



# Guide, Instructions and Commentary to the 2013 AIA Digital Practice Documents

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## INTRODUCTION

### Purpose of this Guide, Instructions and Commentary

As the use of building information modeling (BIM) and other types of Digital Data has continued to evolve in the design and construction industry in recent years, the industry has begun to ask practical questions regarding how these concepts and tools should be implemented. In an effort to provide guidance, the American Institute of Architects (AIA) published its first Digital Data documents, AIA Documents E201™–2007, Digital Data Protocol Exhibit, and C106™–2007, Digital Data Licensing Agreement, in October 2007. E201–2007 is an exhibit to an agreement that allows the parties to establish the procedures they agree to follow with respect to the transmission or exchange of Digital Data, including instruments of service. Unlike E201–2007, C106–2007 is not an exhibit and is instead a stand-alone agreement between

two parties who otherwise have no existing licensing agreement for the use and transmission of Digital Data, including Instruments of Service.<sup>1</sup> Following the release of E201–2007, the AIA addressed the increasing use of BIM with the publication of AIA Document E202™–2008, Building Information Protocol Exhibit. Like E201–2007, E202–2008 is an exhibit that is attached to the parties’ agreement. E202–2008 is used to establish the requirements for model content at five progressive levels of development, and the authorized uses of the model content at each level of development. E202–2008 also assigns authorship of each model element by project phase, defines the extent to which model users may rely on model content, clarifies model ownership, sets forth BIM standards and file formats, and provides the scope of responsibility for model management from the beginning to the end of the project.

Digital practice and the use of BIM are rapidly evolving areas of the industry. Typically AIA Contract Documents are revised on a ten year cycle. However, given the pace at which use of Digital Data in the construction industry is changing, a ten year review cycle for the Digital Practice documents would have been too long, to maintain a meaningful tool for industry participants. Accordingly, in 2011 the AIA undertook to again evaluate continued development and adoption of digital practice and BIM. As a result of this evaluation, the AIA created an updated and reconfigured new set of Digital Practice documents that includes AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit; AIA Document G201™–2013, Project Digital Data Protocol Form; and AIA Document G202™–2013, Project Building Information Modeling Protocol Form. This Guide, Instructions and Commentary to the 2013 AIA Digital Practice Documents (the “Guide”) is intended to provide an in-depth look at this set of Digital Practice documents, and to provide guidance on how the documents are intended to be used.

### **Structural Revisions to AIA’s Digital Practice Documents**

The updated new set of Digital Practice documents includes a substantial amount of content from E201–2007 and E202–2008. The content, however, has been restructured, edited and expanded upon. This process has also resulted in a set of documents that are structurally different from their predecessors.

E203–2013 is an exhibit that is intended to be attached to an agreement at the time the agreement is executed. E203–2013 consists of general provisions (i.e., purpose statement, definitions) that would not normally change as the project proceeds. It also provides a place for the parties to identify which party, if any, will be charged with Digital Data management or model management responsibilities. Accordingly, to the extent these responsibilities affect the scope of services; they are included as a part of the initial agreement.

The primary purpose of E203–2013 is to initiate, at the outset of a project, a substantive discussion about the extent to which Digital Data and BIM will be utilized, and how Digital Data and models can be used and relied upon. Once a general understanding is reached, the project participants use E203–2013 to document the agreed upon expectations regarding scope and anticipated Authorized Uses of Digital Data and BIM. The premise is that there will be a single version of E203–2013 negotiated for a project and that version will be included as an exhibit to each contract on the project. Accordingly, the title page for E203–2013 does not reference a specific agreement. The agreements to which E203–2013 is made an exhibit will include a reference to the dated version of the incorporated E203–2013. For example, in B101–2007, the Owner and Architect would list and incorporate E203–2013 in Article 13. Through this process, the various Project Participants begin the Project with a common understanding of how Digital Data and BIM will, generally, be utilized on the project. To the extent Project Participants are utilizing AIA agreements that reference

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<sup>1</sup> While C106–2007 was updated as part of the AIA’s 2013 revisions to its Digital Practice documents, the only substantive change to the document was to add a fill point allowing the Parties to clearly identify the Digital Data subject to the license granted in the agreement. Therefore, C106–2013 is not discussed in detail in this Guide.

E201–2007 or E202–2008, it will be necessary to delete or otherwise modify those references. E203–2013, G201–2013 and G202–2013 are substitutes for, and replace E201 and E202.

Having set the baseline regarding Digital Data and BIM expectations, E203–2013 then requires the Project Participants, “[a]s soon as practical” after execution of the agreement, to meet and decide upon the necessary and relevant protocols for the development and use of Digital Data and BIM. Once agreed to, the protocols are memorialized in G201–2013 and G202–2013. AIA Document G201–2013 is used to document the agreed upon Digital Data protocols while G202–2013 is used to document the Modeling protocols. G201–2013 and G202–2013 are not expressly incorporated into the project participants’ agreements, however; the terms of the E203–2013 (attached to each Project Participant’s agreement) require each party to follow the protocols once established, and as updated from time to time.

The separation of the exhibit and protocols is a departure from the approach taken in E201–2007 and E202–2008, in which the detailed protocols are part of the exhibit. There are a number of benefits to this new approach. E203 no longer requires the Project Participants to negotiate and finalize the detailed Digital Data and Modeling protocols at the same time they make their initial decisions regarding whether and how to use Digital Data and BIM. By separating the protocols from the exhibit, the Project Participants are able to first discuss and document their general expectations regarding use of Digital Data and BIM on the Project. Subsequently, the protocols are negotiated and agreed upon at a time that makes the most sense for the Project (e.g., after the key design and construction contracts are negotiated, and after all the relevant Project Participants are on-board). Further, because the protocols set forth in G201–2013 and G202–2013 are not a part of the underlying agreement, they can be modified and adjusted as necessary without the need to separately and formally amend each party’s agreement.


While E203–2013 requires the Project Participants to follow the most recent protocols, enforcement of that obligation may ultimately depend on the ability of a Project Participant to prove that the other Project Participants agreed to the protocols seeking to be enforced. Accordingly, in utilizing G201–2013 and G202–2013, the Project Participants should develop an acceptable process to document the receipt of, and agreement to, each version of the protocols by each Project Participant. Such a process will protect against a Project Participant ultimately claiming that it never saw, or agreed to, the latest version of the relevant protocols and therefore is not bound by them. There are a variety of ways the Project Participants might document receipt and agreement. (See discussion at E203, Sections 3.2.2 and 4.5.3 below.)

### **Revisions to this Guide**

This Guide not only allows the AIA to provide guidance on how to use the existing documents, it also provides the ability to address new topics as they develop. This Guide will be updated as necessary to reflect changing industry standards. The revision date of this document is included in the lower right hand corner of the document. Please check back periodically to confirm that you have the latest version of this Guide.

### **How to Use this Guide**

The following is a section-by-section analysis and discussion of AIA Documents E203–2013, G201–2013 and G202–2013. For each section of the documents, the Guide reproduces the text of the underlying document, which is directly followed by a detailed discussion. In addition to the general discussion, the Guide also provides suggested alternate language for certain sections to address various project specific needs. The suggested language is indented from the body text of the Guide.

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# GUIDANCE

## Guidance, Instructions and Commentary to AIA Document E203–2013, Building Information Modeling and Digital Data Exhibit

E203–2013 is the anchor of the AIA’s new set of Digital Practice documents and sets the stage for the development of Digital Data and Modeling protocols for the Project. It is comprised of five articles:

- Article 1 General Provisions
- Article 2 Transmission and Ownership of Digital Data
- Article 3 Digital Data Protocols
- Article 4 Building Information Modeling Protocols
- Article 5 Other Terms and Conditions

Article 1 describes the overall purpose, contains key provisions related to the flow down of obligations and establishes a set of standard definitions for terms such as Digital Data, Level of Development, Authorized Use, Party, Project Participant, etc. that will be used throughout the Digital Practice documents. Terms that are defined in E203 Article 1 are capitalized throughout this Guide.

Article 2 addresses topics related to the transmission of Digital Data, including treatment of confidential Digital Data.

Article 3 addresses the Parties’ intention to utilize Digital Data, and to subsequently establish protocols regarding its transmission and use. If necessary, in Article 3 the Parties will also identify who will be charged with the responsibility of managing a centralized electronic document management system for the Project.

Article 4 addresses the Parties’ intentions for BIM utilization on the Project and, if necessary, the subsequent creation of applicable protocols. Article 4 also provides a place to identify who will be charged with Model management responsibilities.

As stated above, the actual protocols required to be established pursuant to both Article 3 and Article 4 are not set forth in E203–2013—instead, the protocols for Digital Data are described in G201–2013, and the protocols for BIM in G202–2013.

Article 5 provides a space for the Parties to indicate any other provisions that will apply to their use of Digital Data or BIM on the Project.

### Article 1 General Provisions

#### E203–2013 Section 1.1

§ 1.1 This Exhibit provides for the establishment of protocols for the development, use, transmission, and exchange of Digital Data for the Project. If Building Information Modeling will be utilized, this Exhibit also provides for the establishment of the protocols necessary to implement the use of Building Information Modeling on the Project, including protocols that establish the expected Level of Development for Model Elements at various milestones of the Project, and the associated Authorized Uses of the Building Information Models.

Article 1 of E203–2013 begins with a series of sections explaining the general purpose of the document, how the terms of the exhibit relate to the underlying Agreement into which it is incorporated, how it is applicable across the Project, and the potential impact subsequent protocols may have on the Parties' scopes of services, scopes of work, and related compensation. Section 1.1 establishes the intent and purpose of E203–2013.

### **E203–2013 Section 1.2**

**§ 1.2** The Parties agree to incorporate this Exhibit into their agreements with any other Project Participants that may develop or make use of Digital Data on the Project. Prior to transmitting or allowing access to Digital Data, a Party may require any Project Participant to provide reasonable evidence that it has incorporated this Exhibit into its agreement for the Project, and agreed to the most recent Project specific versions of AIA Document G201™–2013, Project Digital Data Protocol Form and AIA Document G202™–2013, Building Information Modeling Protocol Form.

A primary purpose of these Digital Practice documents is to encourage the useful sharing of Digital Data, by providing the Project Participants a way to establish the framework and expectations regarding the creation, sharing and use of Digital Data on the Project. Digital Data is defined in E203–2013 to include Building Information Modeling. To be effective, the subsequently agreed upon protocols and standards must be recognized by all the Project Participants that will create and use the Digital Data. Accordingly, the Parties agree that they will incorporate the Exhibit into all other agreements on the Project. (G201–2013 Section 1.1 contains a fill point to list of the Project Participants that have attached the Exhibit to their agreement.)

Section 1.2 requires the Parties (in all instances the term “Parties” refers to the parties to the underlying Agreement to which E203–2013 is attached) to incorporate E203–2013 into each of the Party’s other agreements for the Project. For example, if an owner and architect negotiate and attach an E203–2013 to AIA Document B101™–2007, Standard Form Agreement between Owner and Architect, the architect would be required to incorporate the same E203–2013 into each of its consultant agreements. Similarly, the Owner would be required to incorporate E203–2013 into its agreement with the Contractor, who would in turn be required to incorporate E203–2013 into its Subcontractor agreements. Through this flow-down process, E203–2013 permeates the entire Project.

The intent is that E203–2013 will be incorporated into the underlying Agreement when the Agreement is executed. In B101–2007, E203–2013 can be incorporated by referencing it in Section 13.2.2 of Article 13, Scope of the Agreement. Currently, B101–2007 includes a reference to E201–2007 (note that B101–2007 does not reference E202–2008 because E202–2008 was published after B101–2007). As E203–2013 is intended to replace E201–2007 (and E202–2008), the existing language can be deleted and replaced with language referencing E203–2013 by name and date. An example of such language would be as follows:

**§ 13.2.2** AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, dated \_\_\_\_\_.

The process for incorporating E203–2013 into AIA Contract Documents standard form Owner/Contractor agreements would be similar. In AIA Document A101™–2007, Standard Form Agreement between Owner and Contractor where the basis of payment is a Stipulate Sum, E203–2013 can be incorporated by reference in Section 9.1.7.1. As is the case in B101–2007, the current reference to E201–2007 should be

deleted and replaced with language referencing E203–2013 by name and date. The suggested language above for B101–2007 would be sufficient in A101–2007 as well.

It is also possible that the Parties would need to incorporate E203–2013 after the initial execution of the Agreement. In that case, the Parties would execute an amendment to the Agreement. For amendments to Owner/Architect agreements, the AIA publishes AIA Document G802™–2007, Amendment to the Professional Services Agreement. In the space provided in G802–2007 below the words “As follows,” the Parties can insert language indicating that the Agreement is being amended to incorporate E203–2013. An example of such language would be as follows:

The Agreement is amended to incorporate AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, dated \_\_\_\_\_.

If the incorporation of E203–2013 will result in an adjustment to compensation or contract time, G802–2007 allows the Parties to indicate any adjustments.

For amendments to consultant agreements, the AIA publishes G803™–2007, Amendment to the Consultant Services Agreement. G803–2007 is set up similarly to G802–2007 and the suggestions above, and example language, would apply to G803–2007 as well.

If the Parties need to amend an Owner/Contractor agreement, the Parties can use AIA Document G701–2001, Change Order. In the space provided below the phrase “The Contract is changed as follows” the Parties can insert language indicating that the Contract is being amended to incorporate E203–2013. An example of such language would be as follows:

The Contract is amended to incorporate AIA Document E203–2013, Building Information Modeling and Digital Data Exhibit, dated \_\_\_\_\_.

Similarly, if the incorporation of E203–2013 will result in an adjustment to compensation or contract time, G701–2001 allows the Parties to indicate any adjustments.

It should be noted that the general flow-down provisions of some of the AIA Contract Documents, including the AIA Architect/Consultant Agreement (C401–2007) and the Contractor/Subcontractor Agreement (A401–2007) may arguably already pass along the obligations of the E203–2013 if the exhibit is incorporated into the relevant Prime Agreement prior to the time the sub-agreements are executed. Relying on such a flow down, however, is possibly ambiguous. However, including language in the Agreement explicitly incorporating E203–2013 is likely the clearest way to assure that the document is incorporated in downstream agreements. Given the relative novelty of these documents, and the various nuances presented on a project-by-project basis, users may wish to consult with an attorney to determine the best way to incorporate E203–2013 into their agreements.

It may also be the case that a Model will only be shared amongst the Project Participants on one side of a Project (e.g., only the design team will be sharing the Model). E203–2013 can be utilized in such a scenario and there are a few options available to users to achieve this result. Some options are outlined below in the discussion pertaining to E203–2013 Section 4.1. Another solution would be to only incorporate E203–2013 into the Architect/Consultant and Consultant/Sub-consultant agreements. Accordingly, E203–2013 and the related protocol forms could be completed, but they would only apply to the design team. To achieve this

result, however, this Section 1.2 would need to be modified. As currently drafted, if E203–2013 were attached to the Architect/Consultant agreement, the Architect would be obligated to incorporate E203–2013 into its agreement with the Owner, which would trigger the Owner’s obligation to incorporate E203–2013 into its agreement with the Contractor. Accordingly, Section 1.2 would need to clarify that E203–2013 is not to be incorporated in the Architect/Owner agreement, but that the Architect and Consultant will incorporate E203–2013 in their downstream agreements only.

### **E203–2013 Section 1.2.1**

**§ 1.2.1** The Parties agree that each of the Project Participants utilizing Digital Data on the Project is an intended third party beneficiary of the Section 1.2 obligation to incorporate this Exhibit into agreements with other Project Participants, and any rights and defenses associated with the enforcement of that obligation. This Exhibit does not create any third-party beneficiary rights other than those expressly identified in this Section 1.2.1.

This section is intended to protect the Parties in situations where some Project Participants, with whom the Parties do not have a direct contractual relationship, fail to incorporate the exhibit into their agreements with consultants or contractors (please see the discussion below related to E203–2013 Section 1.4.12 for a discussion of the difference in definitions for the terms “Parties” and “Project Participants”). As noted above, it is E203–2013 that creates the contractual obligations to follow the agreed upon Digital Data and Modeling protocols. Therefore, it is necessary that the terms of E203–2013 be applicable to all the relevant Project Participants throughout the network of agreements on the Project. If a Party fails to incorporate the Exhibit, as required in Section 1.2, into any agreement with a consultant or contractor, that consultant or contractor may not be obligated to comply with developed protocols. Therefore, the protections that the protocols provide upstream (restrictions on Authorized Uses) may be lost.

