Building Envelope Solutions Llc

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Building Envelope Guyer Partners
Introductory technical guidance for civil engineers, structural engineers, architectural engineers and construction managers interested in glass and metal curtain wall and masonry enclosures for buildings. Here is what is discussed: 1. GLASS AND METAL CURTAIN WALLS 2. MASONRY.

Up Against the Wall Guyer Partners
Introductory technical guidance for professional engineers and construction managers interested in design and construction of building enclosure walls. Here is what is discussed: 1. BUILDING ENVELOPE PERFORMANCE, 2. THERMAL ENVELOPE PERFORMANCE, 3. THERMAL ENVELOPE DEFECTS, 4. DESIGN AND CONSTRUCTION PROCESS., 5. AIR BARRIERS, 6. VAPOR RETARDERS, 7. THERMAL INSULATION, 8. CONTROL OF RAIN PENETRATION, 9. SEALANTS.

Roofing & Cladding Systems CRC Press
Introductory technical guidance for professional engineers and construction managers interested in design and construction of building envelopes. Here is what is discussed: 1. AIR BARRIERS, 2. VAPOR RETARDERS, 3. THERMAL INSULATION, 4. CONTROL OF RAIN PENETRATION.

A New Protocol for the Inspection and Testing of Building Envelope Air Barrier Systems Prentice Hall
This book provides highly-detailed technical guidance in the selection of leak-resistant windows and their installation to limit risk of water intrusion. It includes many dozens of intricate, step-by-step installation drawings for a variety of cladding types and wall assemblies, and hundreds of photographs illustrating these installation methods, which have been developed in nearly four decades of analyzing hundreds of window failures, and have by now been successfully used to guide the installation of thousands of windows.This technical guide is intended to assist architects and building enclosure consultants in the design of leak-resistant window detailing, and general and specialty contractors, as well as "do-it-yourself" homeowners, in leak-resistant installation methods of typical, nail-flange windows. Construction-defects attorneys and litigation experts may also find this publication an invaluable helper in understanding factors leading to window infiltration problems.

The Building Envelope Guyer Partners
Introductory technical guidance for civil engineers, structural engineers and architectural engineers interested in building envelope wall systems. Here is what is discussed: 1. METAL STUD WALLS 2. PRECAST CONCRETE PANELS.

The National Program Plan for the Thermal Performance of Building Envelope Systems and Materials Amer Society of Civil Engineers
As third-party consultants, we retain a unique perspective through participation in the design, construction, assessment, and forensic analysis of building envelopes. Our familiarity with the building envelope has shown us that the performance and life span of a building is remarkably dependent on the quality of its design--not only in the selection of materials and systems but also in the quality of their detailing. Considering modern architectural building design, building envelope systems are now relied upon heavily in ways beyond their basic function as environmental control layers. High-risk areas such as elaborately designed green roofs raise the stakes yet further and threaten the integrity of the building envelope when function follows second to aesthetics. A few small decisions in how building envelope systems are implemented can mean the difference between a successful or failing design, and the difference may not be immediately obvious to the untrained eye. Cost is another factor, and often a limitation, guiding the design of facade, roofing, and waterproofing systems. Special attention also needs to be given to cost- or value-oriented decision-making in building envelope design. Having the correct knowledge and tools to design building envelope systems can offer protection against costly mistakes and provide balance between function and architectural appeal. By providing general design criteria and solutions to commonly observed issues, our objective is to afford others a better opportunity to identify potential issues and, ultimately, avoid problems that develop during the service life of a building.

Building Envelope Failures--causes and Remedial Measures Princeton Architectural Press
Introductory technical guidance for professional engineers and construction managers interested in design of building envelopes for airtightness and thermal efficiency. Here is what is discussed: 1. BUILDING ENVELOPE PERFORMANCE 2. THERMAL ENVELOPE PERFORMANCE 3. THERMAL ENVELOPE DEFECTS 4. DESIGN AND CONSTRUCTION PROCESS. 5. AIR BARRIERS

Roofing and Cladding Systems Handbook McGraw Hill Professional

Premature building failures and increased heating and cooling loads have made building envelope air leakage a growing concern in North America. In Canada, the National Air Barrier Association has made the inspection and testing of air barrier systems a mandatory requirement within its Quality Assurance Program. In the United States, Massachusetts is the first of what is expected to be many states introducing revised Energy Codes making air barriers mandatory in new construction. The Air Barrier Association of America has recently formed and will adopt a similar quality assurance program. Utilizing existing ASTM standards, this paper proposes a protocol for the inspection and testing of air barrier systems to be performed before construction begins, during installation, and post-construction. Studies show that even routine testing of the air barrier system will dramatically improve a building's air permeance.

