



EXTERIOR BUILDING ENCLOSURES

Design Process and Composition for Innovative Facades

C. Keith Boswell, FAIA

Exterior Building Enclosures Process And Composition For Innovative Skins

E Durkheim



Exterior Building Enclosures Process And Composition For Innovative Skins:

Exterior Building Enclosures Keith Boswell, 2013-06-10 A comprehensive guide to the design and execution of sophisticated exterior building enclosures Focused on the design process for architects and related professionals this book addresses the design and execution of sophisticated exterior building enclosures for a number of commercial building types and in a variety of building materials It focuses on the design process by delineating enclosure basics the participants owners architects engineers consultants and their roles and responsibilities through collaboration and tracking the design process through construction This comprehensive handbook covers all of the factors that affect the design of a building enclosure including function visual aesthetics performance requirements and many other criteria In depth case studies of projects of various scales types and climate conditions illustrate the successful implementation of exterior wall enclosure solutions in brick masonry stone architectural concrete glass and metals This unique and indispensable guide Defines the functions physical requirements design principles and types of exterior building enclosures Identifies the participants in the design and construction process and specifies their roles and responsibilities Presents a step by step process for the design of exterior enclosures from defining goals and developing concepts through creating construction documents Reviews the construction process from bidding and negotiation through the paper phase to the brick and mortar stage Provides details on the properties of exterior enclosure materials including structural considerations weather protection fire safety and more Covers a variety of materials including brick masonry natural stone masonry architectural concrete metal framing and glass and all glass enclosures Written by the technical director of the San Francisco office of Skidmore Owings Merrill Exterior Building Enclosures is an indispensable resource for architects engineers facade consultants and green design consultants working on commercial building projects

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construction documents Reviews the construction process from bidding and negotiation through the paper phase to the brick and mortar stage Provides details on the properties of exterior enclosure materials including structural considerations weather protection fire safety and more Covers a variety of materials including brick masonry natural stone masonry architectural concrete metal framing and glass and all glass enclosures Written by the technical director of the San Francisco office of Skidmore Owings Merrill Exterior Building Enclosures is an indispensable resource for architects engineers facade consultants and green design consultants working on commercial building projects

Technology of the Multi-Layer Façade Systems Ingrid Paoletti, Massimiliano Natri, 2025-08-29 The book explores the design production and construction processes of the multi layer fa ade systems towards the principles of environmental and energy sustainability through the drafting of an explanatory and operative reference instrument The work provides the planning of a technical guide focusing on the executive design and construction methodologies The scientific basis of the research implies the definition of the main functional typologies established on the analysis conducted on the experimental case studies with the aim of achieving a codification of the performance and executive potentialities The development of the book as a technical guide on the multi layer fa ade systems involves the possibilities of technology transfer towards different building types and intended uses with the aim of increasing hygro thermal lighting and acoustic performance through the application of technical skins devices and integrated screens on the external enclosures Moreover the book explains the modes of technology transfer through the use of standard and non customized products so as to improve the diffusion in the production and construction of mass produced systems and components

Bioclimatic Double-Skin Façades Mary Ben Bonham, 2019-11-20 Visually enriched with over 250 photographs and drawings Bioclimatic Double Skin Fa ades is an essential reference guide for understanding the types and functions of double skin fa ades Author Mary Ben Bonham examines the history and continuing potential of double skin architecture informing on the variety of approaches possible and advising a rigorous integrated design process leading to application Featuring a wide selection of architectural examples the book will be of interest to professionals and students within the fields of architecture engineering and construction Characterized by a buffer like air space between two glazed building skins double skin windows and fa ades aim to improve building comfort and energy performance Double skins introduce complexity and initial costs yet significant buildings in locations around the globe continue to select this approach In addition to exploring motivations benefits and cautions for designing with double skins the book provides a primer on fundamental fa ade design concepts and strategies for control of thermal luminous and acoustic environments Chapters also address alternative types of high performance fa ades and implications for each phase of fa ade design and construction Bioclimatic Double Skin Fa ades promotes bioclimatic design that is inspired by nature measured in performance and uniquely adapted to climate and place In depth case studies illustrate how double skin fa ades have been adapted to a range of climates and cultural settings Marseille Library and Grenoble Courthouse in France Cambridge Public Library in