To illustrate the concern that is being addressed, consider the following example. If the Owner and Architect incorporate E203–2013 into their Agreement, via Section 1.2, they both agree to incorporate the E203–2013 into their downstream agreements with other Project Participants. If the Owner, however, fails to incorporate E203–2013 into its agreement with the Contractor, the Owner has breached a contractual duty to the Architect and would be responsible to the Architect for resulting damages. So, for example, if the contractor, unaware of restrictions contained in the protocols, used some portion of the Digital Data supplied by the Architect for a purpose not otherwise sanctioned in the protocols, and subsequently brought a claim against the Architect for damages arising from reliance on the Digital Data the Architect provided, the Architect would have a claim against the Owner for its failure to incorporate E203–2013. Accordingly, the Architect receives some level of protection to the extent it can show some damage as a result of the Owner’s breach of this provision.

Alternatively, consider a scenario where the Owner satisfies its obligations and incorporates E203–2013 into its Agreement with the Contractor but the Contractor fails to incorporate E203–2013 into its agreements with its sub-contractors and consultants. Thereafter, one of those consultants or subcontractors relies on the Digital Data in a manner that is inconsistent with the protocols, resulting in some injury to a third party. The third party then brings a claim against the Architect.

In this instance, in the absence of Section 1.2.1, the Architect would likely have no recourse against the Contractor based on the Contractor’s failure to satisfy the Section 1.2 obligation to incorporate E203–2013



downstream, because the Architect has no contractual relationship with the Contractor. The Architect's contractual relationship is with the Owner, who satisfied its obligation by incorporating E203–2013 into its Agreement with the Contractor.

However, Section 1.2.1 was created to give all the Project Participants the ability to enforce the obligations under Section 1.2 against all the other Project Participants. In the example above, the Architect, as a third party beneficiary, would therefore have the same protection against the Contractor, for contractual breach of Section 1.2, as it does against the Owner. The Architect might then bring a claim for breach of contract against the Contractor, and seek to recover any amounts paid on the third party claim as damages arising from the Contractor's breach.

Another option to protect against failure of downstream incorporation of E203–2013 would be to utilize some kind of a broad indemnification language. An example of such language would be as follows:

§ 1.2.1 If a Party fails to incorporate this Exhibit into its agreements with any other Project Participants that may develop or make use of Digital Data for this Project, that Party agrees to indemnify and hold harmless the other Project Participants and their contractors, consultants, agents and employees, to the fullest extent permitted by law, from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from such Project Participants' use of Digital Data inconsistent with the terms of this Exhibit.

Any indemnification language included, however, should be reviewed closely with legal and insurance counsel as indemnification provisions are notoriously difficult to enforce, and in some circumstances may create an uninsurable obligation. In many jurisdictions, anti-indemnification statutes limit the validity and enforceability of indemnification provisions in contracts. The suggested language contains an indemnification under which the indemnitor's obligation covers the indemnitee's losses to the extent caused by the use of Digital Data, inconsistent with the terms of the exhibit, by any of the indemnitor's consultants or contractors that do not have the E203–2013 attached to their agreement. As such, the indemnitee's obligations may be triggered by an act that does not otherwise constitute negligence on their part. Accordingly, it is unclear what effect, if any, anti-indemnifications statutes may have on the enforceability of such an indemnity. Moreover, many Project Participants have a general aversion to broad indemnification provisions and seek to have them stricken as a matter of routine.

### **E203–2013 Section 1.3**

#### **§ 1.3 Adjustments to the Agreement**

**§ 1.3.1** If a Party believes that protocols established pursuant to Sections 3.2 or 4.5, and memorialized in AIA Documents G201–2013 and G202–2013, will result in a change in the Party's scope of work or services warranting an adjustment in compensation, contract sum, schedule or contract time, the Party shall notify the other Party. Failure to provide notice as required in this Section 1.3 shall result in a Party's waiver of any claims for adjustments in compensation, contract sum, schedule or contract time as a result of the established protocols.

**§ 1.3.2** Upon such notice, the Parties shall discuss and negotiate revisions to the protocols or discuss and negotiate any adjustments in compensation, contract sum, schedule or contract time in accordance with the terms of the Agreement.



**§ 1.3.3** Notice required under this Section 1.3 shall be provided within thirty days of receipt of the protocols, unless otherwise indicated below:

*(If the Parties require a notice period other than thirty days of receipt of the protocols, indicate the notice period below.)*

E203–2013 is intended to be negotiated early in the Project, when the Parties’ expectations for use of Digital Data are most likely not fully refined. E203–2013 only requires identification of the general anticipated uses of Digital Data, subject to refinement and greater detail in the protocols that are subsequently established in G201–2013 and G202–2013. Accordingly, negotiated fees and contract sums the Parties include in the Agreement are based on the general statements of anticipated use for Digital Data and not on the fully developed protocols. Once the Parties begin to identify specific standards and tasks to be performed as part of the protocols, it is quite conceivable that the fully developed requirements may exceed initial expectations regarding scope. To the extent the specific protocols and requirements represent a change to initial expectations, adjustments in compensation and/or contract time should be considered and negotiated.

If a Party believes that the protocols, once established, necessitate an adjustment in compensation, schedule or contract time, that Party must provide notice to the other Party. The standard language in Section 1.3 states that such notice must be provided within 30 days of receipt of the protocols; however, the Parties are free to insert a different notice period to better fit the unique characteristics of their Project.

Once notice is provided adjustments to compensation, schedule or contract time are made in accordance with the provisions of the Agreement. Accordingly, if E203–2013 is attached to an A101–2007, the Owner and Contractor would follow the Change Order provisions set forth in A201–2007. Under B101–2007, the Owner and Architect would then undertake to negotiate an amendment.

While the underlying contracts will control the process for making adjustments based on the Digital Data or Modeling protocols, users must be aware that E203–2013 adds a procedural condition precedent to the processes. A Party must first provide the notice required under this Section 1.3. Failure to provide notice within the time period set forth in Section 1.3 will result in the Party waiving the ability to seek any adjustments relating to the established protocols.

This issue of expanded scope will most likely come into play when the protocols issued as part of G201–2013 and G202–2013 are compared to the Parties’ original statements in E203–2013 regarding the Anticipated Types of Digital Data (E203–2013 Section 3.1) as well as those regarding the Anticipated Building Information Modeling Scope, Authorized Uses, and Ancillary Modeling Activities (E203–2013 Sections 4.2, 4.3 and 4.4 respectively). The goal in completing E203–2013 should be to avoid having to renegotiate fees once the protocols are established, because such an effort can detrimentally impact Project relationships. To the extent users can provide as much detail and clarity as possible in E203–2013, with regard to the anticipated scope of modeling and use of other Digital Data, the greater likelihood subsequent disputes over fees can be avoided.

As noted, E203–2013 establishes the Parties’ initial expectations regarding use of Digital Data, including Modeling. When those protocols are established and set forth in G201–2013 and G202–2013, however, each Party would be well served to review the protocols closely in conjunction with the original statements in E203–2013 to determine if they should pursue an adjustment in compensation or time.

## **E203–2013 Section 1.4**

### **§ 1.4 Definitions**

Defined terms are capitalized throughout the document. The defined terms are coordinated for use with standard AIA Contract Documents. To the extent E203–2013 is used in conjunction with non-AIA agreements, the definitions may need to be modified to coordinate with the terms used in such documents.

#### **E203–2013 Section 1.4.1**

**§ 1.4.1 Building Information Model.** A Building Information Model is a digital representation of the Project, or a portion of the Project, and is referred to in this Exhibit as the “Model,” which term may be used herein to describe a Model Element, a single model or multiple models used in the aggregate, as well as other data sets identified in AIA Document G202–2013, Project Building Information Modeling Protocol Form.

The definition of Building Information Model set forth in this section is largely consistent with current industry understandings. For example, the National BIM Standard defines a Building Information Model as "a digital representation of physical and functional characteristics of a facility," a definition explicitly crafted to encompass multiple files as well as information beyond 3D geometry.

To develop Model protocols it is important that the Project Participants have a good understanding of what will be considered part of the Project’s Model. Because a Model is likely to contain a large number of files, and because there are often multiple ways of representing a given piece of Project information, it will be up to the Project Participants to explicitly determine which files are part of the Model. This has implications for a wide range of issues, including determining the responsibilities for Digital Data and Model management and defining how information will be represented within the Model and what information can be relied on in using the Model. In E203–2013 it is assumed that the Model will consist of a number of interrelated files and databases. G202–2013 Section 1.2 provides a place for explicitly listing these files.

#### **E203–2013 Section 1.4.2**

**§ 1.4.2 Building Information Modeling.** Building Information Modeling or Modeling means the process used to create the Model(s).

There is an entire process involved in the creation of Models (e.g. training, collaboration, sharing of information, clash detection). The term Building Information Modeling or Modeling is used to refer to that process.

#### **E203–2013 Section 1.4.3**

**§ 1.4.3 Model Element.** A Model Element is a portion of the Model representing a component, system or assembly within a building or building site.

The concept of what constitutes a Model Element is significant. In establishing protocols for Modeling, Project Participants are tasked with organizing the development of the Model. A Model consists of many component parts potentially developed by many different entities or individuals. In order to assign responsibility for managing and coordinating the development of the Model to the appropriate Project Participant, and assign the Level of Development, the Model needs to be broken down into component parts. The Model Elements represent these component parts.

It should also be noted that a Model Element is a portion of the Model. Therefore, based on the definition of “Model” as discussed above, the Model Element may not consist solely of a graphical representation.

The Model Element will also include any other data sets the Project Participants have decided will be part of the Model, as set out in G202–2013 Section 1.2.

#### **E203–2013 Section 1.4.4**

**§ 1.4.4 Level of Development.** The Level of Development (LOD) describes the minimum dimensional, spatial, quantitative, qualitative, and other data included in a Model Element to support the Authorized Uses associated with such LOD.

Each Model Element develops at a different rate. The Level of Development (LOD) framework allows the Project Participants to understand the progression of a Model Element from conceptual idea to precise definition and description. The LOD of a given Model Element informs the other Project Participants about how developed the information is expected to be, and the extent to which that information can be relied upon, at a particular point in time in the development of the Model. Identifying the LOD for each Model Element, along its development path, helps prevent other Project Participants from using the Model Element in an unintended manner or inferring greater precision than the Model Element Author intends. See the Guide topics under G202–2013, Article 2, for a detailed discussion of Levels of Development.

#### **E203–2013 Section 1.4.5**

**§ 1.4.5 Authorized Uses.** The term “Authorized Uses” refers to the permitted uses of Digital Data authorized in the Digital Data and/or Building Information Modeling protocols established pursuant to the terms of this Exhibit.

A large amount of information can be included in a Model Element, regardless of whether or not it has been fully thought through by its author. The approach to this issue has often been to prohibit reliance on any information from the Model, through the use of a broad disclaimer. In essence, the position taken is: “because some of the information is not reliable don’t rely on any of it.”

The intent behind establishing an Authorized Use is to change the position to “because some of the information is not reliable you can only rely on the information that I explicitly say you can.” This allows Project Participants to transmit information through Models for specifically intended purposes, while preventing unintended reliance. The G202–2013 Model Element Table provides a vehicle for defining Authorized Uses, Model Element by Model Element and milestone by milestone.

#### **E203–2013 Section 1.4.6**

**§ 1.4.6 Model Element Author.** The Model Element Author is the entity (or individual) responsible for managing and coordinating the development of a specific Model Element to the LOD required for an identified Project milestone, regardless of who is responsible for providing the content in the Model Element. Model Element Authors are to be identified in Section 3.3, Model Element Table, of G202–2013.

A Model Element Author (MEA) is identified to provide a single point of contact for development of each Model Element, at an identified Project milestone, in order to accomplish the organized development of the Model. As each Model Element evolves, the identity of the MEA may change. For example, when development of a Model Element moves from the design phase to the construction phase the MEA may switch from someone on the design team to a contractor or subcontractor. For example, in the development of the structural system, the designated MEA may change from the architect to the structural engineer and finally to the steel fabricator.

The designation of an MEA does not change who is in responsible charge for the design. That responsibility is set by the Project Participants' scopes of work in their agreements. The identification of the MEA may be unrelated to the individual or entity that is in responsible charge of the underlying design. For example, while the structural engineer must be in responsible charge of all the structural engineering on a project, the Architect may be listed as the MEA because they are coordinating the development of the Model Element during the design stages.

The MEA is defined as an "individual or entity" to allow flexibility. On some projects consultants or trade contractors may be identified. On others, individual people within those firms may be named in order to facilitate communication and coordination.

#### **E203–2013 Section 1.4.7**

**§ 1.4.7 Digital Data.** Digital Data is information, including communications, drawings, specifications and designs, created or stored for the Project in digital form. Unless otherwise stated, the term Digital Data includes the Model.

Digital Data is defined broadly, and is intended to include all types of data stored or transmitted via digital means. It is important to note that unless stated otherwise, Digital Data includes Models. Accordingly, even though Article 2 of E203–2013 only uses the term Digital Data (and not Models), the provisions of Article 2 apply equally to all Digital Data, including Models.

#### **E203–2013 Section 1.4.8**

**§ 1.4.8 Confidential Digital Data.** Confidential Digital Data is Digital Data containing confidential or business proprietary information that the transmitting party designates and clearly marks as "confidential."

This section provides a specific definition of Confidential Digital Data. Care should be taken to make sure it is consistent and coordinated with any similar definitions in the Agreement. This definition relates directly to Section 2.2. That section addresses the Parties responsibilities with regard to Confidential Digital Data. Any changes or modifications made in Section 1.4.8 will affect Section 2.2.

#### **E203–2013 Section 1.4.9**

**§ 1.4.9 Written or In Writing.** In addition to any definition in the Agreement to which this Exhibit is attached, for purposes of this Exhibit and the Agreement, "written" or "in writing" shall mean any communication prepared and sent using a transmission method set forth in this Exhibit, or the protocols developed pursuant to this Exhibit, that permits the recipient to print the communication.

This section clarifies the meaning of the terms "Written" or "In Writing" as they relate to an increasingly digital world. This clarification is necessary because E203–2013 is an exhibit that will be attached to a complete agreement. It is very possible that the underlying agreement will use these terms, and do so in a context that did not contemplate means of transmission in the age of Digital Data.

#### **E203–2013 Section 1.4.10**

**§ 1.4.10 Written Notice.** In addition to any terms in the Agreement to which this Exhibit is attached, for purposes of this Exhibit and the Agreement, "written notice" shall be deemed to have been duly served if transmitted electronically to an address provided in this Exhibit or the Agreement using a transmission method set forth in this Exhibit that permits the recipient to print the communication.

This section is a clarification of terms that maybe used in the Agreement in a context that did not contemplate an environment where Digital Data is the primary means of communication.

#### **E203–2013 Section 1.4.11**

**§ 1.4.11 Party and Parties.** The terms “Party” and “Parties” refer to the signing parties to the Agreement.

See E203–2013 Section 1.4.12 discussion.

#### **E203–2013 Section 1.4.12**

**§ 1.4.12 Project Participant.** A Project Participant is an entity (or individual) providing services, work, equipment or materials on the Project and includes the Parties.

While E203–2013 will generally be attached to an agreement between two specific Parties, its intended impact goes beyond just those two Parties. In order to be effective, the Digital Practice documents must guide and impact the actions and behavior of the various participants on the Project that will utilize Digital Data. Accordingly, in describing various responsibilities, E203–2013 and the associated protocol documents often need to refer to the larger group of Project Participants. This section provides the defined term “Project Participant” to address that need.

In some instances, however, there is also a need to refer to the specific Parties to the Agreement to which E203–2013 is attached. The duties and obligations created in E203–2013 contractually flow between the actual Parties who have signed the Agreement, not all of the Project Participants. (The exception to this rule is the limited third party beneficiary provision in Section 1.2.1.) Therefore, E203–2013 also has a definition for “Parties”, in Section 1.4.11, in order to distinguish the signatories to the Agreement from all the other Project Participants. The definitions make clear, however, that the term Project Participant includes the Parties.

