Measure And Construction Of The Japanese House En Full Version

Measure and Construction of the Japanese House en

The measure and construction of the Japanese house en embody a rich tradition rooted in centuries of architectural innovation, cultural philosophy, and environmental adaptation. These structures are renowned for their elegant simplicity, harmony with nature, and efficient use of space. Understanding how Japanese houses are measured and constructed offers valuable insights into their unique aesthetic, functional design, and cultural significance. This article explores the detailed methods of measurement and construction techniques employed in traditional and modern Japanese houses, providing a comprehensive overview of their architectural principles.

Historical Context and Cultural Significance

Origins of Japanese Housing Architecture

Japanese house en (also known as minka in rural areas and machiya in urban settings) have evolved over centuries. Traditional methods are deeply influenced by:

- Indigenous building practices
- Chinese architectural influence
- Zen Buddhism principles emphasizing simplicity and natural harmony

Cultural Values Reflected in Construction

The design and construction of Japanese houses reflect core cultural values such as:

- Wabi-sabi (beauty in imperfection)
- Connection with nature
- Flexibility and adaptability
- Emphasis on craftsmanship

Measurement Principles in Japanese House Construction

Modular Measurement System

Japanese architecture relies on a modular measurement system based on ken (?), a traditional unit that facilitates flexible spatial arrangement.

The Ken and Its Dimensions

- The ken is approximately 1.82 meters (about 6 feet).
- It serves as a basic unit for designing room sizes, wall placement, and structural elements.

Using the Ken in Planning

- Spatial proportions are based on multiples of ken, enabling easy adaptation and expansion.
- The modular system promotes rhythmic and harmonious spatial layouts.

Other Measurement Units

- Shaku: a traditional measurement roughly 30.3 centimeters.
- Sun: 1/10 of a shaku, used for finer measurements.

Measurement Techniques

- Precise measurement with traditional tools like keshiki (measuring sticks).
- Incorporation of natural features like trees and landscape into spatial planning.
- Use of grid systems aligned with ken units for consistency.

Construction Materials and Techniques

Traditional Materials

- Wood: The primary material, especially cedar (sugi), cypress (hinoki), and pine.
- Clay and Plaster: For walls and finishes.
- Rice Straw and Thatch: Used in roof thatching (kayabuki).
- Paper: Washi paper for shoji screens.

Structural Elements

Post and Beam Construction

- Post: Vertical supports, often made of timber.
- Beam: Horizontal supports connecting posts.
- The framework follows a post-and-lintel system.

Foundation

- Typically shallow, made with stone or wooden piles.
- Designed to accommodate earthquakes and uneven terrain.

Architectural Features

- Tatami Rooms: Mats measuring about 0.9 by 1.8 meters, defining interior space.
- Sliding Doors (Fusuma and Shoji): Allow flexible partitioning.
- Engawa: Veranda that connects indoor and outdoor spaces.
- Roofs: Usually gabled or hipped with thatch or tiled coverings.

Construction Process of a Japanese House en

Site Selection and Preparation

- Consideration of natural features, orientation, and climate.
- Leveling the ground and setting stakes based on measurement plans.

Foundation Construction

- Laying a foundation using stones or wooden piles.
- Ensuring stability and flexibility to seismic activity.

Framing

- Erecting vertical posts at intervals based on ken measurements.
- Connecting posts with horizontal beams and braces.
- Constructing the roof framework with careful attention to load distribution.

Wall and Floor Construction

- Installing shoji or fusuma for interior partitions.
- Laying tatami mats on wooden floors.
- Applying clay plaster or wood panels on exterior walls.

Roofing

- Assembling roof trusses.
- Covering with tiles or thatch depending on regional style.
- Ensuring proper drainage and protection from the elements.

Finishing Touches

- Installing sliding doors, screens, and interior fixtures.
- Incorporating natural ventilation and lighting features.
- Final adjustments to ensure harmony and functionality.

Modern Adaptations and Construction Techniques

Integration of Modern Materials

- Use of steel, concrete, and synthetic materials for durability.
- Preservation of traditional aesthetics with modern technology.

Prefabrication and Modular Construction

- Prefabricated components based on ken-based modules.
- Increased efficiency and consistency in construction.

Earthquake-Resistant Design

- Reinforced frameworks.
- Flexible joints and shock absorbers.
- Base isolators in contemporary structures.