Massachusetts Manitoba Hydro Place in Canada and the Pearl River Tower in China **Bio-based Building Skin** Anna Sandak, Jakub Sandak, Marcin Brzezicki, Andreja Kutnar, 2019-03-04 This book provides a compendium of material properties demonstrates several successful examples of bio based materials application in building facades and offers ideas for new designs and novel solutions It features a state of the art review addresses the latest trends in material selection assembling systems and innovative functions of facades in detail Selected case studies on buildings from diverse locations are subsequently presented to demonstrate the successful implementation of various biomaterial solutions which defines unique architectural styles and building functions The structures morphologies and aesthetic impressions related to bio based building facades are discussed from the perspective of art and innovation essential factors influencing the performance of materials with respect to functionality and safety are also presented Special emphasis is placed on assessing the performance of a given facade throughout the service life of a building and after its end The book not only provides an excellent source of technical and scientific information but also contributes to public awareness by demonstrating the benefits to be gained from the proper use of bio based materials in facades As such it will appeal to a broad audience including architects engineers designers and building contractors Rethinking Building Skins Eugenia Gasparri, Arianna Brambilla, Gabriele Lobaccaro, Francesco Goia, Annalisa Andaloro, Alberto Sangiorgio, 2021-12-05 Rethinking Building Skins Transformative Technologies and Research Trajectories provides a comprehensive collection of the most relevant and forward looking research in the field of facade design and construction today with a focus on both product and process innovation The book brings together the expertise creativity and critical thinking of more than fifty global innovators from both academia and industry to guide the reader in translating research into practice It identifies new opportunities for the construction sector to respond to present challenges towards a more sustainable efficient connected and safe future Introduces the reader to the role of facades with respect to the main challenges ahead Provides an overview of the major facade technological advancements throughout history and identifies prospective research trajectories Includes interviews with key industry players from different backgrounds and expertise Showcases a comprehensive range of leading research topics in the field organised by product and process innovation Covers major innovations across the value chain including facade design fabrication construction operation and maintenance and end of life Contributes towards the definition of an international research agenda and identifies emerging market opportunities for the facade industry **Trends on Construction in the Digital Era** António Gomes Correia, Miguel Azenha, Paulo J. S. Cruz, Paulo Novais, Paulo Pereira, 2022-11-19 These proceedings address the latest developments in the broad area of intelligent construction integrated in the mission of the International Society for Intelligent Construction ISIC which aims to promote intelligent construction technologies applications from the survey design construction operation and maintenance rehabilitation by adapting to changes of environments and minimizing risks Its goals are to improve the quality of construction cost saving and safety exploring

fundamental issues related to the application and use of Artificial Intelligence AI and Machine Learning techniques and technology ISIC 2022 is the 3rd ISIC international conference held in Guimar es Portugal on September 6 9 2022 and follows the previous successful instalments of the conference series in China 2019 and USA 2017 It took a holistic approach to integrate civil engineering construction machinery electronic sensor technology survey testing technologies information technology computing and other related fields in the broad area of intelligent construction The respective contributions cover the following topics Artificial Intelligence for Design and the Built Environment Building Information Modelling BIM and Construction Automation and Robotics Intelligent Construction Sustainable Construction and Sustainable and Smart Infrastructures Given its broad range of coverage the book will benefit students educators researchers and professionals practitioners alike encouraging these readers to help the intelligent construction community into the digital era and with a vision on societal issues

Material Balance Ingrid Paoletti,Massimiliano Natri,2020-09-30 This book argues that we are living in an era of deep mutation and the anthropocentric model no longer fits our way of living and behaving on Earth Climate change is upsetting our relationship with nature and the environment while artificial intelligence scenarios undermine the foundations of human life As the pressure to re align based on new modes of living and consuming increases the first priority should be to address the way we imagine design produce and construct our built environment The highly original book explores how the relation between design technology and material cultures can underpin and drive this change It discusses the need for a new material balance to develop our design practice not only from an energy and environmental perspective but also from a physiological cultural and semantic one in order to re balance the impact of material design on society This publication is an excellent guide to understanding in detail the theoretical framing of several crucial topics in material balance design from computational knitting to material agency and from new acoustic ecology to future fa ade technologies bio based design and ultimately non anthropocentric habitats offering insights into preferable future scenarios