Further, when the E203 standard language refers to the capitalized term “Agreement,” it is referencing the specific agreement to which E203 is attached. Accordingly, the terms of the E203–2013 are only binding on the Parties to the “Agreement.” This is why identical versions of the E203–2013 must be incorporated into all the other Project Participants’ agreements. Each Project Participant becomes a “Party” when E203–2013 is attached to their agreement. They thereby become subject to the same obligations and restrictions as all the other Project Participants that have E203–2013 attached to their agreements. By way of example, where E203–2013 is attached to an A101–2007, the Owner and the Contractor are the “Parties” and are bound by the terms of E203–2013. The Architect, however, is not a Party to the A101–2007 and is a Project Participant in the context of that agreement. Since the identical E203–2013 is attached to the B101–2007, to which the Architect is a Party, the Architect is bound by the same obligations as the Contractor.

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## **Article 2 Transmission and Ownership of Digital Data**

### **E203–2013 Section 2.1**

**§ 2.1** The transmission of Digital Data constitutes a warranty by the Party transmitting Digital Data to the Party receiving Digital Data that the transmitting Party is the copyright owner of the Digital Data, or otherwise has permission to transmit the Digital Data for its use on the Project in accordance with the Authorized Uses of Digital Data established pursuant to the terms of this Exhibit.

In exchanging Digital Data, the Party receiving Digital Data must trust that it is free to receive and use the information provided. Accordingly, Section 2.1 places a duty on the transmitting Party to warrant that it is either the copyright holder of the information being transferred or has permission from the copyright holder to transmit the information for use on the Project.

It should be noted that E203–2013 does not specifically address ownership of the Model. It is assumed that E203 will be used in conjunction with other AIA Contract Documents standard form agreements, which generally provide that copyright ownership of the Instruments of Service (which would include a Model) resides with the individual or entity that created them. AIA Contract Documents also generally require the copyright holders of the Instruments of Service to grant the Owner a license to use the Instruments of Service for the Project. Accordingly, the digital practice documents are silent on ownership because it is assumed the topic is addressed in the Agreement.

### **E203–2013 Section 2.2**

**§ 2.2** If a Party transmits Confidential Digital Data, the transmission of such Confidential Digital Data constitutes a warranty to the Party receiving such Confidential Digital Data that the transmitting Party is authorized to transmit the Confidential Digital Data. If a Party receives Confidential Digital Data, the receiving Party shall keep the Confidential Digital Data strictly confidential and shall not disclose it to any other person or entity except as set forth in Section 2.2.1.

See Section 2.2.1 discussion.

### **E203–2013 Section 2.2.1**

**§ 2.2.1** The receiving Party may disclose Confidential Digital Data as required by law or court order, including a subpoena or other form of compulsory legal process issued by a court or governmental entity. The receiving Party may also disclose the Confidential Digital Data to its employees, consultants or contractors in order to perform services or work solely and exclusively for the Project, provided those employees, consultants and contractors are subject to the restrictions on the disclosure and use of Confidential Digital Data as set forth in this Exhibit.

Confidential Digital Data is defined in E203–2013 Section 1.4.8 as “Digital Data containing confidential or business proprietary information that the transmitting party designates and clearly marks as ‘confidential.’” It is imperative that both the Party transmitting and the Party receiving Confidential Digital Data understands its responsibilities with regard to such information. Section 2.2 establishes the Parties’ rights in transmitting Confidential Digital Data and obligations in maintaining its confidentiality. Section 2.2.1, however, clearly establishes certain reasonable exceptions to the requirement that Confidential Digital Data be kept strictly confidential.

### **E203–2013 Section 2.3**

**§ 2.3** By transmitting Digital Data, the transmitting Party does not convey any ownership right in the Digital Data or in the software used to generate the Digital Data. Unless otherwise granted in a separate license, the receiving Party’s right to use, modify, or further transmit Digital Data is specifically limited to designing, constructing, using, maintaining, altering and adding to the Project consistent with the terms of this Exhibit, and nothing contained in this Exhibit conveys any other right to use the Digital Data.



The sharing of files is of concern to many professionals due to the fear of losing control over, ownership of, and/or copyright in the files shared. Because the value of many digital documents, specifically Models, is increased with file sharing and collaboration, it is no longer feasible to withhold access. Therefore, to encourage and protect the owner of the Digital Data, it is critical that the receiving party understands and agrees to the limits of use.

#### **E203–2013 Section 2.4**

**§ 2.4** Where a provision in this Article 2 conflicts with a provision in the Agreement into which this Exhibit is incorporated, the provision in this Article 2 shall prevail.

E203–2013 is intended to be incorporated as an exhibit into the Agreement between the Parties. Many such agreements may already contain language regarding the transmission of copyrighted materials and the use of confidential information. To avoid the risk of conflicting provisions, Section 2.4 states that the terms of the Exhibit set forth in Article 2 will have precedence. It should be understood, however, that the terms of Article 2 apply only to Digital Data. Terms in the Agreement addressing non-Digital Data would not necessarily be in conflict with the terms of Article 2.

Regardless of this statement, however, the existence of two specific requirements or terms pertaining to the same issues, one in the main body of the Agreement and the other in the attached E203–2013, may create confusion and ambiguity. Accordingly, the Exhibit and the Agreement should be reviewed and coordinated to the extent practical.

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### **Article 3 Digital Data Protocols**

#### **E203–2013 Section 3.1**

**§ 3.1 Anticipated Types of Digital Data.** The anticipated types of Digital Data to be used on the Project are as follows.

*(Indicate below the information on the Project that shall be created and shared in a digital format. If the Parties indicate that Building Information Modeling will be utilized on the Project, the Parties shall also complete Article 4.)*

<b>Anticipated Digital Data</b>	<b>Applicability to the Project</b> <i>(Indicate Applicable or not Applicable)</i>	<b>Location of Detailed Description</b> <i>(Section 3.1.1 below or in an attachment to this exhibit and identified below)</i>
Project Agreements and Modifications		
Project communications		
Architect’s preconstruction submittals		
Contract Documents		
Contractor’s submittals		
Subcontractor’s submittals		
Modifications		
Project payment documents		
Notices and Claims		
Building Information Modeling		



The range of potential types and uses of Digital Data is virtually limitless. This breadth of possibilities is perhaps the greatest benefit of using Digital Data on the Project, but these endless options and choices also represent risk. A lack of understanding among the Project Participants on the anticipated uses for Digital Data increases the likelihood of later misunderstandings and conflicts. The Project, and its participants, could suffer from inefficient and uncoordinated use of Digital Data, unintended use of Digital Data, the inability to use incompatible Digital Data, and unrealized expectations among Project Participants.

To complete Section 3.1, Project Participants should consider how Digital Data is expected to be utilized and shared. Section 3.1 is intended to be completed at the initiation of the Project, before a definitive list of all expectations can be established, however, the more specific the identification of the anticipated uses, the better.

This section further serves as a launching point for Project Participants to discuss and differentiate between the uses of Digital Data that are included in the fees or contract sum at the time the Agreement and E203–2013 are executed, and any subsequently established uses that may require the Parties to undertake additional efforts, assume additional risks or provide additional value to the Project. See the discussion for E203–2013 Section 1.3.

The first column of the table is pre-populated with commonly used types of data identified in G201–2013 although users should modify it as necessary to meet their specific Project needs. The user should indicate in the second column whether the Digital Data is anticipated to be used on the Project and then use the third column to indicate where the characteristics and anticipated use of the Digital Data are described in more detail. Remember that the intent is to establish a general understanding of the scope of Digital Data use so that expectations are in alignment and scope and fee are negotiated properly. The actual protocols for how the digital data will be used are later captured in G201–2013.

While the pre-filled list is likely to be sufficient for many projects, the table is flexible and allows other anticipated digital data to be added to meet specific project requirements. Examples include the following:

- Surveys
- Energy analyses
- Cost estimating
- Submittal approvals
- CAD
- Photographs
- Video

The list of uses identified in this section should ultimately be coordinated with G201–2013 where the protocols for sharing the Digital Data are described.

Note that if the Parties intend to use Building Information Modeling on the Project, which appears in the standard text of the list, the parenthetical instruction states that the Parties should indicate such intention in Section 3.1 and complete Article 4 to describe the unique characteristics of Model development, use and sharing. The protocols governing Digital Data under Article 3 may relate to BIM, but the Parties must also complete Article 4 to fully explain and address their expectations with regard to BIM.

### **E203–2013 Section 3.1.1**

**§ 3.1.1** Insert a detailed description of the anticipated Digital Data identified in Section 3.1, if not further described in an attachment to this Exhibit.

Section 3.1.1 provides a fill point for the Parties to provide a detailed description of the types of Digital Data to be used on the Project. The Parties should describe the anticipated scope of services in as much detail as possible. Doing so will reduce the likelihood of a later disputes relating to the nature and types of information that would be digital.

### **E203–2013 Section 3.2**

**§ 3.2** As soon as practical following execution of the Agreement, the Parties shall further describe the uses of Digital Data, and establish necessary protocols governing the transmission and Authorized Uses of Digital Data, in consultation with the other Project Participants that are expected to utilize Digital Data on the Project.

Section 3.2 requires the Parties to meet to establish Digital Data protocols *as soon as practical following execution of the Agreement*.

E203–2013 purposely does not establish these protocols when the agreement between the Parties is executed. The way Digital Data is used, and the benefits that will result, will vary based on the team, the project delivery method, and the project itself. Because of these variables, it is impractical for this Exhibit to identify a specific time for the establishment of the protocols, favoring instead “as soon as practical following execution of the Agreement.” While the notion of “as soon as practical following execution of the Agreement” will vary from project to project, the Project Participants should endeavor to establish the protocols before significant data exchanges begin, to avoid uncoordinated and inefficient use of Digital Data. It should also be noted that any use of Digital Data by a Project Participant prior to the agreement to and documentation of the Digital Data protocols in G201–2013 will be at the Project Participant’s sole risk pursuant to Section 3.4.1.

Identifying specific Digital Data, its uses, and the methods for sharing and archiving is accomplished by completing the Digital Data protocols in G201–2013. Completing the initial G201–2013 and modifying it as necessary to reflect changing project requirements will ensure that a clear understanding of roles, responsibilities and uses are evident to all Project Participants.

Recognizing that at the time contracts are typically executed, a primary purpose of E203–2013 is to allow the Parties to adequately define their expectations regarding the use of Digital Data and to more clearly define the Parties’ scope of services and compensation. Thereafter, and consistent with the parameters set in the E203–2013, the Parties flesh out the specific details regarding Digital Data in G201–2013.

This approach is not so different from the approach often taken with regard to LEED® related services. A building owner may include in its program the goal of obtaining a certain LEED® rating. Often, however, the specific steps to reach that goal are not established at the time the Owner/Architect agreement is executed. Typically, the Owner, Architect and Contractor have not yet determined which LEED elements to pursue, and those details often get worked out as the Project proceeds.

### **E203–2013 Section 3.2.1**

**§ 3.2.1** Unless another Project Participant is identified below, the Architect shall prepare and distribute to the other Project Participants Digital Data protocols for review, revision and approval.

*(If a Project Participant other than the Architect shall be responsible for preparing draft and final Digital Data protocols, identify that Project Participant.)*

Assigning the responsibility to prepare written Digital Data protocols to a single Project Participant creates an advocate for the development of the protocols and is intended to ensure that the task is completed. Section 3.2.1 establishes the Architect as the default entity responsible for preparing the written protocols. The Architect is designated because, for most projects, the Architect is likely better situated in the early stages of the Project to assess the entire range of Digital Data necessary to see the Project to its completion. However, if someone other than the Architect, or if multiple Project Participants, will be responsible for preparing written protocols, those Project Participants must be identified. For example, if an Owner’s representative has established protocols for document management, or if a Construction Manager is responsible for managing Project information, it may make more sense to have that Project Participant prepare the written protocols.

### **E203–2013 Section 3.2.2**

**§ 3.2.2** The agreed upon Digital Data protocols shall be set forth in AIA Document G201–2013 and each Project Participant shall memorialize their agreement in writing to such Digital Data protocols.

Section 3.2.2 establishes the expectation that the Project Participants will approve the Digital Data protocols and will memorialize their agreement in writing in G201–2013. (See E203 Section 1.4.9 for discussion of the defined term “in writing.”)

As the enforcement of the protocols may ultimately depend on the ability of a Project Participant to prove that the other Project Participants agreed to the protocols, Section 3.2.2 also requires each Project Participant to manifest, in writing, their agreement to the Digital Data protocols. There are a range of possibilities available to users with regard to the mechanism through which Project Participants can manifest their agreement to the protocols. The most obvious option is to require each Project Participant to sign G201–2013. Less formal options may also be available such as requiring initials. Further, as project Web sites grow in popularity, the protocols may be distributed on such Web sites and Project Participants may be required to “check a box” that they have agreed to the latest versions of the protocols.

### **E203–2013 Section 3.2.3**

**§ 3.2.3** The Parties, together with the other Project Participants, shall review and, if necessary, revise the Digital Data protocols at appropriate intervals as required by the conditions of the Project.

As the Project progresses, the Project Participants will likely begin to adjust how they share and use Digital Data. Needs may change, efficiencies may be discovered, and new Project Participants may join the Project. Regardless of the reasons, Section 3.2.3 anticipates the likelihood that the established protocols will need to be revised.

### **E203–2013 Section 3.3**

**§ 3.3** The Parties shall transmit, use, store and archive Digital Data in accordance with the Digital Data protocols set forth in the latest version of AIA Document G201–2013 agreed to by the Project Participants.

This language creates a contractual obligation to follow the protocols as they are established and agreed to by the Parties and other Project Participants. As noted above, however, the enforcement of the protocols

may ultimately depend on the ability of a Project Participant to prove that the other Project Participants agreed to the protocols. Accordingly, in utilizing G201–2013, the Project Participants should develop an acceptable process to document the receipt of, and agreement to, each version of the protocols by each Project Participant. Such a process will protect against a Project Participant ultimately claiming that it never saw, or agreed to, the latest version of the relevant protocols and therefore is not bound by them.

## **E203–2013 Section 3.4**

### **§ 3.4 Unauthorized Use**

#### **§ 3.4.1 Prior to Establishment of Digital Data Protocols**

If a Party receives Digital Data prior to the agreement to, and documentation of, the Digital Data protocols in AIA Document G201–2013, that Party is not authorized to use or rely on the Digital Data. Any use of, or reliance on, such Digital Data is at that Party’s sole risk and without liability to the other Party and its contractors, consultants, agents and employees.

The premise of the Digital Practice documents is that the Project Participants are willing to share Digital Data because the protocols establish clear expectations and restrictions regarding the Authorized Uses of the Digital Data. Nevertheless, it may be necessary, or beneficial to the Project, for Digital Data to be shared prior to the establishment of the protocols. As the protocols are not yet established, the associated Authorized Uses have yet to be established. Accordingly, where Digital Data is shared prior to establishment of the required protocols any use of the Digital Data is at the sole risk of the Party using the Digital Data without liability to the other Party or any of its consultants, contractors, agents, and employees. This provision reinforces the notion that Digital Data should only be used and relied on after the protocols governing its use have been discussed and agreed to by the Project Participants.

If the Parties believe additional protection is necessary, indemnification language could be added to the end of this section. An example of such language is as follows:

To the fullest extent permitted by law, such Party shall indemnify and hold harmless the other Party and its contractors, consultants, agents and employees from and against claims, damages, losses and expenses, including but not limited to attorneys’ fees, arising out of or resulting from such Party’s use, transmission, or reliance on such Digital Data.

As noted above in discussing E203–2013 Section 1.2.1, any indemnification language should be reviewed closely with legal and insurance counsel as indemnification provisions are complex and notoriously difficult to enforce.

## **E203–2013 Section 3.4.2**

### **§ 3.4.2 Following Establishment of Digital Data Protocols**

Following agreement to, and documentation of, the Digital Data protocols in AIA Document G201–2013, if a Party uses Digital Data inconsistent with the Authorized Uses identified in the Digital Data protocols, that use shall be at the sole risk of the Party using the Digital Data.

Once the protocols are established, the Project Participants have all agreed to use Digital Data consistent with the protocols. Use inconsistent with the Digital Data protocols, which include the Authorized Uses, is at the sole risk of the Party using the Digital Data.

If the Parties believe additional protection is necessary, they may consider including an indemnification obligation at the end of this section, such as the following:

Further, to the fullest extent permitted by law, the Party using the Digital Data shall indemnify and hold harmless the other Party and its contractors, consultants, agents and employees from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from such Party's use of the Digital Data inconsistent with the Authorized Uses identified in the Digital Data protocols.

For the reasons noted above, however, indemnification can be a complicated legal concept, and indemnification language should be reviewed closely with legal and insurance counsel. Generally speaking, the more broadly written the indemnity, the less likely that it will ultimately be enforceable.