Sustainable Practices

- Use of eco-friendly materials.
- Incorporation of natural ventilation, passive solar design, and green roofs.

Summary of Key Points

- Measurement in Japanese house en is fundamentally based on the ken, enabling flexible, harmonious spatial arrangements.
- Precise traditional measurement tools and units like shaku and sun complement the ken system.
- Construction techniques emphasize wooden post-and-beam frameworks, with materials chosen for their natural properties and local availability.
- Interior design features like tatami mats, sliding doors, and engawa reflect both aesthetic and functional considerations.
- Modern Japanese houses blend traditional principles with contemporary materials and technologies to enhance safety, comfort, and sustainability.

Conclusion

The measure and construction of the Japanese house en are testaments to a sophisticated architectural philosophy that values harmony, flexibility, craftsmanship, and environmental integration. Rooted in a modular measurement system centered around the ken, traditional Japanese architecture achieves a delicate balance between form and function. While modern innovations have introduced new materials and techniques, the core principles of measurement and construction continue to influence contemporary Japanese homes, preserving a timeless cultural legacy that seamlessly blends tradition with innovation. Understanding these methods offers not only architectural insight but also a deeper appreciation of Japan?s cultural approach to living spaces.

Measure and Construction of the Japanese House En: An In-Depth Exploration

The traditional Japanese house, renowned for its elegance, harmony with nature, and intricate craftsmanship, offers a fascinating case study in architecture and spatial design. Central to this architectural ethos is the concept of the en?a fundamental structural and symbolic element that embodies the spirit of Japanese living spaces. Understanding the measure and construction of the Japanese house en provides insight into its unique aesthetic, functional efficiency, and cultural significance.

This article explores the detailed aspects of en, including its historical roots, measurement systems, structural components, and construction techniques. Through this comprehensive analysis, readers will gain a clearer understanding of how the en shapes the spatial experience of traditional

Japanese architecture.

Historical and Cultural Context of the En in Japanese Architecture

The Origins and Evolution of En

The en (?) in Japanese architecture literally translates to "edge," "border," or "connection." Historically, the concept has deep roots in Japanese culture, embodying notions of boundary, relationship, and continuity. In traditional homes, en often manifests as a verandah or engawa?a narrow, covered strip of flooring running along the external periphery of rooms.

In Edo-period architecture, the en became a vital transitional space that blurs the boundary between interior and exterior, emphasizing harmony with nature. Its design reflects a philosophical approach of seamless integration, where indoor and outdoor environments coexist fluidly.

Cultural Significance and Symbolism

The en is more than a mere architectural feature; it symbolizes social and spiritual connections. It serves as a space for social interaction, a buffer zone offering privacy while maintaining openness. The presence of en in a residence or temple signifies a respectful acknowledgment of nature and community, key values in Japanese life.

Measurement Systems in Japanese Architecture: Foundations for En Construction

Traditional Measurement Units: The Sun and the Ken

Japanese architecture relies on traditional measurement units that differ markedly from Western systems. Two primary units influence the construction and sizing of en:

- Sun (Shaku): An ancient unit approximately equivalent to 30.3 cm, used in various measurements.
- Ken (?): A unit roughly equal to 1.8 meters (about 6 shaku), historically used to measure room sizes and structural modules.

These units underpin the modular approach to building, ensuring consistency and harmony across architectural elements.

Modular Design Principles

The ken serves as a fundamental module, dictating spacing, proportions, and the layout of en and adjacent spaces. For example, many traditional rooms are designed as multiples of 1.5 or 2 ken, creating a balanced, grid-like spatial organization.

The use of these measurements ensures that en aligns harmoniously with other architectural features, facilitating ease of construction and aesthetic coherence.

Structural Components of the En in Traditional Japanese Houses

Physical Elements Constituting the En

The construction of en involves several key components:

- Post and Beam Framework: Vertical timber posts (hashira) and horizontal beams (nuki, kumimono) form the skeleton, providing stability and defining the space.
- Flooring: Typically, tatami mats are laid within the en, with measurements adhering to the modular system, often 0.91 meters by 1.82 meters.
- Veranda (Engawa): A narrow, covered corridor that surrounds the house or specific rooms, serving as a transition zone.
- Sliding Doors (Fusuma and Shoji): These elements delineate space within en, enabling flexible room configurations.