Translucent Building Skins Scott Murray,2013-05-07 Exploring the design of innovative building enclosure systems or skins in contemporary architecture and their precedents in earlier twentieth century modern architecture this book examines the tectonics the history and the influence of translucency as a defining characteristic in architecture Highly illustrated throughout with drawings and full colour photographs the book shows that translucency has been and continues to be a fertile ground for architectural experimentation Each chapter presents a comparative analysis of two primary buildings a recent project paired with a historical precedent highlighting how architects in different eras have realized the distinctive effects of translucency The included buildings span a variety of program types ranging from a single family residence to a factory to a synagogue Whether it is Pierre Chareau s glass lens curtain wall at the Maison de Verre Frank Lloyd Wright s wall of stacked glass tubes at the Johnson Wax Research Tower or Peter Zumthor s use of acid etched glass in a double skin envelope at the Kunsthau s Bregenz the included projects each offer an exemplary case study of innovations in materiality and

fabrication techniques Today among many contemporary architects there is an engagement with new technologies new material assemblies and new priorities such as sustainability and energy efficiency A resurgent interest in translucency as a defining quality in buildings has been an important part of this recent dialogue and this book makes essential reading for any architect looking to incorporate aspects of translucency into their buildings

Design and Construction of Bioclimatic Wooden Greenhouses, Volume 3 Gian Luca Brunetti, 2022-12-19 This book is the third of four dealing with bioclimatic design and construction by focusing on the most basic and polyvalent of modern environmental systems the bioclimatic greenhouse the Swiss army chainsaw of architecture More specifically this third volume focuses on how the envelope of bioclimatic wooden greenhouses may be designed and built In more general terms it helps us to consider how to design and build the transparent and opaque enclosures of bioclimatic low energy architecture with low environmental impact This multi volume book covers both free standing greenhouses that can naturally heat and cool themselves and lean to greenhouses that support the natural heating and cooling of buildings this includes both agricultural greenhouses and greenhouses suited to host people As a result it is a trans disciplinary work deriving its areas of concern from a broad range of study areas spanning from environmental to constructional to structural drawing the clarity of the approach from the fact that the topics are presented by a single author with a single voice and a designer s mindset To achieve this the book adopts a composite set of explanatory strategies and communication registers including extensive support by 3D construction drawings and examples and presents not only state of the art solutions but also experimental ones

Design and Construction of High-Performance Homes Franca Trubiano, 2013-03-05 Both professionals and students are increasingly committed to achieving high performance metrics in the design construction and operation of residential buildings This book responds to this demand by offering a comprehensive guide which features architectural innovations in building skin technologies which make lighter more transparent buildings high performing energy free architectural design principles and advances in building integrated photovoltaics essential engineering principles controls and approaches to simulation for achieving net zero the advantages of integrated design in residential construction and the challenges and opportunities it engenders detailed case studies of innovative homes which have incorporated low energy design solutions new materials alternative building assemblies digital fabrication integrated engineering systems and operational controls Divided into four parts the book discusses the requisite AEC Architecture Engineering and Construction knowledge needed when building a high performance home It also communicates this information across four case studies which provide the reader with a thorough overview of all aspects to be considered in the design and construction of sustainable homes With contributions from experts in the field the book provides a well rounded and multi faceted approach This book is essential reading for students and professionals in design architecture engineering civil mechanical and electrical construction and energy management