### **E203–2013 Section 3.5.1**

**§ 3.5.1** Centralized document management system use on the Project shall be:

*(Check the appropriate box. If the Parties do not check one of the boxes below, the default selection shall be that the Parties will not utilize a centralized electronic document management system on the Project.)*

- The Parties intend to use a centralized electronic document management system on the Project.
- The Parties do not intend to use a centralized electronic document management system on the Project.

The use of centralized document management systems is becoming increasingly prevalent for today's projects. These systems range in complexity from a simple repository that allows those with access to view, use and modify project related electronic data files, to robust document management products that add features like access rights, document tracking and version control. Not all projects will utilize a centralized electronic document management system or program. If one is to be used, however, the management of that Project-wide system may result in additional scope for some or all of the Project Participants. Accordingly, in Section 3.5.1, the Parties should indicate their expectations regarding the use of such a system or program. If the Parties fail to check one of the boxes, the default shall be that a centralized electronic document management system or program will not be used on the Project.

**§ 3.5.2** If the Project Participants intend to utilize a centralized electronic document management system on the Project, the Project Participants identified in Section 3.5.3 shall be responsible for managing and maintaining such system. The Project Participants responsible for managing and maintaining the centralized electronic document management system shall facilitate the establishment of protocols for transmission, use, storage and archiving of the centralized Digital Data and assist the Project Participants identified in Section 3.2.1 above in preparing Digital Data protocols. Upon agreement to, and documentation of, the Digital Data protocols in AIA Document G201–2013, the Project Participants identified in Section 3.5.3 shall manage and maintain the centralized electronic document management system consistent with the management protocols set forth in the latest version of G201–2013 approved by the Project Participants.

If the Parties determine that a centralized management system will be used on the Project, Section 3.5.3 provides an opportunity to identify the Project Participant(s) that will be responsible for maintaining it. The identified Project Participants are required to facilitate, with the other Project Participants, the establishment of the protocols relating to the centralized electronic document management system and to assist the Project Participant identified under Section 3.2.1 in preparing any related Digital Data protocols.

To develop the centralized Digital Data management system protocols, the Project Participants tasked with managing Digital Data should consider how to best facilitate communication and transfer of the Digital Data

to all relevant Project Participants, as well as the archival requirements that ensure the integrity of record copies. Examples of other items to consider include the following:

- Who needs to have access to the Digital Data, at what point, and with what level of permissions?
- How to control the integrity of the Digital Data as it is being used, and limit the ability of editing to those who have permission?
- How does the manager establish access to Project Participants that are not active users of Digital Data, but may be required to observe progress?
- At what points during the Project are record copies of the Digital Data to be archived?

**E203–2013 Section 3.5.3**

**§ 3.5.3** Unless responsibility is assigned to another Project Participant, the Architect shall be responsible for managing and maintaining the centralized electronic document management system. If the responsibility for management and maintenance will be assigned to another Project Participant at an identified Project milestone, indicate below the Project Participant who shall assume that responsibility, and the Project milestone.

*(Identify the Project Participant responsible for management and maintenance only if the Parties intend to utilize a centralized electronic document management system on the Project.)*

<b>Responsible Project Participant</b>	<b>Project Milestone</b>
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When the Parties have agreed to use a centralized data management system, Section 3.5.3 assigns the management responsibility of that system to the Architect. If Project circumstances suggest another Project Participant might be better suited, the Parties are required to identify those who will be responsible. The table included in Section 3.5.3 allows the responsibility to be assigned based on the Project milestones acknowledging that, throughout the course of the Project, there may be different individuals or entities better suited to manage the centralized Digital Data. For example, when a Project shifts from the design phases to the construction phase, it may be appropriate for the management of shared Digital Data to shift from the Architect to the Contractor. In that instance, the table might be completed in this way:

Responsible Individual or Entity	Project Milestone
Architect	Project Inception
Contractor	Commencement of Construction

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**Article 4 Building Information Modeling Protocols**

**E203–2013 Section 4.1**

**§ 4.1** If the Parties indicate in Section 3.1 that Building Information Modeling will be used on the Project, specify below the extent to which the Parties intend to utilize Building Information Modeling and identify the provisions of this Article 4 governing such use:

- The Parties shall utilize Building Information Modeling on the Project for the sole purpose of fulfilling the obligations set forth in the Agreement without an expectation that the Model will be relied upon by the other Project Participants. Unless otherwise agreed in writing, any use of, transmission of, or reliance on the Model is at the receiving Party’s sole risk. The remaining sections of this Article 4 shall have no force or effect.
- The Parties shall develop, share, use and rely upon the Model in accordance with Sections 4.2 through 4.10 of this Exhibit.



Section 4.1 requires the Parties to identify the intended scope of use of BIM via a check box.

If the Parties choose the first check box, the Parties will only use Modeling internally to facilitate the completion of their underlying contractual obligations. Under this option the Model is prepared without the expectation that it will be shared with and relied upon by the other Project Participants. If the Model is in fact shared, subsequent use of, or reliance on, the Model is at the sole risk of the Party receiving the Model. The remaining Sections of Article 4 do not apply because they are tailored to address the unique issues that arise when the Model is prepared with the expectation that it will be shared with the other Project Participants. It should also be noted that in checking the first box, the Parties arguably indicate they will not be sharing their own models with their own consultants or subcontractors. If models are to be shared on one side of the Project (i.e., amongst the design team only), the text of E203–2013 will need to be modified (see also discussion above at E203–2013 Section 1.2), or the second box should be checked and the G202–2013 protocol carefully completed (see discussion below.)

By choosing the second check box, the Parties agree that the Model will be developed, shared, used, and relied on in accordance with Sections 4.2 through 4.10, which allow for the subsequent establishment of the Modeling protocols that will be set forth in G202–2013. Even if the Parties check box 2, they can still exert a significant amount of control over how the Model is shared and relied upon on the Project.

If, for example, the Parties only intend to allow the architect and its consultants to share and rely on the Model, E203–2013 and G202–2013 could be crafted in such a way that the “Authorized Uses” only relate specifically to the provision of design services. The Authorize Uses, for example, would not permit fabrication or detailed cost estimating. So, while the Model will be shared and relied on, the ultimate scope of reliance and use is limited to the design team. Even if one of the contractors ended up receiving the Model, by the terms of E202–2013 attached to their Agreement, they agreed to follow the set forth in G202–2013. The protocols would limit reliance on the Model Elements to only design related services. Accordingly, pursuant to E203–2013 Section 4.7, any use inconsistent with those Authorized Uses would be at the contractor’s sole risk.

Another option would be to add language to one of the options clarifying that the Model will only be shared during the design of the project and only among the design team. Users are encouraged to modify and revise the standard language to fit their specific needs.

Users should note that the standard language obligates the Parties, and not the Project Participants, to develop, share, use and rely upon the Model in accordance with the terms of E203–2013. This is because, as is discussed above in the definitions of Parties and Project Participants, E203–2013 is only binding on the Parties to the underlying agreement. E203–2013, however, is intended to be incorporated into every agreement on the Project. Accordingly, each Project Participant becomes bound by a common set of obligations and protocols by virtue of E203–2013 being incorporated into its Project Agreement.

Users should also understand the impact their selection in Section 4.1 can have on compensation. E203–2013 Section 1.3 states that the establishment of the protocols may result in an adjustment in compensation if such protocols result in a change to the originally anticipated scope of work or services. If the Parties choose the first box, the Party utilizing Modeling retains complete control over the scope of BIM services and the level of development it puts into the Model, as it is only using Modeling as a tool to fulfill its obligations in the underlying Agreement. Compensation will be based on that expectation.



If the Parties agree that Models will be used for more than just the Parties’ internal purposes, the Parties recognize that Models will be shared with and used by other Project Participants for certain identified Authorized Uses. The Parties further agree to subsequently establish protocols that will control development of, use of and reliance on the Model. Under option 2, the assumption is that the Model will be relied on by the other Project Participants for certain Authorized Uses. This means that the Modeling Parties must develop the Model sufficiently to meet such external needs and uses. This amount of effort may be inconsistent with the level of development a Party would normally provide if Modeling was only used as a tool to fulfill its own obligations and therefore warrant an adjustment in compensation.

E203–2013 Sections 4.3, 4.4 and 4.5 require the Parties to establish their anticipated scopes of work or services related to Modeling before the protocols are established. The clearer the Parties are in those sections, the easier it will be to determine if a change in scope has occurred when the protocols are subsequently established, thus reducing the possibility for conflict.

### **E203–2013 Section 4.2**

**§ 4.2 Anticipated Building Information Modeling Scope.** Indicate below the portions of the Project for which Modeling will be used and the anticipated Project Participant responsible for that Modeling.

Consistent with the general scoping premise of the E203–2013, Section 4.2 provides the opportunity to broadly define how Modeling will be used on the Project and who will be responsible for such Modeling. Parties must be aware of the portions of the Project that are in the scope to be modeled, and those portions that will be referenced, diagrammed, or otherwise documented without Modeling—for example:

- 1) The Project Models will include structural and architectural Models.
- 2) Mechanical and Plumbing Model Elements will only be developed in the mechanical rooms and for pipes larger than 2½ inches in diameter.
- 3) Electrical Lighting Model Elements will be modeled, as well as raceways and duct banks and all conduits larger than 2 inches. All smaller conduits and wiring shall be symbolic LOD 100 only.

In addition to indicating what will be modeled, it is also important to indicate who will be doing the modeling. Again, the amount of Modeling a Project Participant expects to perform on the Project directly impacts their scope of services. Accordingly, it serves the entire Project to be as clear as possible in the Project Agreements as to the Modeling expectations so as to avoid scope disputes later in the Project.

While E203–2013 provides flexibility on the information to be included in this section and the format in which it is provided, the following is an example of how to complete this section utilizing a table format:

<b>Anticipated Modeling Scope</b>	<b>Project Participant Responsible</b>
The Project Models will include structural and architectural Models.	AQA Architects
Mechanical and Plumbing Model Elements will only be developed in the mechanical rooms and for pipes larger than 2 ½ inches in diameter.	SDS Engineering
Electrical Lighting Model Elements will be modeled, as well as raceways and duct banks and all conduits larger than 2 inches. All smaller conduits and wiring shall be symbolic LOD 100 only.	AQA Architects

As noted above in the discussion of Section 4.1, if the subsequently established protocols vary from the anticipated Modeling scope set forth in this section, there may be a need to adjust compensation, contract sum or contract time.

### **E203–2013 Section 4.3**

**§ 4.3 Anticipated Model Authorized Uses.** Indicate below the anticipated Authorized Uses of the Model for the Project, which Authorized Uses will be agreed upon by the Project Participants and further described for each LOD in G202–2013.

Without clearly defined anticipated Authorized Uses, the extent to which one Party anticipates using Models may not align with the other Project Participants' expectations, resulting in disputes over scope and compensation. A clear understanding among the Project Participants of the anticipated Authorized Uses for the Model will prevent complications later in the Project. To the extent the Parties can identify the anticipated Authorized Uses at Project inception they will be able to avoid many of these problems.

This section records the anticipated Authorized Uses for the Models. This list will eventually be included within the Level of Development definitions found in G202–2013 as the defined Authorized Uses when the Project Participants will provide much more detail on the Authorized Uses. For a further discussion on the Authorized Uses and Levels of Development, please refer to the portion of the Guide addressing Article 2 of G202–2013 below.

Examples of Authorized Uses that might be inserted in Section 4.3 include, but are not limited to, the following:

- Construction Sequencing
- Construction Coordination.
- Material Takeoffs in support of cost estimating
- Fabrication

### **E203–2013 Section 4.4**

**§ 4.4 Ancillary Modeling Activities.** Indicate additional Modeling activities agreed upon by the Parties, but not included in G202–2013, if any.

*(Describe any Modeling activities, such as renderings, animations, performance simulations, or other similar use, including the anticipated amount and scope of any such Modeling activities.)*

Users will utilize this section to describe other expected Modeling activities. Generally, these Modeling activities will not carry with them an expectation of reliance for particular use, which is the focus of the Authorized Uses in Section 4.3. Even though reliance is not an issue, the Parties need to be aware of what the total scope of expectations is with regard to all Modeling activities. Section 4.4 allows the parties to discuss and negotiate their expectations about, for example, the number of renderings that will be done, or how many animations will be created from the Model.

### **E203–2013 Section 4.5**

#### **§ 4.5 Model Protocols**

As soon as practical following execution of the Agreement, the Parties shall, in consultation with the other Project Participants that are expected to utilize Building Information Modeling on the Project, further describe the Authorized Uses of the Model and establish necessary protocols governing the development of the Model utilizing AIA Document G202–2013.

This section requires the Parties to meet to establish Modeling protocols as soon as practical following execution of the Agreement. Like E203–2013 Section 3.2 relating to the Digital Data protocols, Section 4.5 purposely does not establish the Model protocols within E203–2013. The reasons for, and benefits of, such an approach are identical to those discussed above for E203–2013 Section 3.2.

#### **E203–2013 Section 4.5.1**

**§ 4.5.1** The Model protocols shall address the following:

- .1 Identification of the Model Element Authors;
- .2 Definition of the various LOD for the Model Elements and the associated Authorized Uses for each defined LOD;
- .3 Identification of the required LOD of each Model Element at each identified Project milestone;
- .4 Identification of the construction classification systems to be used on the Project;
- .5 The process by which Project Participants will exchange and share the Model at intervals not reflected in Section 3.3, Model Element Table, of AIA Document G202–2013;
- .6 The process by which the Project Participants will identify, coordinate and resolve changes to the Model;
- .7 Details regarding any anticipated as-designed or as-constructed Authorized Uses for the Model, if required on the Project;
- .8 Anticipated Authorized Uses for facilities management or otherwise, following completion of the Project; and
- .9 Other topics to be addressed by the Modeling protocols:  
*(Identify additional topics to be addressed by the Modeling protocols.)*

This section is intended as an illustrative list of topics to consider for protocols. The Parties can modify and supplement this list as necessary to fit the needs of their Project. Once agreed to, the items listed will be further developed as protocols in G202–2013.

The terms “as-designed” and “as-constructed” record Models as used in Section 4.5.1.7 are based on the use of the terms “as-designed” and “as-constructed” record drawings in B101–2007. The instructions to B101–2007 define as-designed record drawings as “the record of everything the Architect designed for the Project, and include the original Construction Documents plus all addenda, Architect’s Supplemental Instructions, Change Orders, Construction Change Directives and minor changes in the work.” The instructions define as-constructed record drawings (or “as-builts”) as “the record of the Project as constructed based on information the Contractor provides to the Owner under the contract for construction. Because the As-constructed Record Drawings will be based on the Contractor’s mark-ups, the Architect is not responsible for the accuracy or completeness of the As-constructed Record Drawings.”

#### **E203–2013 Section 4.5.2**

**§ 4.5.2** Unless responsibility is assigned to another Project Participant identified below, the Architect shall prepare and distribute Modeling protocols to the other Project Participants for review, revision and approval. *(If a Project Participant other than the Architect shall be responsible for preparing draft and final Model protocols, identify that Project Participant.)*

This section requires the Architect to prepare Modeling protocols, unless another Project Participant is identified. The discussion above for E203–2013 Section 3.2.1, with the Architect preparing the Digital Data protocols, applies here as well.

### **E203–2013 Section 4.5.3**

**§ 4.5.3** The agreed upon Modeling protocols shall be set forth in AIA Document G202–2013 and each Project Participant shall memorialize their agreement in writing to such Model protocols.

Section 4.5.3 establishes the expectation that the Project Participants will approve the Modeling protocols and will memorialize them in G202–2013. The importance of recording agreement is identical to the discussion above for E203–2013 Section 3.2.2. (See also discussion at E203–2013 Section 1.4.9, for the definition of the term “in writing.”)

### **E203–2013 Section 4.5.4**

**§ 4.5.4** The Parties, together with the other Project Participants, shall review, and if necessary, revise the Modeling protocols at appropriate intervals as required by the conditions of the Project.

As is the case with the Digital Data protocols, the Project Participants will likely need to revise the Modeling protocols as the Project proceeds. This may be because needs change, efficiencies are discovered, or additional Project Participants may be involved. Regardless of the reasons, Section 4.5.4 allows for the possibility that the established protocols will be revised. Section 4.5.4 states that the Project Participants will revisit and revise the established Modeling protocols as necessary.