Materiality and Craftsmanship

Traditional en construction utilizes natural, locally sourced materials:

- Wood: Cypress (hinoki), cedar (sugi), and pine are prevalent for framing.
- Bamboo: Often used in decorative or structural details.
- Clay and Plaster: For walls and finishes, ensuring breathability and aesthetic harmony.
- Paper (Washi): Used in shoji screens, contributing to diffused lighting within en.

Construction Techniques and Processes of Building En in Japanese Homes

Foundation and Base Preparation

Construction begins with establishing a foundation that often employs stone or raised wooden platforms to prevent moisture ingress. The post and beam framework is then assembled, adhering to precise measurements based on the ken system.

Framework Assembly

- Vertical Posts (Hashira): Placed at regular intervals, typically every 2 to 4 ken.
- Horizontal Beams: Connected with traditional joinery techniques such as mortise and tenon joints, eliminating the need for nails.
- Flooring Installation: Tatami mats are laid over the wooden base, defining the en space.

Wall and Surface Work

- Fusuma and Shoji are fitted into the framework, allowing flexible space division.
- Plaster walls are applied to interior surfaces, with careful attention to surface flatness and aesthetic detail.

Finishing Touches: The Veranda and Exterior Details

- The engawa is constructed with similar precision, often extending around the perimeter of the en.
- Eaves and roof structures are designed to complement the en, providing shelter and aesthetic balance.

Innovations and Variations in En Construction

Modern Adaptations

Contemporary Japanese homes may incorporate reinforced concrete or steel frames, but many still preserve traditional en features for cultural authenticity. Innovations include:

- Use of lightweight materials to improve insulation.
- Integration of large glass panels for enhanced natural light.
- Modular prefabricated components for easier assembly.

Regional Variations

Different regions adapt en construction to local climate and materials:

- Kyushu: Emphasizes open, airy en with large verandas.

- Kanto: Tends toward more enclosed spaces with refined wood finishes.
- Tohoku: Incorporates thicker walls and insulated en for colder climates.

Conclusion: The Enduring Significance of Measure and Construction of En

Understanding the measure and construction of the Japanese house en reveals much about Japanese cultural values and architectural principles. The meticulous use of traditional units like ken, combined with craftsmanship rooted in natural materials, creates spaces that are both functional and spiritually resonant.

The en exemplifies a harmonious intersection of measurement, materiality, and symbolic meaning. As modern architecture continues to evolve, preserving the essence of en offers a vital link to Japan?s architectural heritage, ensuring that the values of simplicity, harmony, and craftsmanship endure.

In summary, the construction of en is a testament to Japan?s sophisticated approach to architecture?one that balances precise measurement, cultural symbolism, and innovative adaptation?a true reflection of the Japanese aesthetic and philosophical worldview.

QuestionAnswer What are the common measurement units used in the construction of Japanese houses? Japanese house construction primarily uses traditional units like the tatami mat (measured in mats), as well as metric units such as millimeters and centimeters for precise measurements. How is the size of a Japanese house typically measured? The size of a Japanese house is often measured in tatami mats (jo), which represent the number of standard-sized mats that cover the floor area, along with square meters for detailed specifications. What are the key construction techniques unique to Japanese houses? Japanese houses utilize techniques such as wooden post-and-beam framing, tatami flooring, sliding shoji doors, and flexible space design, emphasizing natural materials and lightweight, earthquake-resistant structures. How does the measurement of interior spaces differ from exterior measurements in Japanese house construction? Interior space measurements often focus on usable areas like room sizes in tatami mats, while exterior measurements include overall building footprint in square meters, considering setbacks and lot boundaries. What considerations are taken into account when measuring for traditional Japanese house features like sliding doors and tatami rooms? Measurements are carefully planned to fit standard sizes of tatami mats (approximately 0.9 by 1.8 meters) and sliding door dimensions, ensuring seamless integration into the overall floor plan. Are there modern standards or codes that influence how Japanese houses are measured and constructed? Yes, Japanese building standards and codes specify minimum requirements for measurements, safety, and earthquake resistance, guiding the precise measurement and construction practices for modern Japanese houses.