Building Envelopes Guyer Partners

A one-stop resource for residential or commercialconstruction projects, Construction Building Envelope andInterior Finishes Databook gives you instant access tohundreds of tables, specifications, charts, diagrams, andillustrations covering materials and components mostfrequently used on a typical job. In easy-to-understandlanguage, construction pro Sidney M. Levy covers:*Interior metal stud specifications, design data and typicaldetails...drywall installation...and fire and sound ratings*Structural steel, cast-in-place concrete and masonrystructural systems, with details, specifications, andillustrations of component parts*Masonry shapes, patterns, installations tips and practices,with an illustrated guide to reinforcing specifications andmaterials*Roofing types and materials...flashing and waterproofingdetails *Finishes including plastic laminates...resilient flooring...painting specifications...and installation guidelines*Much more!

Energy Savings Resulting from Building Envelope Upgrades in Mid-Rise Construction--A Case Study National Council of Teachers of English

This report presents the results from several demonstrations of a new method for sealing building envelope air leaks using an aerosol sealing process developed by the Western Cooling Efficiency Center at UC Davis. The process involves pressurizing a building while applying an aerosol sealant to the interior. As air escapes through leaks in the building envelope, the aerosol particles are transported to the leaks where they collect and form a seal that blocks the leak. Standard blower door technology is used to facilitate the building pressurization, which allows the installer to track the sealing progress during the installation and automatically verify the final building tightness. Each aerosol envelope sealing installation was performed after drywall was installed and taped, and the process did not appear to interrupt the construction schedule or interfere with other trades working in the homes. The labor needed to physically seal bulk air leaks in typical construction will not be replaced by this technology. However, this technology is capable of bringing the air leakage of a building that was built with standard construction techniques and HERS-verified sealing down to levels that would meet DOE Zero Energy Ready Homes program requirements. When a developer is striving to meet a tighter envelope leakage specification, this technology could greatly reduce the cost to achieve that goal by providing a simple and relatively low cost method for reducing the air leakage of a building envelope with little to no change in their common building practices.

Building Envelope Solutions McGraw Hill Professional

The Bice House Dormitory on the campus "Grounds" of the University of Virginia was constructed in the mid-1970s as a dormitory for the nursing school. The building was an eight-story, concrete framed, residential facility with brick veneer cladding over steel stud framing systems. After more than 25 years of service, deficiencies in the brick fa ç ade, coupled with inadequate exterior wall framing, required removal and replacement of the entire exterior wall system from the interior drywall, up to and including the brick veneer. As part of the exterior wall replacement, window systems and insulation materials were upgraded. The building was also refitted with an air barrier system over the new exterior gypsum sheathing. Because existing individual packaged terminal air conditioning units were temporarily removed and reinstalled after renovation, the heating and cooling systems for the building remained unchanged, providing a unique opportunity to measure the true energy savings realized in a building strictly as a result of upgrading the building envelope. When the total heating and cooling costs after the first two full years of service were compared to the costs from years prior to the renovation (normalized for the temperature variations), a distinct reduction in energy costs were recognized from the improvements made during the renovation. The yearly energy consumption for the building was reduced by roughly 14 %, yielding a savings of roughlyUSD12,800 per year based on current energy costs. Based on a payback period method of analysis, the improvements will have paid for themselves in roughly 14 years.

International Conference on Building Envelope Systems and Technology The Fairmont Press, Inc.

Few parts of a building work harder than its envelope (also known as its facade). The envelope is the part of the building most visible from the outside--so it should be visually appealing--but it can also have the biggest effect on the well-being and safety of its occupants--so the envelope should be help heat and cool the building, allow light into it, and provide necessary structure. Too often, a building's envelope is more aesthetically striking than functional, or vice versa. A great building envelope, though, architecturally integrates all of its elements.

An Introduction to Stud Wall and Precast Concrete Building Envelope Systems Guyer Partners

Introductory technical guidance for civil engineers, structural engineers, architectural engineers and construction managers interested in sealing exterior building wall systems to prevent air and water leakage and penetration. Here is what is discussed: 1. BUILDING ENVELOPE PERFORMANCE 2. THERMAL ENVELOPE PERFORMANCE 3. THERMAL ENVELOPE DEFECTS 4. DESIGN AND CONSTRUCTION PROCESS. 5. AIR BARRIERS 6. VAPOR RETARDERS 7. THERMAL INSULATION 8. CONTROL OF RAIN PENETRATION 9. SEALANTS.