### **E203–2013 Section 4.6**

**§ 4.6** The Parties shall develop, use and rely on the Model in accordance with the Modeling protocols set forth in the latest version of AIA Document G202–2013, which document shall be included in or attached to the Model in a manner clearly accessible to the Project Participants.

Section 4.6 requires the Parties to develop, use and rely on the Model in accordance with the most recent set of established protocols. This language creates a contractual obligation to follow the Modeling protocols as they are established and agreed to by the Parties and other Project Participants. As noted above, however, the enforcement of the protocols may ultimately depend on the ability of a Project Participant to prove that the other Project Participants agreed to the protocols. Accordingly, in utilizing G202–2013, the Project Participants should develop an acceptable process to document the receipt of, and agreement to, each version of the protocols by each Project Participant. Such a process will help protect against a Project Participant ultimately claiming that it never saw or agreed to the latest version of the relevant protocols and therefore is not bound by them.

Section 4.6 also requires the Parties to include a copy of the latest version of G202–2013 in the Model so that it is accessible to the Project Participants. This requirement is easily accomplished with current software capabilities and ensures that any Project Participant that receives a Model will also receive the Model protocols governing the use of the Model.

### **E203–2013 Section 4.7**

#### **§ 4.7 Unauthorized Use**

##### **§ 4.7.1 Prior to Establishment of Model Protocols**

If a Party receives any Model prior to the agreement to, and documentation of, the Modeling protocols in AIA Document G202–2013, that Party is not authorized to use, transmit, or rely on the Model. Any use, transmission or reliance is at that Party’s sole risk and without liability to the other Party and its contractors, consultants, agents and employees.

Section 4.7.1 is modeled after E203–2013 Section 3.4.1 and the related discussion is equally applicable here. As noted in the Section 3.4.1 discussion, in some instances the Parties may believe that additional protection is warranted and may decide to include an indemnification obligation. The following is an example of such indemnification language:

To the fullest extent permitted by law, the receiving Party shall indemnify and hold harmless the other Party and its contractors, consultants, agents and employees from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from the receiving Party's use, transmission, or reliance on such Models.

As noted in the discussion for E203–2013 Section 1.2.1, however, any indemnification language should be reviewed closely with legal and insurance counsel as indemnification provisions are complex and notoriously difficult to enforce.

### **E203–2013 Section 4.7.2**

**§ 4.7.2** Following agreement to, and documentation of, the Modeling protocols in AIA Document G202–2013, if a Party uses or relies on the Model inconsistent with the Authorized Uses identified in the Modeling protocols, such use or reliance shall be at the sole risk of the Party using or relying on the Model. A Party may rely on the Model Element only to the extent consistent with the minimum data required for the identified LOD, even if the content of a specific Model Element includes data that exceeds the minimum data required for the identified LOD.

The justification for Section 4.7.2 is the same as the virtually identical provisions in Section 3.4.2. Upon the documentation of the Modeling protocols, the Parties have agreed that the shared Models can be used and relied upon only as set forth in the Authorized Uses in the protocols. Use and reliance inconsistent with the protocols remains unauthorized. Accordingly, Section 4.7.2 states that after the protocols are established, any use of the Model inconsistent with the protocols is at the sole risk of the Party using the Model. This section also clarifies that to the extent the Model contains information that exceeds the required LOD, the use or reliance is still controlled by the Authorized Uses associated with the required LOD as set forth in the G202–2013, Section 3.3 Model Element Table. For example, if an LOD 200\_Model Element contains *specific* information regarding the location and type of light fixture to be used, the information can only be relied on consistent with an LOD 200. G202–2013 Section 2.3.1 defines LOD 200 to mean that the Model Element is represented as a *generic* system, object, or assembly with *approximate quantities, size, shape, location, and orientation*. Therefore, even though the information regarding the light fixture is specific, because the Model Element is indicated to be at the LOD 200 level, the information cannot be relied on as specific and instead can only be relied on to the extent appropriate for generic information.

If the Parties believe additional protection from the risks of unauthorized use is necessary, they may consider including an indemnification obligation following the first sentence in the section. The following is an example of such language:

Further, to the fullest extent permitted by law, the Party using or relying on the Model shall indemnify and hold harmless the other Party and its contractors, consultants, agents and employees from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from such Party's use of the Model inconsistent with the Authorized Uses identified in the Modeling protocols.

For the reasons noted above in the discussion for Section 1.2, however, indemnification is a complicated legal concept and indemnification language should be reviewed closely with legal and insurance counsel.

## **E203–2013 Section 4.8**

### **§ 4.8 Model Management**

**§ 4.8.1** The requirements for managing the Model include the duties set forth in this Section 4.8. Unless assigned to another Project Participant, the Architect shall manage the Model from the inception of the Project. If the responsibility for Model management will be assigned to another Project Participant, or change at an identified Project milestone, indicate below the identity of the Project Participant who will assume that responsibility, and the Project milestone.

<b>Responsible Project Participant</b>	<b>Project Milestone</b>
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Maintaining records and archives of the Model comes with a level of responsibility that the Project Participants should be aware of at the onset of the Project. Other Project Participants will be relying on the individual(s) or entity (ies) charged with managing and maintaining the Model. This may require an increase in scope of work for the Project Participants charged with this responsibility. The increase in scope is a factor that may affect compensation and should be included in the Agreement. Accordingly, Model management is included in E203–2013 as opposed to the G202–2013.

This section requires the Parties to identify the Project Participants that will be responsible for managing the Model. As is the case with the Digital Data management role, the Project Participant responsible for managing the Model may shift as the Project progresses.

The standard language states that the Architect will manage the Model from the inception of the Project and that the Parties may identify another Project Participant that will subsequently assume those responsibilities. The Architect is the default as it is the Project Participant that will more likely than not be engaged in the most Modeling activities at the beginning of the Project.

## **E203–2013 Section 4.8.2**

**§ 4.8.2 Model Management Protocol Establishment.** The Project Participant responsible for managing the Model, in consultation with the other Project Participants that are expected to utilize Building Information Modeling on the Project, shall facilitate the establishment and revision of Model management protocols, including the following:

- .1 Model origin point, coordinate system, precision, file formats and units
- .2 Model file storage location(s)
- .3 Processes for transferring and accessing Model files
- .4 Naming conventions
- .5 Processes for aggregating Model files from varying software platforms
- .6 Model access rights
- .7 Identification of design coordination and clash detection procedures
- .8 Model security requirements
- .9 Other: *(Identify additional Model management protocols to be addressed.)*



The Section 4.8.2 list is not intended to be exhaustive and is only intended as a suggestion of common protocols to consider in managing a Model. The standard list appearing in this Section 4.8.2 corresponds to the list of protocols in G202–2013 Section 1.7. To the extent the Section 4.8.2 list is modified to fit the particular needs of the Project, similar revisions should be made to the G202–2013 Section 1.7 list.

### **E203–2013 Section 4.8.3**

**§ 4.8.3 Ongoing Responsibilities.** The Project Participant responsible for managing the Model shall do so consistent with the Model management protocols, which shall also include the following ongoing responsibilities:

- .1 Collect incoming models:
  - .1 Coordinate submission and exchange of models
  - .2 Create and maintain a log of models received
  - .3 Review model files for consistency with Section 4.8.2.1 through 4.8.2.5
  - .4 Maintain a record copy of each model file received
- .2 Aggregate Model files and make them available for Authorized Uses.
- .3 Maintain Model Archives and backups consistent with the requirements of Section 4.8.4 below
- .4 Manage Model access rights
- .5 Other: *(Identify additional responsibilities.)*

Section 4.8.3 provides a list of common Model management responsibilities that will be performed on an on-going basis. The listed responsibilities are not intended to be exhaustive. It should be noted, however, that the “responsibilities” included in Section 4.8.3 will become a part of the Agreement and therefore become contractual responsibilities for the Project Participant assigned to manage the Model.

At a minimum, the Project will require a Model management activity to collect, coordinate and aggregate Models. The complexity of this task will vary from project to project, but could potentially include a sophisticated collaboration Web site to facilitate the task. Much depends on the level of sophistication of the Project Participants, and the level of reliance on each other's work.

The responsibility for data integrity, including backups, periodic and milestone archiving, and logs of interaction, is critical to maintaining the value and integrity of the data within the Model.

Other responsibilities could include:

- Preparation of visualization Models on a regular basis
- Preparation of Model data for submission to reviewing authorities
- Creating aggregated material takeoffs
- Preparing construction sequencing Models
- Preparing Model subsets for specialty use by consultants or subcontractors

### **E203–2013 Section 4.8.4**

**§ 4.8.4 Model Archives.** The individual or entity responsible for Model management as set forth in this Section 4.8 shall compile a Model Archive at the end of each Project milestone and shall preserve it without alteration as a record of Model completion as of that Project milestone.



This section requires the Project Participant responsible for managing the Model to compile and preserve an archive at the end of each Project milestone. The Project milestones are identified in the Model Element table of Section 3.3 in G202–2013. The Party responsible for managing the Model is required to create and maintain the archive consistent with the established protocols.

Although the default requirement is that the Model be archived at the conclusion of each Project milestone, if some other interval fits better, given the unique characteristics of each Project, that should be discussed and other archive dates agreed to by the Project Participants.

**E203–2013 Section 4.8.4.1**

**§ 4.8.4.1** Additional Model Archive requirements, if any, are as follows:

Section 4.8.4.1 consists of a blank fill point that will allow the Parties to include any additional archive requirements necessary to satisfy the unique characteristics of their Project.

**E203–2013 Section 4.8.4.2**

**§ 4.8.4.2** The procedures for storing and preserving the Model(s) upon final completion of the Project are as follows:

This section provides a place for the Parties to identify the manner in which the Model will be stored and preserved upon final completion of the Project.

Some of the issues that should be discussed include how long the archive files will be retained, how long each of the Parties and Project Participants will be able to have access to the archive files, who bears the responsibility and cost of maintaining the archive files, how those archive files can be used, and what processes should be established for the destruction of any archive files once the required retention period has elapsed.

**E203–2013 Section 4.9**

**§ 4.9 Post Construction Model**

The services associated with providing a Model for post construction use shall only be required if specifically designated in the table below as a Party’s responsibility.

*(Designate below any anticipated post construction Model and related requirements, the Project Participant responsible for creating or adapting the Model to achieve such uses, and the location of a detailed description of the anticipated scope of services to create or adapt the Model as necessary to achieve such uses.)*

<b>Post Construction Model</b>	<b>Applicability to Project</b> <i>(Applicable or Not Applicable)</i>	<b>Responsible Project Participant</b>	<b>Location of Detailed Description of Requirements and Services</b> <i>(Section 4.10 below or in an attachment to this exhibit identified below)</i>
<b>§ 4.9.1</b> Remodeling			
<b>§ 4.9.2</b> Wayfinding and Mapping			
<b>§ 4.9.3</b> Asset/FF & E Management			
<b>§ 4.9.4</b> Energy Management			
<b>§ 4.9.5</b> Space Management			
<b>§ 4.9.6</b> Maintenance Management			

This section is utilized only if there are additional requirements for Modeling beyond those necessary for design and construction execution as described in Section 3.3 of G202–2013. The services listed in this section are in addition to traditional basic services, and may be performed by any of the Project Participants designated in the Section 4.9 table.

This section is different from record Model activities or other LOD in that the characteristics of Models used for post-construction activities can vary greatly. While the post-construction Model may be a subset or extraction of the construction Model, the graphical format, data format, and specific scope of effort varies greatly with the intended post-construction Model use. Accordingly, the Modeling requirements for Post Construction Model Uses do not fit well simply under an LOD description within the G202–2013. For example, the representation of walls and doors for wayfinding is significantly different from that of energy management and require a different level of scope description to clarify the intent.

The rows of the table list the Post Construction Model uses, the applicability to the Project, the responsible Project Participant, and the location of the detailed description of the required services.

In the first column, Post Construction Models, common potential Post Construction Model Uses are listed. The list is a starting point and the Parties can add other potential uses as desired by the Owner. Currently there are no well-established standards for each of these uses, and each Owner or software interface will have a unique scope of how the Model data is developed and utilized. Accordingly, to clarify expectations, the Parties should provide as much detail as possible in describing the anticipated services necessary to provide a Model for post-construction use.

The “Applicability to Project” column is specifically useful to clarify scope and non-scope items. While deleting a line might otherwise be the simplest way to delete a non-scope item, indicating specifically that it is not applicable to the Project is the clearest way to clarify expectations. The affirmative step of marking an item as “not applicable” records that the Parties discussed the issue and affirmatively decided that it was not applicable. If the section were merely left blank, there could later be a dispute as to whether the scope was ever discussed.

The “Responsible Project Participant” is the Project Participant who will execute the work on the Model as required to meet the defined scope of services. This may be the architect, engineer, contractor, fabricator or material supplier. Because E203–2013 is intended to be a flow down document, it is important that the responsible Project Participant have this document attached to their related agreements, otherwise, it is a non-binding obligation. For a detailed discussion about the process for incorporating E203–2013 into the Project agreements, please refer to the section of the Guide discussing E203–2013 Section 1.2.

The last column, “Location of Detailed Description of Requirements and Services” is utilized to indicate where the requirements and scope of services/work are recorded. It may be in Section 4.10 below or an attached document. It may also indicate an external reference standard. If the owner has established a standard then it is easily referenced here.

In describing the scope of the requirements and services, either in E203–2013 Section 4.10 or as a separate attachment to this Exhibit, any number of methods can be utilized. One technique would be to establish a separate table, mirroring the list of model content in the G202–2013 Section 3.3, Model Element table, for

each of the Post Construction Models. Each line could further designate the responsible Project Participant for that individual piece of content, and provide a note that clearly describes the requirements and scope for that line of content. This technique may require a separate table for each Post Construction Model, but may also be the best way to establish clear expectations of an owner’s requirement.

The Parties should also take note of the potential relationship between the identified post-construction Models and the permissions, given to the Owner in the Agreement, for uses of the Parties’ intellectual property. For example B101–2007 Section 7.3 gives the Owner a license to use the Architect’s Instruments of Service (which would include the Model) for “constructing, using, maintaining, altering and adding to the Project.” This language may be sufficiently broad to encompass the identified Post Construction Model uses, but it may not.

#### **E203–2013 Section 4.10**

**§ 4.10** Insert a detailed description of the requirements for each Post Construction Model identified in Section 4.9 and the anticipated services necessary to create each Post Construction Model, if not further described in an attachment to this Exhibit.

Section 4.10 provides a fill point for the Parties to provide the scope of services with respect to each post-construction Model use identified in Section 4.9. As is always the case, the Parties should describe the anticipated scope of services in as much detail as possible. Doing so will reduce the likelihood of a later dispute over the scope of services.

## **Article 5 Other Terms and Conditions**

### **E203–2013 Article 5 Other Terms and Conditions**

Other terms and conditions related to the transmission and use of Digital Data are as follows:

Article 5 provides a space for the Parties to provide any additional terms and conditions relevant to Digital Data.

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## Guidance, Instructions and Commentary to AIA Document G201–2013, Project Digital Data Protocol Form

G201–2013 allows the Project Participants to document the Digital Data protocols for the Project, exclusive of specific Modeling requirements, which are addressed in greater depth in G202–2013, Project Building Information Modeling Protocol Form. The protocols are established in the form documents, rather than in the Agreement, because it is likely that the protocols will change as the Project progresses. If the protocols were included in the agreements, the Project Participants would need to amend all of their agreements every time the protocols changed, which would be unduly burdensome. It should be noted, however, that even though the protocols are not part of the Agreement language, E203–2013, at Section 3.3, contractually requires the Parties to follow the protocols once established.

It is expected as that as the Project circumstances change, the Project Participant will jointly revise and issue updated versions of G201–2013. This would be the case anytime information contained in G201–2013 is revised or expanded. Accordingly, G201–2013 provides a space on the cover page to allow the Parties to designate a version number and a date, to differentiate between newer and older versions. Because the form content may change over the Project’s duration, the version number, date, preparer, and distribution fields should be updated as needed. For example, as the Project moves into construction, the list of Project Participants responsible for creating, transmitting and reviewing Digital Data will likely grow and change significantly, and the distribution list should reflect the current Project Participants.

Users must also be aware that pursuant to E203–2013 Section 1.3, if the protocols established in G201–2013 will result in a change in the scope of work or services warranting an adjustment in compensation, contract sum, schedule or contract time, the user must satisfy the notice requirement set forth in Section 1.3.3 in order to request an adjustment. The standard provision in E203–2013 Section 1.3 requires 30 days written notice, although users are permitted to provide a different time period for the notice requirement. Refer to the discussion of E203–2013 Section 1.3 for more detail.