Related keywords: Japanese house measurement, traditional Japanese architecture, tatami mat

sizing, wooden frame construction, shoji screen dimensions, Japanese roof design, room partitioning techniques, building materials Japan, Japanese interior layout, structural engineering Japan

Building Construction University Of Delaware

Building Construction University of Delaware is a prominent program that prepares students for diverse careers in the construction and building industry. Known for its rigorous curriculum, experienced faculty, and state-of-the-art facilities, this program offers a comprehensive education designed to meet the evolving demands of the construction sector. Whether you're interested in project management, sustainable building practices, or structural engineering, the Building Construction program at the University of Delaware provides a solid foundation for professional success. This article explores the key aspects of the program, including academic offerings, faculty expertise, facilities, career opportunities, and why it stands out as a top choice for aspiring construction professionals.

Overview of Building Construction Program at the University of Delaware

The Building Construction program at the University of Delaware is part of the College of Engineering and the College of Arts and Sciences, offering undergraduate and graduate degrees tailored to meet industry needs. The program emphasizes hands-on learning, technical proficiency, and leadership skills to prepare students for real-world challenges.

Academic Degrees Offered

- Bachelor of Science in Building Construction Management
- Master of Science in Building Construction and Facility Management
- Certificate programs in specialized areas such as sustainable construction and project management

Program Goals and Objectives

- Develop technical knowledge in construction methods, materials, and systems
- Foster leadership and management skills for construction projects
- Promote sustainable and environmentally responsible building practices

- Prepare students for certification exams such as OSHA, LEED, and PMP
- Engage students in industry internships and cooperative education (co-op) opportunities

Curriculum and Course Highlights

The curriculum is designed to combine theoretical knowledge with practical application. Courses are structured to build foundational skills before progressing to advanced topics.

Core Courses

- Construction Materials and Methods
- Structural Analysis and Design
- Construction Project Management
- Estimating and Cost Control
- Construction Safety and Risk Management
- Sustainable Building Practices

Electives and Specializations

Students can select electives based on their career interests, including:

- Building Information Modeling (BIM)
- Green Building Technologies
- Construction Law and Contracts
- Quality Assurance and Control
- Advanced Project Scheduling

Capstone and Practical Experience

- Final year capstone projects involve real-world construction challenges
- Industry internships and co-op programs provide hands-on experience
- Collaboration with local construction firms for site visits and project simulations

Faculty and Industry Experts

The success of the Building Construction program is largely attributed to its faculty, who bring a wealth of industry experience and academic expertise.

Faculty Expertise

- Professors with backgrounds in civil engineering, architecture, and construction management
- Industry practitioners who regularly consult and collaborate with students
- Researchers focusing on sustainable construction practices, innovative building materials, and construction safety

Industry Partnerships

- Collaboration with leading construction firms and industry organizations
- Opportunities for mentorship, internships, and job placements
- Participation in industry conferences and seminars hosted by the university

State-of-the-Art Facilities and Resources

The University of Delaware invests heavily in providing students with modern facilities that mirror real-world construction environments.

Construction Labs and Workshops

- Fully equipped labs for materials testing and structural analysis
- Model construction sites for hands-on learning
- Workshops for developing skills in carpentry, framing, and finishing

Building Information Modeling (BIM) Labs

- Advanced software tools for digital modeling and project simulation
- Training in 3D modeling, clash detection, and construction sequencing

Library and Research Resources

- Access to extensive technical journals, industry reports, and standards
- Dedicated research centers focusing on sustainable construction and engineering innovations

Career Opportunities and Industry Connections

Graduates of the Building Construction program at the University of Delaware are well-positioned for successful careers across the construction industry.

Potential Career Paths

- Construction Project Manager
- Estimator and Cost Analyst
- Construction Safety Officer
- Building Inspector
- Sustainability Consultant
- Facilities Manager
- Construction Engineer

Job Placement and Support Services

- Career counseling and resume workshops
- On-campus recruiting events and job fairs
- Alumni network for mentorship and industry connections
- Internship and co-op placement assistance

Accreditation and Industry Recognition

The program is accredited by reputable organizations, ensuring academic quality and industry relevance.

Accrediting Bodies

- ABET (Accreditation Board for Engineering and Technology)
- The Construction Management Association of America (CMAA)
- LEED Certification Providers for sustainable building curricula

Industry Recognition

- High employment rates among graduates
- Recognition from industry leaders for curriculum excellence
- Continuous curriculum updates aligned with industry standards

Why Choose Building Construction at the University of Delaware?