Architecture Follows Nature-Biomimetic Principles for Innovative Design Ilaria Mazzoleni, 2013-03-21 This full

color volume proposes an innovative methodology that uses the functional aspects of nature to inspire improvements in building design and form encouraging designers to apply biomimetic principles to architectural processes The book focuses on the analysis of various animal skins translating the principles of communication thermoregulation water balance and protection into the built environment Illustrating how biomimetic principles can create a more sustainable way of building this is the first time the author s new methodology as well as the 12 case studies has been published **The Innovative Use of Materials in Architecture and Landscape Architecture** Caren Yglesias,2014-02-21 This book is about materials The fundamental properties and technical aspects are reviewed within a context of a material s history the theories of its meaning and making and its use Information about the sustainability aspects of each material is included as a critical necessity in construction Innovative design comes from an understanding of materials for what they are how they have been used in the past and how they can support human activity The author provides essential information to students and professionals concerned with advancing their design at a time when the consumption of natural resources and the consequences of wasteful practices are of urgent concern Instructors considering this book for use in a course may request an examination copy here [Material Architecture](#) John Fernandez,2006 Composed of a series of essays this book deals with the broad issues affecting the nature of architectural materials and provides a focused review of the state of the art materials It also provides designers with the tools they need to evaluate and select from the thousands of different materials that are available to them The book is organized into three sections Time looks at how the materials used in architectural design have changed over the years showing how we have come to use the materials we do in contemporary design Materials covers all five material families metals polymers ceramics composites and natural materials giving in depth information on their properties behavior origins and uses in design It also introduces a review of the cutting edge research for each family Systems outlines the technical design orientated research that uncovers how new architectural assemblies can be designed and engineered All of this practical advice is given along with many real case examples illustrating how this knowledge and information has been and can be used in architectural design **Structural Glass Facades and Enclosures** Mic Patterson,2011-03-21 A COMPREHENSIVE GUIDE TO STRUCTURAL GLASS FACADES FOR ARCHITECTS ENGINEERS AND BUILDERS Once an experimental building form structural glass facades have matured into a fully robust technology Structural Glass Facades and Enclosures documents defines and categorizes the current state of the art in long span glass facade design and construction with a focus on structural systems glass cladding options and implementation strategies for innovative design A comparative analysis of these various systems is included along with designs and design practices for enhancing transparency engineering issues material process and fabrication considerations installation means and methods and project delivery strategies for implementing innovative building technology in today s construction marketplace The reader will find information here that is not available together in any single resource including Structural system types and

design options with integrated glass system options and their application on each of the structural types An in depth discussion of design fabrication and installation issues relative to each system type accompanied by illustrations and photographs A discussion of the challenges of implementing innovative design and technology in the construction industry and operational practices to improve the probability of success A series of in depth case studies documenting representative samples of stunning built works that employ the technology and design principles identified in the book Structural Glass Facades and Enclosures provides expert content for putting cutting edge technology into real life practice creating new potential for fresh applications embracing both aesthetic and performance solutions and for the adoption of the technology by architects builders and facade practitioners

Integrating Innovation in Architecture Ajla Aksamija, 2017-03-13

Today s design professionals are faced with challenges on all fronts They need not only to keep in step with rapid technological changes and the current revolution in design and construction processes but to lead the industry This means actively seeking to innovate through design research raising the bar in building performance and adopting advanced technologies in their practice In a constant drive to improve design processes and services how is it possible to implement innovations And moreover to assimilate them in such a way that design methods and technologies remain fully integrated Focusing on innovations in architecture this book covers new materials and design methods advances in computational design practices innovations in building technologies and construction techniques and the integration of research with design Moreover it discusses strategies for integrating innovation into design practices risks and economic impacts Through numerous case studies it illustrates how innovations have been implemented on actual architectural projects and how design and technical innovations are used to improve building performance as well as design practices in cutting edge architectural and engineering firms Projects of all scales and building types are discussed in the book ranging from small scale installations academic and commercial buildings to large scale mixed use healthcare civic academic scientific research and sports facilities Work from design firms around the globe and of various scales is discussed in the book including for example Asymptote Architecture cepezed CO Architects Consarc Architects FAAB Architektura Gerber Architekten HOK IDOM ACXT MAD Architects Morphosis Architects SDA Synthesis Design Architecture Studiotrope Perkins Will Richter Dahl Rocha Associ s Sn hetta Rob Ley Studio Trahan Architects UNStudio and Zaha Hadid Architects among many others

