



Designation: E3035 – 15

## Standard Classification for Facility Asset Component Tracking System (FACTS)<sup>1</sup>

This standard is issued under the fixed designation E3035; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reappraisal. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reappraisal.

### 1. Scope

1.1 This standard (FACTS) establishes a classification of building and sitework elements and components, and their associated functions, attributes, and products. Elements, as defined here, are major assemblies and components common to buildings and sitework. Elements usually perform given functions, regardless of the design specification, construction method, or materials used. The attribute classification will lead to more effective management of the operation, maintenance, and life cycle cost of the asset.

1.2 The classification:

1.2.1 Incorporates Levels 1, 2, and 3 from Classification E1557:

1.2.1.1 Major Group Element (Classification E1557 Level 1).

1.2.1.2 Group Element (Classification E1557 Level 2).

1.2.1.3 Element (Classification E1557 Level 3).

1.2.2 Establishes sub-elements at Levels 4 and beyond:

1.2.2.1 Because the main objective is content and not specifically rigid structure, levels beyond those established in Classification E1557 are not balanced.

1.2.2.2 Products and characteristics are introduced at varying levels, depending on the appropriate element and elemental function.

1.2.2.3 Functional elements are aligned with products and product characteristics.

1.2.3 Incorporates the noun-adjective-attribute relationship between elements, elemental function and the associated products and characteristics.

1.2.4 This approach identifies specific products that will support the element at its functional level. However, the classification permits the introduction of additional products necessitated due to higher order requirements, such as but not limited to:

- (1) Asset type
- (2) Asset function
- (3) Asset conditions
- (4) Building code requirements

1.3 The classification seeks to define a larger universe of attributes, products, and characteristics that may define its functional use and life cycle cost.

1.4 The classification also provides a logical database structure for the implementation of related Real Property Management applications and business processes such as:

- (1) Building Information Modeling (BIM) Technologies
- (2) Smart Building Technologies
- (3) Sustainability
- (4) Computerized Maintenance Management Systems (CMMS)
- (5) Facility Asset Management Systems
- (6) Property Condition Assessment
- (7) Real Property Development
- (8) Project Management Systems
- (9) Cost Planning, Estimating, and Control Procedures

1.5 Use of the classification provides a consistent means for analysis, evaluation, monitoring, and reporting during the life of the asset, from planning through design, construction, operations, maintenance, rehabilitation, and disposal.

1.6 The values stated in inch-pound units are to be regarded as standard. No other units of measurement are included in this standard.

1.7 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

### 2. Referenced Documents

2.1 *ASTM Standards*:<sup>2</sup>

E833 Terminology of Building Economics

E917 Practice for Measuring Life-Cycle Costs of Buildings and Building Systems

E1334 Practice for Rating the Serviceability of a Building or Building-Related Facility (Withdrawn 2013)<sup>3</sup>

<sup>1</sup> This classification is under the jurisdiction of ASTM Committee E06 on Performance of Buildings and is the direct responsibility of Subcommittee E06.81 on Building Economics.

Current edition approved Oct. 1, 2015. Published November 2015. DOI: 10.1520/E3035-15

<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

<sup>3</sup> The last approved version of this historical standard is referenced on [www.astm.org](http://www.astm.org).

- E1369 Guide for Selecting Techniques for Treating Uncertainty and Risk in the Economic Evaluation of Buildings and Building Systems
- E1480 Terminology of Facility Management (Building-Related)
- E1557 Classification for Building Elements and Related Sitework—UNIFORMAT II
- E1670 Classification for Serviceability of an Office Facility for Management of Operations and Maintenance
- E1699 Practice for Performing Value Engineering (VE)/ Value Analysis (VA) of Projects, Products and Processes
- E1946 Practice for Measuring Cost Risk of Buildings and Building Systems and Other Constructed Projects
- E2013 Practice for Constructing FAST Diagrams and Performing Function Analysis During Value Analysis Study
- E2018 Guide for Property Condition Assessments: Baseline Property Condition Assessment Process
- E2135 Terminology for Property and Asset Management
- E2156 Guide for Evaluating Economic Performance of Alternative Designs, Systems, and Materials in Compliance with Performance Standard Guides for Single-Family Attached and Detached Dwellings
- E2166 Practice for Organizing and Managing Building Data
- E2452 Practice for Equipment Management Process Maturity (EMPM) Model
- E2495 Practice for Prioritizing Asset Resources in Acquisition, Utilization, and Disposition
- E2506 Guide for Developing a Cost-Effective Risk Mitigation Plan for New and Existing Constructed Facilities
- E2604 Practice for Data Characteristics of Equipment Asset Record
- E2675 Practice for Property Management System Outcomes
- E2812 Practice for Uniform Data Management in Asset Management Records Systems