Building Envelope Solutions Conference, 29 March 2007 Canada Mortgage and Housing Corporation

Proven Strategies and Solutions for Reducing Energy Consumption Property and facility managers can turn to Energy-Efficient Building Systems as a one-stop guide to operating and maintaining commercial building systems at peak efficiency. Designed to help reduce energy costs and meet environmental standards, this state-of-the-art productivity tool contains fully illustrated, real-world examples of successful green building projects that have achieved significant, energy-saving results. From energy management and auditing, HVAC systems, cooling towers, and pumping systems...to lighting, electrical systems, automation, and building envelope, this expert resource takes readers step by step through procedures for getting optimal performance from every building system. For each system, the book presents the latest methods for improving efficiency...identifying promising new solutions...evaluating their feasibility...and estimating actual savings. Comprehensive and authoritative, Energy-Efficient Building Systems enables building professionals to: Get an in-depth understanding of the principles of each building system Select the most efficient systems for any nonresidential building Maximize energy efficiency with practical strategies and solutions Utilize hands-on methods for evaluating feasibility and estimating savings Review real-world examples of successful green building projects Inside This Cost-Saving Energy Guide • Energy Management and Energy Auditing • Air-Conditioning and Central Chiller Systems • Boilers and Heating Systems • Pumping Systems • Cooling Towers • Air Handling and Distribution Systems • Lighting Systems • Building Electrical Systems • Building Automation Systems • Building Envelope

An Introduction to Design of Building Envelopes for Thermal Efficiency and Airtightness

1-Weather Effects on Roofing Systems2-Understanding Your Roofing and Cladding Systems3-Building Envelope & Roofing Structure4-Roofing Construction Materials5-Insulation &

Waterproofing Membranes6-Energy System Calculations7-Fasteners & Flashings: Holding the Roof on the Roof8-Penetrations Through the Roofing System9-Roofing Project Management10-Convention and Unconventional Roofing Structures11-Warranty and Maintenance of Roofing Systems12-Roofing People13-Roofing Safety & Liability14-Industry Trade AssociationsGlossary of Roofing TerminologyBibliographyIndex

Building America Case Study: Field Trial of an Aerosol-Based Enclosure Sealing Technology, Clovis, California

This Standard provides a guideline and methodology for assessing the condition and performance of existing building envelope systems and components, and identifying problematic and dysfunctional elements. As the adaptive reuse, rehabilitation, and improvement of existing buildings have assumed a more prominent role in meeting national needs, the ability to accurately assess the conditions of a building is imperative. The condition of the building envelope is most important since failures can result in safety and health problems, as well as structural damage. Proper evaluation of the building envelope is often the first step toward stabilization and rehabilitation of the building. This Standard is a compilation of basic information, procedures, and references, and will be an asset to the investigator developing a logical approach to the assessment of the building envelope in order to focus on fundamental defects rather than outward symptoms.

Building Envelope Failure

A revision of the National Program Plan for the Thermal Performance of Building Envelope Systems and Materials, first issued in January 1979, was prepared to redirect research and implementation efforts more sharply towards the needs of the building industry in the 1980s. The revision also incorporates the recommendations of a task force of industry and academic leaders established to review the initial document. This report summarizes the technical accomplishments under the Program Plan during the past three years and details the research, development, and verification projects that need to be initiated or completed in the next few years to realize the full potential energy conservation in buildings. The paper emphasizes the need for cooperation between the public and private sectors of the building community and suggests a method of accomplishing it.

The Building Envelope

Annotation. This guide shows facility managers how to conduct a roofing system assessment and choose the optimal roofing system at the minimum cost. Reid, a facility engineer, covers weather effects on roofing systems, roofing construction materials, insulation and weatherproofing membranes, energy system calculations, fasteners and flashings, penetrations through the system membrane, project management, unconventional roofing structure, warranty and maintenance, and safety and liability.

27109-13 INTRODUCTION TO BUILDING ENVELOPE SYSTEMS IG.

Building envelope standards and practices have evolved over the past few decades in response to increased energy efficiency goals and a better understanding of building science. New materials, systems, and detailing methods help to reduce thermal bridging and to reduce air leakage through building envelopes. A building envelope assembly that is properly designed, detailed, and installed to today's standards typically will perform as expected, reduce energy usage, and provide a durable and long-lasting assembly. However, these technologies are not a panacea for deficiencies in the construction process, deferred maintenance, or unforeseen occupant uses and alterations. The sheer multitude of components involved in today's building envelopes and the airtightness of the assemblies themselves can lead to vulnerabilities exacerbated by any of these factors. Having investigated many building envelope failures, we have found that air barrier, roofing, and waterproofing perfection is challenging to achieve. The goal of this paper is to outline strategies to reduce or evacuate moisture from building envelopes without extensive replacement of components or systems. This paper presents case studies of existing buildings equipped with moisture-monitoring data loggers to evaluate initial conditions and verify moisture reduction over time. The data loggers collected readings at 5-min. intervals for temperature, relative humidity, and moisture content and have been in place for more than six years in some buildings. The primary moisture reduction strategies employed in these studies include added thermal protection, modification of heating systems, the introduction of active air movement, and ventilation of the roof assembly. The success of these strategies is verified with empirical data.

Building Envelope Design for California Non-residential Energy Compliance with Concrete Masonry