Selecting the right program is crucial for future success. Here are some reasons why the University of Delaware's Building Construction program stands out:

- **Strong Industry Connections:** Partnerships with leading firms ensure internships, mentorships, and job placements.
- **Hands-On Learning:** Practical experience through labs, workshops, and real-world projects.
- **Research Opportunities:** Engage in innovative research on sustainable construction and new materials.
- **Location Advantage:** Situated in a region with a vibrant construction industry, providing ample project opportunities.
- **Alumni Network:** Access to a network of successful professionals across the construction sector.

Conclusion

The Building Construction University of Delaware program offers a comprehensive pathway for students aspiring to excel in the construction industry. Combining rigorous academics, practical experience, industry partnerships, and cutting-edge facilities, it prepares graduates to meet the challenges of modern construction projects. Whether you aim to become a project manager, estimator, or sustainability expert, this program provides the tools, knowledge, and connections necessary for a successful career. For those seeking a top-tier education in building construction, the University of Delaware stands out as a premier choice to turn your ambitions into reality.

Keywords: Building Construction University of Delaware, construction management program, construction degrees Delaware, sustainable building practices, construction industry careers, University of Delaware construction facilities, ABET accredited construction program, career in construction Delaware, Building Construction faculty Delaware, construction internships University of Delaware

Building Construction at the University of Delaware: Pioneering Education and Innovation in the Field

Building construction is a vital discipline that bridges the gap between engineering, architecture, and project management. It shapes the physical environment we live in, ensuring safety, sustainability, and efficiency in the built environment. The University of Delaware (UD) has established itself as a prominent institution in this domain, offering comprehensive programs, cutting-edge research, and industry collaborations that prepare students to excel in the ever-evolving construction industry. **Building construction university of delaware** stands out as a hub for academic excellence,

practical training, and innovative research, making it a top choice for aspiring construction professionals.

In this article, we delve into the various facets of building construction at the University of Delaware, exploring academic programs, research initiatives, industry partnerships, facilities, and career prospects. Whether you?re a prospective student, industry stakeholder, or simply interested in the future of construction education, this detailed overview provides valuable insights into how UD is shaping the next generation of construction experts.

Overview of Building Construction at the University of Delaware

The University of Delaware?s approach to building construction emphasizes a multidisciplinary curriculum designed to equip students with technical skills, managerial capabilities, and a strong foundation in sustainable practices. The program integrates classroom learning with real-world applications through labs, internships, and collaborative projects.

The Department of Civil and Environmental Engineering at UD oversees the construction program, emphasizing hands-on learning and research that addresses current industry challenges. The university?s commitment to innovation is reflected in its investment in state-of-the-art facilities and active industry collaborations.

Academic Programs and Curriculum

Bachelor?s Degree in Construction Engineering and Management

The undergraduate program aims to produce graduates capable of managing complex construction projects from inception to completion. Key components include:

- Core Courses: Structural analysis, construction materials, project management, construction safety, and estimating.
- Electives: Sustainable construction, Building Information Modeling (BIM), and advanced project planning.
- Practical Experience: Opportunities for internships, co-op programs, and industry site visits.

Students are encouraged to develop skills in leadership, communication, and problem-solving, vital for managing diverse teams and projects.

Master?s and Ph.D. Programs

Advanced degrees focus on research and specialization in areas such as construction automation,

digital construction technologies, and resilient infrastructure. These programs foster innovation and prepare students for leadership roles or academia.

- Master?s in Civil Engineering (Construction Emphasis): Combines coursework with thesis research.
- Doctoral Studies: Focused on cutting-edge research, often in collaboration with industry partners.

State-of-the-Art Facilities and Labs

The University of Delaware invests heavily in facilities that support hands-on learning and research:

- Construction Laboratory: Equipped with tools and equipment for testing construction materials and techniques.
- BIM and Digital Modeling Labs: Facilities dedicated to Building Information Modeling, virtual construction simulations, and digital twin technology.
- Robotics and Automation Labs: Supporting research in construction automation and innovative construction methods.
- Sustainable Construction Facilities: Focused on green building practices, renewable materials, and energy-efficient construction.

These facilities enable students to gain practical experience and conduct pioneering research that addresses industry needs.