**3. Terminology**

3.1 *Definitions:* For definitions of terms used in this classification, refer to Terminologies E833, E1480, and E2135.

3.1.1 *Additional Definitions:*

3.1.2 *adjective*—defines a noun by describing the place or thing, that is, function of the named system or element.

3.1.3 *attribute*—the inherent physical or performance characteristics specifying a place or thing as distinct from something else.

3.1.4 *elements*—defined as significant component part of the whole that performs a specific function, or functions, regardless of design, specification, or construction. E833, E1557

3.1.5 *function*—the purpose of the entire project or some portion thereof determined by the needs or desires of the user/owner and expressed in two words, an active verb and measurable noun. E833, E1699, E2013

3.1.6 *noun*—name such as a place or thing and used in identifying the building system or primary building elements.

3.1.7 *verb*—describes an action or occurrence that indicates a state of being.

**4. Significance and Use**

4.1 This classification defines building elements as major assemblies, components, and attributes common to real property assets and sitework. Elements perform given functions, regardless of the design specification, construction method, materials or products used. (See Terminology E1480, Classifications E1557 and E1670, and Practice E2675.)

4.2 The classification aligns products to specific functional elements and/or sub-element to enable the development of specialized maintenance procedures. (See Practices E2452, E2604, and E2675.)

4.3 This alignment will help streamline warehousing requirements and enable functional business units to use a common nomenclature. (See Terminology E1480 and Practice E2452.)

4.4 The classification will lead to more effective life cycle management of the operation, maintenance and cost of the asset by linking activities and participants in an asset’s full life-cycle, from initial planning through construction, operations, maintenance, repair, modernization, and disposal. (See Practices E917 and E1334, Classification E1670, Practice E1946, and Guide E2506). See Fig. 1 for life cycle application of FACTS.

4.5 The benefits of the life cycle application of FACTS are:  
 4.5.1 Maintain project tracking and transparency through all phases of project lifecycle.

4.5.2 Continue to develop requirements and information tracked as processes evolve.

4.5.3 Inform future projects, policies, processes, and guidance with lessons learned/best practices.

4.6 The users of this classification include owners, architects and engineers, developers, property managers, asset managers, project managers, operation and maintenance staff, cost estimators, construction contractors, and database administrators. (See Guide E1369, Terminology E1480, Guide E2156, and Practice E2812.)

4.7 Application of this classification (FACTS) provides for value-added activities that cannot be derived from using a solely product-based approach. (See Guide E1369 and Practice E1699.)

4.8 FACTS provides a scalable classification structure applied across the project lifecycle at various levels of depth and

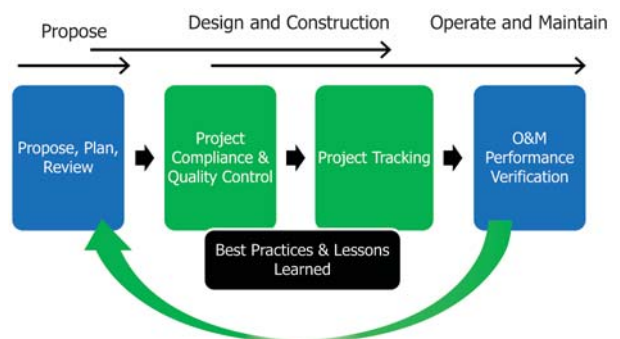


FIG. 1 Life Cycle Application of FACTS

granularity. In the planning, design, and construct stages, scope definition and cost estimates become progressively more granular as performance management requirements and detailed design specifications are completed.