### Article 1 General Provisions Regarding Use of Digital Data

#### G201–2013 Section 1.1

§ 1.1 List each Project Participant that has incorporated AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, dated \_\_\_\_\_, into its agreement for the Project:

**Project Participant**

**Discipline**

The Section 1.1 table, when completed, provides a complete list of each Project Participant that has incorporated E203–2013 into their Project Agreement. It is important for each Project Participant that will utilize Digital Data to incorporate E203–2013 into their agreements because E203–2013 Section 3.3 provides the contractual obligation to use the Digital Data consistent with the protocols established in G201–2013. If Digital Data is provided to a Project Participant that has not incorporated E203–2013 into its agreement, the protections against unauthorized use established in the protocols could be lost. It will also be important for the Project Participants to keep this table updated and issue updated versions of G201–2013 every time a new Project Participant is added to this list.

## G201–2013 Section 1.2

**§ 1.2 Project Participants.** For each Project Participant listed in Section 1.1, identify and provide contact information for the individuals responsible for implementation of the Digital Data protocols.

Project Participant	Individual Responsible	Contact Information
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The Project Participant table found in Section 1.2 is a continuation of the discussion and decision making process that begins in Section 1.1. This section requires the document users to identify, for each Project Participant, the individuals responsible for implementation of the Digital Data protocols. This table provided can be expanded as needed.

A typical Project may begin with the Owner and Architect sharing digital programming, design concepts, and budgeting information. As the Project progresses, additional consultants, contractors and possibly sub-contractors and suppliers may be added. As projects move through specific phases, the assignment of Digital Data responsibilities may change within an organization. Care should be taken to keep this table current and accurate to maintain the seamless transfer of information, which will require the issuance of updated versions of G201–2013 as necessary.

The following is an example of how this table may be filled out:

Project Participant	Individual Responsible	Contact Information
AQA Architects	John Smith	JSmith@AQA.com; 212-555-2323
SDS Engineering	Susan Brown	SBrown@SDS ENG.com; 301-555-0987
FMD Construction	David Morse	DMorse@FMDcon.com; 212-555-3477

## G201–2013 Section 1.3

**§ 1.3** Terms in this document shall have the same meaning as those in AIA Document E203–2013.

By this cross-reference, the Project Participants recognize the use of the terminology found in E203–2013, including such terms as “Digital Data” and “Project Participant.” Terms with specialized meanings are generally defined and capitalized in AIA Contract Documents.

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## Article 2 Digital Data Management Protocols

### G201–2013 Section 2.1.1

**§ 2.1.1 Electronic Document Management System.** If, pursuant to Section 3.5.1 of the Project specific version of AIA Document E203–2013, the Project Participants indicated an intent to use a centralized electronic document management system on the Project, the requirements for the centralized electronic document management system are as follows:

*(The requirements for the system shall address, among other things, access to and security of Digital Data.)*

This section requires identification of any centralized electronic document management system or program. There are a wide variety of options as to the selection, creation and management of such Project based systems. The potential impact on a Project Participant’s normal methods for document storage and management makes this matter an important topic for discussion.

The selected centralized electronic document management system, if any, can be as simple or complex as the Project for which it is being used. Often, the type and volume of shared Digital Data and the number of Project Participants will suggest the optimal solution. Something as simple as a shared FTP site where files can be posted and accessed may be all that is needed for certain Projects. As Project complexity increases, a system with additional capabilities such as commenting, version control, access logging and other features may be beneficial to serve as a centralized Project record that all Project Participants can access and utilize. It may also be appropriate to maintain separate systems for distinct types of electronic documents. For example, drawing data may be on one system managed by the Architect while correspondence and non-graphic data is maintained on the Owner's system. Article 2 provides the Project Participants with an opportunity to set forth the specific requirements of any such management system.

Because available software and system requirements continually evolve, it is important to gain acceptance from the Project Participants on the appropriate system for the Project. What may be standard practice for one Project Participant may require a considerable learning curve for others. Accordingly, due consideration should be given to system cost and the level of effort new users may need to get up to speed. For the benefit of the Project, such considerations should occur as early as possible.

Examples of issues that may need to be addressed in this section during the identification of the appropriate system could include the following:

- Access rights to submittals or other records after the Project is concluded, including time period for such access
- Rights to post, alter, view and archive the data
- Ownership of such a document management system

When completing Article 2, in addition to considering the operation of the centralized electronic document management system, the Parties should also focus on documenting what the system is intended to achieve and how the system will impact the role of the Project Participants. For example, the selection of a proprietary software system as the management system may require users to purchase a license or impact their ability to gain access from off-site.

Article 2 contains a series of fill points relating to system documentation, startup, and ongoing requirements. Although using the fill point(s) is recommended, it may be appropriate where large amounts of information will be provided, to include a summary of the information in G201–2013 and also reference a separate document containing more detailed information.

### **G201–2013 Section 2.1.2**

**§ 2.1.2 System Startup Requirements.** Initial training and other startup requirements to be implemented with respect to the use or management of Digital Data, if any, are as follows:

*(Describe in detail any initial training or other startup requirements.)*

This section requires the Parties to describe training required for any centralized electronic document management program or system utilized on the Project. If the system selected in 2.1.1 above is a simple Web-based file sharing utility, the training and access requirements may be negligible. An example of such language would be as follows:

The Architect will provide a one-half day Digital Data orientation for all Project Participants.

If the system is complex, significant startup efforts may be necessary. Any such outside training, special hardware, or software requirements should be stated. Additionally, training may be necessary to bring other Project Participants up to speed on a particular program to be able to work with the others. If the selected system is already in use by some of the Project Participants, the need for training may not be evenly distributed among the other Project Participants.

### **G201–2013 Section 2.1.3**

**§ 2.1.3 Ongoing System Requirements.** Ongoing training or support programs to be implemented with respect to the use or management of Digital Data, if any, are as follows:

*(Describe in detail any ongoing training or support programs to be implemented.)*

Individual Project Participants may employ staff with the expertise to provide training or maintenance for selected systems, in which case their contract scope and compensation may require amendment if they become responsible for providing such services. Some systems are maintained by outside vendors on a fee basis, or require independent digital resources. If these items are part of the Project requirements, they should be described in terms of who will provide the services, which Project Participant will engage the vendor, and how long the services will be in place.

### **G201–2013 Section 2.2**

**§ 2.2 Digital Data Storage Requirements.** The procedures and requirements for storing Digital Data during the course of the Project, if any, are as follows:

*(Describe in detail the procedures and requirements for storing Digital Data during the course of the Project.)*

The potential topics under this section are quite numerous. Digital Data may be stored on a single Project Participant's server, on multiple Project Participants' servers, hosted by an outside provider, or a combination of these methods. The Project Participants should discuss how the Digital Data will be stored, saved and accessed by everyone involved. It would serve the Project well to have a detailed explanation of how this is achieved while also maintaining the free flow and integrity of Digital Data. Furthermore, the requirements established in this section need to be coordinated with any centralized electronic document management system identified in Section 2.1.1 above.

### **G201–2013 Section 2.3**

**§ 2.3 Digital Data Archiving Requirements.** The procedures and requirements for archiving and preserving Digital Data during the course of the Project and following final completion of the Project, if any, are as follows:

*(Describe in detail the procedures and requirements for archiving and preserving Digital Data during the course of the Project and following completion.)*

This section requires identification of procedures and requirements for storing Digital Data during the Project and after the Project is completed. There are numerous approaches for accomplishing this task. A common solution is to require archiving of all Project Digital Data at specified Project milestones recognized by all Project Participants; or archiving requirements between two Parties could occur in parallel with deliverables as specified in their agreements. However the schedule and process of archiving are decided, the Project Participants should understand that this archive becomes a Project record and any agreed-to process should provide appropriate measures to maintain security, access and integrity.



Some of the issues that should be discussed include the following: (1) how often the Digital Data will be archived, (2) how long the archive files will be retained, (3) how long each of the Project Participants will be able to have access to the archive files, (4) who will bear the responsibility and cost of maintaining such archive files, (5) how the archive files can be used, and (6) what processes should be established for the destruction of any archive files once the required retention period has elapsed.

#### **G201–2013 Section 2.4**

**§ 2.4** Other Digital Data Management protocol requirements, if any, are as follows:

*(Describe in detail any other requirements.)*

This section provides a place for the Project Participants to identify any other requirements for Digital Data management, if any.

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### **Article 3 Transmission and Use of Digital Data**

Article 3 is used to define the transmission methods and Authorized Uses of the Project’s Digital Data. The assumption of this article is that virtually every Project communication can be transmitted and used in digital form, although it is certainly not a requirement. Article 3 is composed of two sections: a table to identify the Digital Data that will be transmitted and used, and a section that provides definitions of the terms used in the table. With so many Digital Data and communication options available, it is critical to establish which system or method will be used for each function so as to streamline work processes between Project Participants and prevent loss of Digital Data integrity due to incompatibility.

#### **G201–2013 Section 3.1**

Section 3.1 consists of the Digital Data Protocol table, which is composed of five columns:

**Digital Data.** This column identifies the Project document, record, or communication that is governed by the protocol. The Digital Data column is pre-populated with the Project items that are most likely to be found on the Project. Because every project is unique, however, the list should be considered as a starting point and the Project Participants should add, clarify, and delete items to reflect the specific Project’s circumstances.

**Digital Data Format.** This is generally a software specific designation, or a file type that is compatible with multiple software platforms. An important issue to consider is the ability to modify the file when selecting Digital Data formats. Certain Digital Data will, by virtue of its phase in the Project, require modification as a part of its Authorized Use, while other Digital Data, such as agreements, should be transmitted in a format that prevents modification.

**Transmission Method.** The transmission method is the means by which, either electronic or physical, the Digital Data will be exchanged between the Project Participants. Recordable media, email, File Transfer Protocol (FTP), as well as a variety of proprietary software interfaces that employ similar strategies are likely candidates for use as a transmission method. The transmission method should provide an appropriate level of verification of transmittal and receipt commensurate with the type of Digital Data being transmitted.

**Authorized Uses.** The Authorized Uses indicate the permitted uses for the Digital Data that is transmitted. As examples, Section 3.2 lists four possible options for Authorized Uses, from the limited (Store and View), to the complete (Modify as required). The distinctions allow the user to control the way the Digital Data will be viewed, reproduced, distributed, incorporated or modified by other Project Participants. Many Project variables will determine the appropriate restriction or use of the transmitted file. Note also that some Digital Data may have more than one permitted use. Authorized Uses should not be in conflict with the underlying agreements between the Parties utilizing this protocol. For example, the Architect’s Instruments of Service have specific uses and ownership rights set forth in the prime agreement.

**Notes.** The Notes column allows the user to provide clarification of the items contained in the previous columns. For example, the table assumes that there is no specific author of the listed Digital Data, but if an item will be authored by a particular Party or Project Participant, the notes column can be used to designate that responsibility. Another example may be to note that a hard copy is to follow all transmissions of a particular type of Digital Data. Further, the notes could be used to capture particular nuances that cannot otherwise be captured in the Authorized Uses column. Remember that it is not necessary, however, to re-record responsibilities that are delineated elsewhere in the Project agreements.

An important concept to understand about the Section 3.1 table is its flexibility. While the table is pre-populated with data that is likely to be conveyed in a digital format, by no means should one construe that this is either the limit of Digital Data or that all of the items in the table must be provided in digital format. For example, a small-scale or simple project might only utilize Digital Data for communications via email with the balance executed utilizing traditional communication means. In this instance, the user can designate in the Section 3.1 table that the other items will be provided in a non-digital format, as shown below:

<b>Digital Data</b>	<b>Digital Data Format</b>	<b>Transmission Method</b>	<b>Authorized Uses</b>	<b>Notes (Enter #)</b>
§ 3.1.1 Project Agreements and Modifications	-	-	-	Non-Digital Data
§ 3.1.2 Project communications				
General communications	EM	EM	R	
Meeting notices	EM	EM	S	
Agendas	PDF	EMA	S	
Minutes	PDF	EMA	S	
Requests for information	EM	EMA	R,I	

Alternatively, users can delete the sections from the table that do not apply, as in the example below.

<b>Digital Data</b>	<b>Digital Data Format</b>	<b>Transmission Method</b>	<b>Authorized Uses</b>	<b>Notes (Enter #)</b>
<del>§ 3.1.1</del> Project Agreements and Modifications				
§ 3.1.2 <del>1</del> Project communications				
General communications	EM	EM	R	
Meeting notices	EM	EM	S	
Agendas	PDF	EM	S	
Minutes	PDF	EM	S	
Requests for information	EM	EM	R,I	

On the other hand, because the information is presented in an editable table, it is easy to add additional rows to include other Digital Data that a Project might require, as is done below.

<b>Digital Data</b>	<b>Digital Data Format</b>	<b>Transmission Method</b>	<b>Authorized Uses</b>	<b>Notes (Enter #)</b>
<b>§ 3.1.-21</b> Project communications				
General communications	EM	EM	R	
Meeting notices	EM	EM	S	
Agendas	PDF	EM	S	
Minutes				
Draft for Review	MSW	EMA	M	
Final for Record	PDF	EMA	S	
Requests for information	EM	EM	R,I	

The Section 3.1 table is intended to be completed utilizing short-hand abbreviations and Notes that are defined in Section 3.2. Each column in the Section 3.1 table has a corresponding list of definitions that are intended to simplify the completion of the Section 3.1 table. Standardizing the Digital Data Format, Transmission Method and Permitted Uses benefits all of the Project Participants by creating a uniform expectation for communication.

## **G201–2013 Section 3.2**

### **§ 3.2 Digital Data Protocol Table Definitions and Notes**

Section 3.2 is used to define the shorthand elements that populate the Digital Data Protocol Table. Except for the Digital Data column, each of the columns has a corresponding section in Section 3.2 that should be completed. Section 3.2 serves as the key to the abbreviations, acronyms, initialisms and notes used in the Section 3.1 table.

Section 3.2 provides terms that are commonly used and abbreviations for those terms. This does not mean that the Project Participants must use any or all of the suggested terms. The lists should be customized to match the specific practice and requirements presented by the work at hand. The most important consideration in completing these sections of the form is to avoid needlessly restricting the flow of information. There is a natural tendency to over complete the table with very specific software requirements, transmission procedures and usage permissions that may not support the flow of communication that is critical to project success. Additionally, the table in section 3.1 should not be viewed as a complete list of Digital Data available or required for the Project. The list should be viewed as a subset of deliverables required and is meant to establish efficiencies in communication between Project Participants where possible.

#### **Digital Data Format**

Today’s projects generate Digital Data in a myriad of formats. Architects, consulting engineers, contractors and others will complete the work utilizing a variety of hardware platforms and software applications. The Digital Data Format section is intended to establish the compatibility of a given piece of Digital Data amongst the Project Participants. The most ubiquitous example of this would be email which is almost universally compatible across platforms and applications. A two or three letter abbreviation may be used in the table:

EM—Email

Many communications are likely to be conducted directly via email. For communications requiring a more formal presentation, for example meeting minutes, a document attached to an email may be required. In order to assure that all Project Participants can utilize that Digital Data, a Microsoft Word Compatible format may be required in the instance where an editable file is desired:

MSW—Microsoft® Word Compatible

If a non-editable format is desired, the user might utilize this designation:

PDF—Portable Document Format; Adobe® Acrobat® or compatible

For certain Digital Data, compatibility may not be good enough. In those instances, uniformity may be the most important characteristic. For example, in a BIM environment, both the software and the version must be uniform amongst the participants in order to maximize the benefits that tool affords. In this instance the designation might be as follows:

RVT—Autodesk® Revit®—2011

Another example where uniformity may be important is the electronic review of shop drawings. Some commonly used software platforms track the annotations of a series of reviewers and allow each to be distinguished from the others, but the Project can only benefit if all of the Project Participants utilize the same software tool. In this instance the designation might be as follows:

BBM—Bluebeam® Revu®

The Digital Data format may also depend on the specific Authorized Use. Nevertheless, the table and this Section 3.2 are sufficiently flexible for users to develop a format that is sufficient to address their needs.