Research Initiatives and Industry Collaboration

UD?s building construction program is distinguished by its robust research portfolio, addressing critical issues such as:

- Sustainable Building Practices: Developing eco-friendly materials, energy-efficient systems, and waste reduction techniques.
- Construction Safety: Innovating safety protocols and hazard mitigation strategies.
- Digital Construction Technologies: Advancing BIM, augmented reality, and automation in construction workflows.
- Resilient Infrastructure: Designing structures capable of withstanding extreme weather events and climate change impacts.

The university maintains active partnerships with industry leaders like Skanska, Turnpike

Construction, and local government agencies. These collaborations facilitate internships, sponsored research, and real-world problem-solving opportunities for students.

Industry Engagement and Career Development

Preparing students for the workforce is a cornerstone of UD?s building construction program. The university offers:

- Internship and Co-op Programs: Ties with construction firms provide students with hands-on experience.
- Career Fairs and Networking Events: Connecting students with industry recruiters and alumni.
- Professional Development Workshops: Covering topics like project management software, safety standards, and leadership skills.
- Certification Support: Assistance with obtaining certifications such as OSHA, LEED, and PMP.

Graduates from UD?s construction programs are highly sought after, finding employment in general contracting, project management, design-build firms, and government agencies. The program?s emphasis on sustainability and digital technology positions students as forward-thinking professionals equipped to lead in modern construction environments.

Sustainability and Green Building Focus

In line with global trends toward sustainable development, the University of Delaware?s building construction curriculum integrates environmental considerations into all facets of education. Initiatives include:

- Green Building Certifications: Courses prepare students for LEED accreditation.
- Research in Renewable Materials: Exploring alternatives to traditional construction materials.
- Energy-efficient Design: Incorporating passive heating, cooling, and renewable energy sources.
- Environmental Impact Assessments: Teaching students to evaluate and minimize construction footprints.

This focus ensures graduates are not only skilled builders but also stewards of sustainable development.

Future Directions and Innovations

Looking ahead, the university aims to incorporate emerging technologies and methodologies into its programs:

- Digital Twins: Creating virtual replicas of construction projects for planning and maintenance.
- Autonomous Construction Equipment: Research into robot-assisted building processes.
- Smart Cities Integration: Preparing students to work within interconnected urban environments.
- Resilience and Climate Adaptation: Designing infrastructure to withstand future environmental challenges.

By maintaining a forward-looking curriculum and research agenda, the University of Delaware continues to be a leader in building construction education.

Conclusion

Building construction at the University of Delaware exemplifies a comprehensive, innovative approach to preparing students for the complexities of modern infrastructure development. Through a blend of rigorous academics, cutting-edge research, industry partnerships, and a focus on sustainability, UD equips its graduates with the skills needed to shape the future of construction. As the industry evolves with new technologies and environmental demands, the university remains committed to fostering a new generation of construction professionals capable of leading through innovation and responsibility.

Whether you?re considering a career in construction or seeking a partner for research and development, the University of Delaware?s building construction program stands out as a beacon of excellence and innovation in the field.

QuestionAnswer What programs does the University of Delaware offer in building construction? The University of Delaware offers undergraduate and graduate programs in Construction Management and Civil Engineering, focusing on building construction, project management, and sustainable building practices. Does the University of Delaware have a dedicated building construction research center? Yes, the University of Delaware hosts the Center for Building Innovation, which conducts research on sustainable construction methods, new building materials, and construction technology. Are there internship opportunities for students in building construction at the University of Delaware? Absolutely. The university collaborates with industry partners to provide students with internships and co-op programs in construction firms, helping them gain real-world experience. What facilities are available for building construction students at the University of Delaware? Students have access to state-of-the-art labs, simulation centers, and fabrication workshops, including the Construction Management Lab equipped with the latest construction software and tools. Is the building construction program at the University of Delaware accredited? Yes, the Construction Management program is accredited by ABET, ensuring high standards of quality and industry relevance. What career paths are available for graduates of the building construction program at the University of Delaware? Graduates can pursue careers in construction management, project engineering, estimating, site supervision, and sustainable building design in both private and public sectors.

Related keywords: building construction, University of Delaware, civil engineering, construction management, architecture program, Delaware engineering schools, construction technology, university construction courses, building sciences, Delaware architecture programs

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