4.9 During the operate and disposal phases, recurring maintenance and non-recurring maintenance procedures are conducted, and assets are ultimately disposed of. Using FACTS, each of the activities in the asset lifecycle can be associated with the appropriate element, product and associated attributes. Thus enabling the calculation of the total cost of ownership of the asset including activities ranging from PM’s (Preventive Maintenance Activities), to major remediation, restoration, and ultimate disposal and/or demolition of the asset. (See Fig. 2.)

4.10 FACTS presents building information in a relational structure with sufficient granularity to meet the requirements for a uniform building classification system that supports establishment of the total cost of ownership of assets. (See Practice E917.)

4.11 FACTS presents building information in a relational structure with sufficient granularity to meet the requirements for a uniform building classification system that supports establishment of the total cost of ownership of assets. (See Practice E917.)

4.12 FACTS represents elements, work results, products, materials, and properties in a relational model that can be consistently applied across a portfolio of assets or buildings. (See Fig. 3.)

4.12.1 In this structure, products are assigned to their respective building element or work result to account for specific functional use.

4.12.2 Without knowledge of this context, designers could fail to select products that align with the purpose of the building.

4.12.3 Facility managers could lack key inputs to define maintenance procedures. FACTS’ relational data structure among elements and products provides the solution to this critical gap and narrows the scope to the appropriate selection of elements that support a specific functional use of the product. (See Classifications E1557 and E1670.)

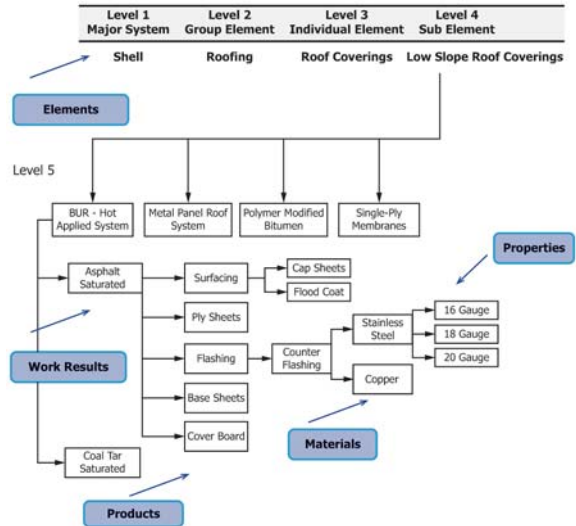


FIG. 3 FACTS and the Integrated Relational Structure of Elements, Work Results, Products, Materials, and Properties

4.13 This approach narrows the specific products that may support the function identified, however, it does not explicitly rule out certain products and materials due to the unknown nature of higher order functions, such as the building type, building function, building conditions, building code requirements, etc.

NOTE 1—For example, if the higher order building function was a prison, this would rule out the use of any ceilings or outlets that are not tamper-proof and as a result, the selection criteria from the database of elements would become limited.

Therefore, the classification seeks to define a larger universe of products and characteristics that may define its functional use. However, the classification also provides a logical database structure where business rules may be applied to further limit the selection criteria based on a higher order function as demonstrated in Fig. 3.

4.14 The alignment of functional elements to a product-based schema focuses on identifying the respective function at the following:

- 4.14.1 Major Group Element (Classification E1557 Level 1),
- 4.14.2 Group Element (Classification E1557 Level 2),
- 4.14.3 Element (Classification E1557 Level 3),
- 4.14.4 Sub-Element (Level 4),
- 4.14.5 Associated Performance Attributes (Not Level Bound), and
- 4.14.6 Identifying the specific products and characteristics.

4.15 Fig. 4 demonstrates an example of the methodology used for identifying each Level within a Built-Up Roofing System. Level 2 = Roofing, Level 3 = Roof Coverings.

4.16 FACTS is a standard that best answers the call to “collect data once...for use by many.” FACTS is built to leverage data so multiple stakeholders/users within an organization can benefit from the shared data. (See Fig. 5.)

4.16.1 Fig. 5 reflects the multiple stakeholder groups and functional users in any organization involved with the built

Building Classification	Plan	Design	Construct	Operate	Disposal
Level 1					
Level 2					
Level 3					
Level 4					
Level 5					
Level 6					
Level 7					
Level 8+					

FIG. 2 Appropriate Level of Detail for FACTS Applied Across the Asset Life Cycle