### **Transmission Method**

The various methods by which Digital Data may be transmitted are continuously changing. The entries that are provided in this section are the most prevalent possibilities, but of course the user can add and delete to suit the Project's specific requirements. Thought should be given to the importance of verification, both transmittal and receipt, of any specific item of Digital Data transmission. For some items it may be important to record when the Digital Data changed hands. The previously mentioned electronic shop drawing review process is an excellent example of an instance where this kind of accounting is important. The Transmission Method selected for submittals should provide this capability.

Some Projects may utilize Web-based project management software to which all of the Project Participants have access, providing the ability to download and upload Digital Data as well as process Requests for Information through the software itself. By employing project management software, the Project Participants should take care in establishing who will manage the software, how the Digital Data will be hosted (internally or by an entity external to the Project) as well as where those costs will be assigned. This should be coordinated with any centralized electronic document management system referenced in G201–2013 Article 2.

File size is another important consideration in selecting a transmission method. Almost hand-in-hand, internet speeds have increased with the file sizes generated by various software products. Nonetheless, most email systems place limits on individual attachments and overall mailbox sizes. Utilizing email attachment (EML) as a means of dispersing large files is probably not the most effective means available.

Lastly, when considering Transmission Method, consider the attention that the Digital Data warrants. Email is the prevalent means of project communication and it is not uncommon for large projects to generate tens, if not hundreds of thousands of emails. Determining how to differentiate critical information from more routine information is very difficult. Remember that the goal is to communicate with appropriate documentation.

### Authorized Uses of Digital Data

The Authorized Uses options set the rules for use of, and reliance on, the Digital Data by the Project Participant receiving or accessing the Digital Data. Note that it is very possible that some Project Digital Data may be distributed to multiple Project Participants, each of whom may have a different permitted use. If that is the case, the Project Participants would be well served to make use of the Notes column to indicate such distinctions and nuances regarding the Authorized Uses.

### Notes

Notes should be designated numerically in the table and described in detail in the Notes fill point in Section 3.2. This convention provides flexibility in completing the table. As previously discussed, responsibility for authorship is a likely topic to be included in the notes column as shown in this example:

Digital Data	Data Format	Transmission Method	Authorized Uses	Notes (Enter #)
§ 3.1.2 Project communications				
Minutes	PDF	EMA	S	1

Where note 1 is defined in Section 3.2 as follows:

1. Author: Design Phase—Architect; Construction Phase—Contractor

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## Guidance, Instructions and Commentary to AIA Document G202–2013, Project Building Information Modeling Protocol Form

E203–2013 records the Parties’ intentions regarding the use of Modeling on the Project, the Anticipated Uses of the Model and other basic assumptions about the roles and responsibilities of the Parties. E203–2013 also contractually obligates the Parties to discuss, establish, and follow protocols for the development and use of Models on the Project. G202–2013 is an extension of, and consistent with, those recorded intentions. The protocols, however, are not included in the actual Agreement because it is very likely that the protocols will need to evolve as the Project progresses and more Project Participants utilize the Model. Requiring the Project Participants to amend all of their agreements every time the protocols change would be burdensome and unrealistic from a practical standpoint, and would provide no real benefit.

It is expected as that as the Project circumstances change, the Project Participant will jointly revise and issue updated versions of G202–2013. This would be the case anytime information contained in G202–2013 is revised or expanded. Accordingly, as is the case with G201–2013, G202–2013 includes a fill point to allow the Parties to designate a revision number and date to differentiate between newer and older versions of the Building Information Modeling protocols.

Users must also be aware that pursuant to E203–2013 Section 1.3, if the protocols established in G202–2013 will result in a change in the scope of work or services warranting an adjustment in compensation, contract sum, schedule or contract time, the user must satisfy the notice requirement set forth in Section 1.3.3 in order to request an adjustment. The standard provision in E203–2013 Section 1.3 requires 30 days written notice, although users are permitted to provide a different time period for the notice requirement.

### Article 1 General Provisions

#### G202–2013 Section 1.1

§ 1.1 For each Project Participant that has incorporated the Project specific AIA Document E203™–2013, Building Information Modeling and Digital Data Protocol Exhibit, dated \_\_\_\_\_, into its agreement for the Project, identify and provide the contact information for individuals responsible for implementation of the Modeling protocols. If, for any Project Participant, more than one individual will be responsible for implementation of the Modeling protocols, list each individual separately and describe the unique Modeling Role assigned to each individual.

Modeling Role	Project Participant	Individual Responsible	Contact Information
---------------	---------------------	------------------------	---------------------

Each Project Participant in the Modeling process has a role and responsibility. Completing the table in this section clearly articulates those roles and provides the contact information to facilitate this important part of the planning process. The Project Participant is the entity that has incorporated E203–2013 into its Agreement and is for the identified Modeling Role. The Individual Responsible is the actual named person, and the primary point of contact for that particular Modeling Role. Contact Information should include information such as address, and more importantly, correspondence information deemed appropriate for timely and efficient communication, such as telephone numbers, mobile numbers, and e-mail addresses.

This table is a key example of the evolutionary nature of this document. In the early stages of the Project, the information may be limited to general scopes of work and the designation of a firm’s responsibility. As the



design progresses and Modeling begins, the table will be populated with specific responsible individuals and the list of Modeling Roles will grow.

The table can be extended to contain any number of individuals that have a separate Modeling Role. It may be that a single firm allocates responsibility for different portions of Modeling protocols to multiple individuals. Each would be recorded on a separate line. The key is to clearly indicate to all the Project Participants who the “go-to” person is for each area of responsibility and contact that person.

### **G202–2013 Section 1.2**

**§ 1.2** This document establishes the Modeling protocols for the Project. For purposes of these protocols, the Model is comprised of the following information and other data sets:

*(Indicate disciplines, separate models, and other data that will be included within the Model and governed by the Modeling protocols.)*

In addition to the fundamental Model Elements within the portions of the Project that are modeled, the Model is comprised of separate data sets and other non-geometric data. Section 1.2 allows the Project Participants to define exactly what is included in the Model for purposes of the Modeling protocols. This section is necessary given the vast amount of different information that can be included in, attached to, or referenced in Models. Large and complex Projects will also likely result in multiple Models, or aggregations of Models that include discrete portions of the Project. Section 1.2 allows the Project Participants to work from a common understanding as to what is included in the Model and therefore, what is governed and defined by the Modeling protocols. Accordingly, when a Project Participant indicates that a Model Element is developed to a Level of Development (LOD) 300, the other Project Participants understand that all the various items listed in this section, which are considered to be part of the Model Element, are also developed to LOD 300 (See also general discussion of LOD definitions G202–2013 Article 2.)

In determining what should be included, it may be worthwhile to address the expected Authorized Uses of the Model, which will help establish the appropriate LOD level. In many instances, the Authorized Use will inform what information should be included in the Model. Users should also be aware that this section may be approached differently depending on the relative size and/or complexity of the Project.

Examples of information that may be included in Section 1.2 are as follows:

- Architectural Models
- MEP Models
- Structural Engineering Models
- Linked Cost databases
- Specifications
- Operations and Maintenance Manuals
- Energy Efficiency Related Information
- Energy Analysis Models

### **G202–2013 Section 1.3**

**§ 1.3 Collaboration Protocols.** The Project Participants’ protocols for the collaborative utilization of the Model, if any, including communications protocols, a collaboration meeting schedule and colocation requirements, are as follows:

The collaboration strategy has been made a fill point so that individual teams can record their preferences for project initiation, ongoing collaboration, and regular forms of communication. Keep in mind that these activities are limited to the collaborative uses of the Model. The document anticipates the need for establishing a means of communicating changes to the Model, scheduling meetings for the Project Participants to discuss the technical aspects of Modeling and the potential of physical colocation. Other items that might be included here include data hosting strategies, wide area networking or other activities or technical implementations that facilitate collaborative utilization of the Model. If a Project Participant has a pre-established collaboration strategy, it may be referenced as necessary in this section.

This section can be as detailed as is necessary to describe the strategy, or may be used as the point to record reference to a separate document.

Because some of these decisions can have a significant impact on the Project Participants' activities, strategies or collaboration requirements should be fully described. If the strategy for the Project includes Project Participants being colocated, space, equipment, lodging and other factors will need to be addressed.

#### **G202–2013 Section 1.4**

**§ 1.4 Technical Requirements.** The technical requirements relating to the utilization of Building Information Modeling, including specific software and hardware requirements are as follows:

The Project Participants will utilize Section 1.4 to describe any software and hardware requirements for the Modeling for the Project. At a minimum, the software and release version that will be used for Modeling should be established, but it is likely that there will be a variety of uses for the Model, some of which may require specific software capabilities. Uses such as shared visualization, fabrication, construction model aggregation, energy performance analysis, scheduling and estimating are all possible instances where a specific technical compatibility may be important.

Project specific hardware requirements should also be indicated here, especially if it is a shared piece of hardware such as those used on site or provided for a colocation team. Another example would be the anticipated use of mobile technologies for collaboration software, visual recording and records access.

#### **G202–2013 Section 1.5**

**§ 1.5 Training and Support.** The parameters for any training or support program(s) that will be implemented with respect to any collaboration strategy or technical requirements are set forth below:

Because the use of Modeling is still in the adoption phases within the industry, the collaborative opportunities it presents are evolving. While individual Project Participants will have training and workflow process analysis to complete in order to participate fully in the Project, the Project Participants as a group may also need to complete a similar undertaking in order to collaborate as effectively as possible. The processes and underlying software may require training, support, and specific capabilities to implement and maintain. For example, the Project Participants may choose to have the entire team, including key subcontractors and owner representatives, participate in a Modeling orientation class designed to set expectations for general Model uses. Or, the Owner may have a specific operations and maintenance program that the Architect and the Contractor are required to understand and to align with as the Model is produced. If the Project Participants do not anticipate any new training or support to implement the collaboration strategies this should be noted as well.

**G202–2013 Section 1.6**

**§ 1.6 Model Standard.** The Model shall be developed in accordance with the following Model Standard, if any:

Standards served an important role in the adoption of Computer Assisted Design. It is unclear, however, what role standards will play with regard to Modeling. There are, in fact, proposed industry-wide standards being developed, and some industry professionals and owners have developed their own Modeling standards. The National Building Information Model Standards or NBIMS, may become a widely used standard as it develops. Other entities may produce similar or competing standards and the marketplace is continually evolving.

To the extent that a specific standard is utilized across parts or the entire spectrum of the Project, it should be recorded here. This clarifies expectations, and reduces inefficiency when coordinated early. Model Standards should be coordinated with Authorized Uses and software and hardware requirements to assure compatibility.

**G202–2013 Section 1.7**

**§ 1.7 Model Management Protocols and Processes.** The following Model Management Protocols and Processes shall apply to the Project only if specifically designated in the table below as being applicable. *(Designate the Model Management Protocols and Processes applicable to the Project in the second column of the table below. In the third column, indicate whether the detailed description of the Model Management Protocol or Process is located in Section 1.8 or in an attached exhibit. If in an exhibit, identify the exhibit.)*

<b>Model Management Protocols</b>	<b>Applicability to Project</b> <i>(Applicable or Not Applicable)</i>	<b>Location of Detailed Description</b> <i>(Section 1.8 below or in an attachment to this exhibit identified below)</i>
<b>§ 1.7.1</b> Model origin point, coordinate system, precision, file formats and units		
<b>§ 1.7.2</b> Model file storage location(s)		
<b>§ 1.7.3</b> Processes for transferring and accessing Model files		
<b>§ 1.7.4</b> Naming Conventions		
<b>§ 1.7.5</b> Processes for aggregating Model files from varying software platforms		
<b>§ 1.7.6</b> Model access rights		
<b>§ 1.7.7</b> Design coordination and clash detection procedures		
<b>§ 1.7.8</b> Model security requirements		

E203–2013 Section 4.8.2 lists a number of potential Model management protocols and processes. The table in G202–2013 Section 1.7 corresponds to the E203–2013 Section 4.8.2 list of potential Model management protocols and processes. In preparing the Modeling protocols, the Project Participants should utilize this table to identify the Model management protocols and processes that apply to the Project. Further, as the Model management protocols and processes may be very detailed, the table allows the Project Participants to identify where the detailed description of each applicable Model management protocol/process is located. Such a description can either be set forth in Section 1.8 or in a separate document that is referenced in the third column in the Section 1.7 table. Again, care should be taken to coordinate these protocols with established strategies, training, formats, etc.

### **G202–2013 Section 1.8**

**§ 1.8** Insert a description of each Model Management Protocol and Process identified in Section 1.7, if not further described in an exhibit attached to this document:

To the extent the Project Participants indicate in the table that the detailed description of a Model management protocol or process is provided in Section 1.8, this section provides an open fill point for such information. If an acceptable description already exists, it can be copied into Section 1.8 or a reference can be provided to an attached document inserted in the table. As use of G202–2013 increases over time, it is anticipated that previously developed descriptions of protocols and processes will become standardized for some Project Participants and much, if not all, of this table can be covered in a referenced document.

### **G202–2013 Section 1.9**

**§ 1.9** Terms in this document shall have the same meaning as those in AIA Document E203–2013.

By this cross-reference, the Project Participants recognize the use of the terminology found in E203–2013, including such terms as “Model,” “Project Participant,” “Level of Development,” and “Authorized Use.” Terms with specialized meanings are generally defined and capitalized in AIA Contract Documents.

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## **Article 2 Level of Development**

### **G202–2013 Section 2.1**

**§ 2.1** The Level of Development (LOD) descriptions, included in Section 2.2 through Section 2.6 below, identify the specific minimum content requirements and associated Authorized Uses for each Model Element at five progressively detailed levels of completeness. The Parties shall utilize the five LOD descriptions in completing the Model Element Table at Section 3.3.

The LOD framework utilized in G202–2013 is designed to accomplish two objectives with regard to Modeling. The LOD framework allows the Project Participants to efficiently communicate to one another the extent to which a Model Element has been developed by virtue of the defined minimum Model content requirement for each LOD. It also allows the Project Participants to communicate the extent to which a Model element may be used and relied on by virtue of the identified Authorized Uses of the Model. Accordingly, the LOD framework sets the floor for Model content and the ceiling for Model use.

With regard to the first objective, communicating the extent of development, it is important to recognize the difference between the detail of a Model Element and the development of a Model Element. In a Model, it is easy to misinterpret the meaning of the level of detail at which a Model Element is represented. To illustrate, consider traditional hand drawings. Hand drawings range from pen strokes on a napkin to detailed drawings with dimensions called out. The detailed hand drawing carries with it the designer’s significant thought and effort in providing that detail. Therefore, it is safe to assume that because the designer took the time and affirmative step to draw an item with great precision and to include extensive additional details (dimensioning, notes, etc.), the designer has thoroughly evaluated and vetted the information such that it is sufficiently developed for its intended purposes.

In a Model, however, it is inappropriate to assume that because a Model Element is depicted in extensive detail, it has been sufficiently developed for particular uses. The common use of library objects as placeholders in Modeling serves as a good example of why this is the case. A designer may pull a very detailed light fixture from an available object library and place that object in the Model, but only as a placeholder. The object, however, contains extensive detail (i.e., the manufacturer name, model number, etc.) and is precisely located despite the fact that the designer has not fully evaluated and decided upon this information. In other words, while the level of detail is extremely high, the level of development is extremely low. Therefore, unlike more traditional drawings, the visual level of detail is insufficient to accurately communicate a Model Element’s level of development as the detail can be misleading.

The Project Participants can utilize the LOD framework to overcome this issue. As is discussed below in more detail, each LOD allows the Project Participants to describe the content requirements associated with the LOD. For example, the standard language for LOD 200 indicates that the “[t]he Model Element is graphically represented within the Model as a generic system, object, or assembly with approximate quantities, size, shape, location, and orientation. Non-graphic information may also be attached to the Model Element.” Therefore, even if a Model Element is extremely detailed, if it is identified to only be at LOD 200, it is clear that the detailed information contained in the Model Element has not been fully developed. Rather, the content has only been developed up to the point of being a generic system, object, or assembly.

The second objective for the LOD framework, communicating the extent of use and reliance, is intended to address the fact that the possible uses of a Model (and all the information included in the Model) are potentially limitless. This has caused significant concern to design professionals that their work may be used for unintended purposes. This concern has led to the proliferation of onerous disclaimers essentially stating that, while the Model is being shared, it cannot be used or relied on. To address this issue, the LOD framework allows the Project Participants to identify “Authorized Uses” for the Model content at each LOD. Any Project Participant using a Model Element can look to the defined Authorized Uses in G202–2013 to know the extent to which it can use and rely on the information in the Model Element.