Textiles, Identity and Innovation: In Touch Gianni Montagna, Manuela Cristina Paulo Carvalho Figueiredo, 2020-05-19

D_Tex is proposed as a hub around which it is possible to look at textiles in their different forms in order to better understand study adapt and project them for the future It is intended to build a flow of ideas and concepts so that participants can arrive at new ideas and concepts and work them in their own way adapting them to their objectives and research D_Tex is intended as a space for sharing and building knowledge around textile material in order to propose new understandings and explorations Present in all areas of knowledge the textile material bets on renewed social readings and its evolutions to constantly reinvent itself

and enable innovative cultural and aesthetic dimensions and unexpected applications to solve questions and promote new knowledge D_Tex proposes to promote discussion and knowledge in the different areas where textiles with all their characteristics can ensure an important contribution combining material and immaterial knowledge innovative and traditional techniques technological and innovative materials and methods but also new organization and service models different concepts and views on teaching With the renewed idea of the intrinsic interdisciplinarity of design and sharing with different areas that support each other the research and practice of textiles was proposed by the D_TEX Textile Design Conference 2019 held June 19 21 2019 at the Lisbon School of Architecture of the University of Lisbon Portugal under the theme In Touch where as broadly understood as possible different areas of textiles were regarded as needing to keep in touch with each other and end users in order to promote and share the best they can offer for the welfare of their users and consumers

Beyond BIM Danelle Briscoe, 2015-10-14 Beyond BIM explores the vast and under explored design potential undertaken by information modeling Through a series of investigations grounded in the analysis of built work interviews with leading practitioners and speculative projects the author catalogs the practical advantages and theoretical implications of exploiting BIM as a primary tool for design innovation Organized by information type such as geographic data local code or materials each chapter suggests a realm of knowledge that can be harvested and imported into BIM to give meaningful specificity to architectural form and space While highly sustainable the work documented and envisioned in this book moves well beyond normalization to reveal inventive takes on contemporary practice Beyond BIM serves as a primary resource for professional architects from practice researchers and designers engaged in information related spatial design processes as well as students and faculties of architecture schools in search of BIM design inspiration Likewise those highly attuned to computation and unconventional ways of creating form and space particularly built outcomes that utilize BIM will find this book meaningful and essential

Barcelona International Convention Centre, 2004 The CCIB is one of the main structures housing the 2004 Forum of Cultures Barcelona and one of the anchors of the new Diagonal Mar district It is not properly a building but a set of objects with different functions clients and programs united by a set of predefined bands that channel this plurality A hotel and office building rise on the northern edge large exhibition and convention halls are located in the central strip and public lobbies restaurants and small conference halls face the sea and the gardens to the south A combination of massive concrete and high precision large span steel the structure is simultaneously conventional and monstrous banal and superhuman With an introduction by Aaron Betsky this book tells the story of the CCIB through the voices of the architects engineers clients consultants and artists that have contributed to their its making

[Detail in Process](#) Christine Killory, Rene Davids, 2008 What separates good architecture from great architecture The difference lies in the details The way an architect chooses to treat architectural detailingscreens and walls doors and windows roofs bridges and stairscan transform the merely ordinary into the extraordinary Detail in Process the second volume in the new AsBuilt

series features twenty five awe inspiring projects characterized by an unusual synthesis of aesthetics and materials the sunshade at Morphosis s Student Recreation Center in Cincinnati the embossed and perforated copper skin of Herzog the handrails at Mir Rivera Architects Lake Austin Footbridge in Austin the stairs at Heatherwick Studio s Longchamp Store in New York City plus twenty more Editors Christine Killory and Ren Davids have collected the best work of the past two years including new buildings by some of today s most daring and detail obsessed architects Norman Foster James Carpenter John Ronan Renzo Piano Marmol Radziner Tadao Ando Steven Holl Jean Nouvel David Chipperfield and SANAA Comprehensively documented Detail in Process includes the plans details and large scale sections needed to appreciate the innovative ways these architects have responded to complicated design problems

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