It should also be noted that there is no intended correspondence between an LOD and traditional design phases. Systems progress at different rates through the design process—for example, design of the structural system is usually ahead of the design of interior construction. At Schematic Design, the model will include many elements at LOD 200, but will also include many at LOD 100, as well as some at 300, and possibly even 400. Similarly, there is no such thing as an “LOD—model”. Models will invariably contain elements at various LODs.

In Article 2, the Project Participants define the actual Levels of Development that will be used on the Project. Each of the five standard Levels of Development consist of two components:

- **Model Element Content Requirements.** These sections provide a description of the minimal content requirements, in terms of representation within the Model, needed to qualify as the LOD. For an element to qualify as a given LOD, all the requirements for that LOD must be met. For example, at LOD 300, both specific assembly and final location must be determined.
- **Authorized Uses.** These sections describe the extent to which reliance can be placed on a Model Element, for certain identified uses. The Authorized Uses included in the standard text of G202–2013

are suggestions and based on some of the more common Model uses. Document users should modify and revise the Authorized Uses to fit their particular needs. The Authorized Uses should be coordinated with the list of Anticipated Model Authorized Uses provided in Section 4.3 of E203–2013. It is also important to understand, however, that the LOD framework and related Authorized Uses specified in these documents are tied to Project Milestones. A somewhat common perception in the industry is that, in the process of creating various Model Elements, they are “tagged” with an LOD. While this may be a useful exercise in the process of creating and revising Model Elements, such a “tag” does not automatically carry with it the Authorized Uses listed in these documents. This is because the LOD framework in these documents describes Model Elements content requirements and the related Authorized Uses *at defined points in time only*. Those defined points in time are the agreed upon Project Milestones set forth in the G202–2013 Section 3.3 Model Element Table.

The LOD definitions, as developed by the AIA and included in Article 2, are gaining acceptance as standard definitions in the industry. Recently the BIMForum<sup>2</sup> utilized the AIA’s LOD definitions in its Level of Development (LOD) Specification document. The LOD Specification utilizes the AIA’s LOD definitions and graphically illustrates characteristics of Model Elements of different building systems at different Levels of Development. The LOD Specification is currently in draft form and is available to download ([bimforum.org/lod](http://bimforum.org/lod)).<sup>3</sup>

## **G202–2013 Section 2.2**

### **§ 2.2 LOD 100**

**§ 2.2.1 Model Element Content Requirements.** The Model Element may be graphically represented in the Model with a symbol or other generic representation, but does not satisfy the requirements for LOD 200. Information related to the Model Element (i.e., cost per square foot, tonnage of HVAC, etc.) can be derived from other Model Elements.

At LOD 100, Model Elements are in the form of narratives, program information, etc. An LOD 100 Model Element is not geometrically modeled, but may be included in a Model as a symbol that does not represent actual geometry. It is also possible that the Model Element is not individually represented in the Model in any graphical sense, but its existence can be derived from other Model Elements that are graphically represented in the Model. For example, the existence of a mechanical system can be derived from the square foot quantity associated with the floor slab that is represented in the Model at LOD 200.

LOD 100 elements are extremely useful early in the design process. They enable the designer to embed a great deal of intelligence regarding such things as approximate costs and system capacities in a Model consisting of nothing more than floors, and then to quickly derive overall costs and capacities as the Model is changed. Some Model Elements may remain at LOD 100 through to the end of the Project. See the discussion under “Cost Estimating” below.

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<sup>2</sup> The BIMForum is an organization formed to facilitate and accelerate the adoption of building information modeling in the design and construction industry. For more information, visit [bimforum.org](http://bimforum.org).

<sup>3</sup> The AIA licensed the use of its copyrighted LOD definitions to the BIMForum to advance acceptance of a standardized set of LOD definitions in the design and construction industry.



Examples of LOD 100 Model Elements:

- **Structural.** A unit quantity of pounds of steel per square foot linked to floor or roof elements.
- **Architectural.** Architectural elements at LOD 100 are not geometrically modeled. Information is in narrative form, including such items as space uses and their areas, allowances for circulation space, and types and quality levels of finish. Elements such as elevators and stairways may be included only in the narrative, or may be placed in a 3D model as non-geometric symbols. The latter approach provides the ability to specify counts and approximate locations of elements without having to model specific geometries earlier than necessary.
- **Interior Construction.** A unit cost per square foot of floor area linked to floor elements, stairways indicated by symbols
- **HVAC.** A unit quantity of tons of cooling capacity per square foot linked to floor elements, terminal units indicated by symbols.
- **Electrical.** A unit quantity of watts per square foot power consumption linked to floor elements.
- **Conveyance.** A common practice for estimating elevators is to include a cost for the machine and a cost per stop. This can be facilitated with an LOD 100 symbol for the machine and one for an elevator stop on each floor.

## **G202–2013 Section 2.2.2**

### **§ 2.2.2 Authorized Uses**

**§ 2.2.2.1 Analysis.** The Model Element may be analyzed based on volume, area and orientation by application of generalized performance criteria assigned to other Model Elements.

**§ 2.2.2.2 Cost Estimating.** The Model Element may be used to develop a cost estimate based on current area, volume or similar conceptual estimating techniques (e.g., square feet of floor area, condominium unit, hospital bed, etc.).

**§ 2.2.2.3 Schedule.** The Model Element may be used for Project phasing and determination of overall Project duration.

**§ 2.2.2.4 Other Authorized Uses.** Additional Authorized Uses of the Model Element developed to LOD 100, if any, are as follows:

**Analysis.** LOD 100 Model Elements can only be analyzed at a very conceptual level, and only through reference to Model Elements at higher Levels of Development. For example, if the HVAC system is still at LOD 100, space volumes might be determined from other Model Elements modeled at a higher LOD in order to help determine the ventilation air volume requirements.

**Cost Estimating.** LOD 100 can be extremely useful for this purpose. There are many Model Elements that never need to be modeled in 3D, but for which enough information is present in the Model to support accurate cost estimating. Paint, for example, is almost never graphically represented in the Model, but information about it can be linked to or derived from wall Model Elements, allowing accurate quantities to be determined. The Model Element table in Article 3 can show that these Model Elements will remain at LOD 100 through the entire design process. This is invaluable in managing everyone’s expectations as to what will and will not be graphically modeled. If Cost Estimating is an Authorized Use, the estimating methods used will be conceptual (i.e., cost per floor square foot, per hotel key, per hospital bed, etc.) because of the nature of the Model Element content at LOD 100.

**Schedule.** LOD 100 Model Elements can be coupled with measurements and counts of Model Elements at higher Levels of Development to generate high-level phasing schedules and overall Project duration. With respect to Model Elements at LOD 100, however, given the conceptual nature of the information, they can only be scheduled in general or conceptual terms.

**Other Authorized Uses.** LOD 100, like all the subsequent LOD definitions, includes a fill point to allow for the addition of other Authorized Uses anticipated by the Project Participants.

## **G202–2013 Section 2.3**

### **§ 2.3 LOD 200**

**§ 2.3.1 Model Element Content Requirements.** The Model Element is graphically represented within the Model as a generic system, object, or assembly with approximate quantities, size, shape, location, and orientation. Non-graphic information may also be attached to the Model Element.

In general, LOD 200 elements are generic placeholders. This is the lowest level at which a geometric representation of a Model Element will appear. By contrast, in LOD 100, a Model Element may be graphically represented by a symbol, but it will lack any geometry. For an LOD 200 Model Element, the size, shape, location, orientation, and any data associated with the Model Element are approximate. LOD 200 elements are useful both early in the design process when specifics have not yet been determined (the designation of LOD 200 tells downstream users that the element may change) and in final Models when selection of certain items, such as lighting fixtures, is left to others or is met by a range of choices.

In addition to the geometric representation, the LOD 200 Model Element may also include non-graphic information. The most common type of non-graphic information attached to Model Elements is cost information. There are several ways of attaching this data. Many authoring tools include fields for such information within the objects themselves, and there are also several tools that allow objects to be linked to line items in a separate database. Other examples of non-graphic information that may be included in an LOD 200 Model Element are thermal characteristics of envelope components, weight of an object, manufacturer/model data, and hyperlinks to operation and maintenance manuals.

Examples:

**Structural.** The structural grid and approximate structural depths (perhaps based on rules of thumb) are shown. This is a prime example of the necessity of coordinating carefully with the G202–2013 Section 3.3 Model Element table. Structural elements are usually selected from a library of objects.—For example, A W 14X34, selected because it is close to what is likely to be needed and placed approximately, looks exactly like a W 14X34 that has been fully engineered and placed in its final location. The designation of LOD 200 tells everyone that, despite its level of detail, the Model Element is still generic and should only be relied on as such.

**Architectural:**

- Walls and roofs: modeled as 3D objects, but thickness, composition, and location are not finalized.
- Window penetrations: modeled, but dimensions and locations are not finalized.

**HVAC.** The purpose of HVAC Model Elements at LOD 200 is primarily to verify early in the design process that spaces such as above-ceiling plenums, shafts, and mechanical rooms are large enough.

Equipment and ductwork are modeled with as much accuracy as is reasonably possible in order to reserve space, but with the caveat that size and location may change as the design progresses. Often only large items or those in congested spaces are modeled at LOD 200—smaller items may be deferred until they can be modeled at higher Levels of Development.

**Electrical.** Lighting fixtures can be modeled as generic 3D objects to begin determination of layout and identification of coordination issues. Switch gear and major panels can also be modeled as generic 3D objects to aid in sizing and layout of equipment rooms and identification of access requirements.

## **G202–2013 Section 2.3.2**

### **§ 2.3.2 Authorized Uses**

**§ 2.3.2.1 Analysis.** The Model Element may be analyzed for performance of selected systems by application of generalized performance criteria assigned to the representative Model Elements.

**§ 2.3.2.2 Cost Estimating.** The Model Element may be used to develop cost estimates based on the approximate data provided and quantitative estimating techniques (e.g., volume and quantity of elements or type of system selected).

**§ 2.3.2.3 Schedule.** The Model Element may be used to show ordered, time-scaled appearance of major elements and systems.

**§ 2.3.2.4 Coordination.** The Model Element may be used for general coordination with other Model Elements in terms of its size, location and clearance to other Model Elements.

**§ 2.3.2.5 Other Authorized Uses.** Additional Authorized Uses of the Model Element developed to LOD 200, if any, are as follows:

**Analysis.** Any analysis based on LOD 200 elements will necessarily be very approximate. Model Elements at this LOD are useful for comparison of options, such as relative effects of building orientation on HVAC load.

**Cost Estimating.** Where costs of LOD 100 elements are based on measurement of other Model Elements, at LOD 200 the Model Element being estimated can be measured or counted directly. For example, at LOD 100 the cost of interior walls is based on floor area, whereas at LOD 200 the actual quantities of walls can be measured. Because the Model Elements are approximate in size and generic in composition, cost estimates based on LOD 200 should be stated as a range rather than as specific numbers.

**Schedule.** Scheduling is aided at LOD 200 by establishing quantities and durations for installation as well as lead times for equipment.

**Coordination.** Because final size and shape, as well as details such as access requirements and anchorage are not yet known, coordination is mostly limited to reservation of space and perhaps approximate routing of major elements.

## **G202–2013 Section 2.4**

### **§ 2.4 LOD 300**

**§ 2.4.1 Model Element Content Requirements.** The Model Element is graphically represented within the Model as a specific system, object, or assembly in terms of quantity, size, shape, location, and orientation. Non-graphic information may also be attached to the Model Element.

LOD 300 Model Elements are specific assemblies, such as specific wall types, engineered structural members, system components, etc. The design of the Model Element is developed in terms of composition, size, shape, location and orientation. Constructability and coordination of other building components may require change to some Model Elements after they are designated LOD 300, but such changes should be minimized as much as possible. Other information such as cost, thermal characteristics, specifications, warranty, and operation and maintenance instruction may be attached to the element.

Examples:

**Structural.** Columns, beams, and joists are represented at their actual engineered sizes, shapes, and locations. Flanges, bases and joist webs can be relied upon for spatial coordination with other elements such as piping and ductwork, but LOD 300 does not usually include connection details such as gusset plates, which can impact coordination. If there is congestion near a connection, that connection should be taken to a higher LOD in order to assure coordination. Smaller details such as bolts, stiffeners and bracing will not be modeled at this level. Data such as steel tonnage and concrete volume can be derived accurately.

**Architectural.** Walls and roofs are represented at their actual thickness. The component layers (GWB, studs, etc.) may not be represented, but in that case they must be included in the non-graphical information attached to the Model Element. If that is the case, the non-graphical information relating to component layers should be listed as part of the Model in G202–2013 Section 1.2.

**HVAC.** Ductwork is represented at the actual engineered size and location, including space for insulation and location of accessories such as turning vanes, dampers and access hatches. Assembly and installation details such as flanges and hangers may not be shown. Data such as CFM and weight may be included in the attached non-graphical data.

**Electrical.** Equipment, switch gear and panels are represented at their actual sizes and locations, and required access space and clearances are shown. Fixtures and devices are accurately located at their actual configuration.

One of the challenges that the industry faces as Modeling becomes increasingly prevalent is the differentiation of the Level of Development of a Model Element from the broader range of information that may be contained in the Model pertaining to that Model Element. A Model that is developed sufficiently to derive traditional construction documents will appropriately include Model Elements with Levels of Development ranging from 100 to 300. Level of Development defines, most importantly, the maximum reliance that a designated user may place upon a given Model Element. When completing the Model Element table in G202–2013 Section 3.3, Project Participants should consider first what reliance is necessary to meet the Project’s needs and then derive the Level of Development necessary to achieve that outcome.

With that in mind, consider that the electronic data set that comprises a Model will include a great deal more than the graphical information that is the three-dimensional representation of the Project. (The data, including non-geographic information, that comprises a Model is established in G202–2013 Section 1.2) For example, door hardware is most likely to be represented in the Model with meta-data embedded as a characteristic of the graphically represented door. A tabular or scheduled Model Element will display the information with a very high degree of specificity and reliance. Model Elements with this characteristic should use the Notes column of the table to identify the high level of reliance from non-graphical content.

Another important issue is the content of the two-dimensional representations of the Contract Documents. Two-dimensional views of the Model, which for many Projects will continue to form the basis of the construction contract, include annotations, line work and other data that do not fit comfortably within LOD definitions. For example, a curtain wall window sill detail might include dimensional detail and anchorage characteristics typical of an LOD 400 for a Model Element that is otherwise represented in the Model at LOD 200 or 300. Generally speaking, the presence of the detail does not cause the curtain wall system to be defined in the Model Element table as LOD 400, nor require that other Model Elements of the curtain wall be modeled to LOD 400. The Model Element, in this case the curtain wall, should be modeled to the Level of Development necessary to achieve the reliance that the Project Participants agree is necessary. The detail is provided to communicate the intent of the design in a specific location or way that supplements the more general Level of Development.

It must be kept in mind that designation of a Model Element as LOD 300 is a statement that it is reliable for the LOD 300 Authorized Uses. These uses are substantially more detailed than those at LOD 200, so, if all the content requirements in the definition are not yet met, the designation must be left at 200.

## **G202–2013 Section 2.4.2**

### **§ 2.4.2 Authorized Uses**

**§ 2.4.2.1 Analysis.** The Model Element may be analyzed for performance of selected systems by application of specific performance criteria assigned to the representative Model Element.

**§ 2.4.2.2 Cost Estimating.** The Model Element may be used to develop cost estimates suitable for procurement based on the specific data provided.

**§ 2.4.2.3 Schedule.** The Model Element may be used to show ordered, time-scaled appearance of detailed elements and systems.

**§ 2.4.2.4 Coordination.** The Model Element may be used for specific coordination with other Model Elements in terms of its size, location and clearance to other Model Elements including general operation issues.

**§ 2.4.2.5 Other Authorized Uses.** Additional Authorized Uses of the Model Element developed to LOD 300, if any, are as follows:

**Analysis.** The accuracy of an LOD 300 Model Element is sufficient to perform detailed analyses such as HVAC load determination and structural simulation. These processes, though, are carried out through specialized software, and may require additional non-graphical data. Many analysis programs do not support the import of Models, in which case, the Model Element will have to be re-modeled in the specific program's format.

**Cost Estimating.** LOD 300 Model Elements can be measured and counted accurately, and specific unit prices can be applied, giving an accurate cost for the line items represented by the element.

**Schedule.** The Model Element contains sufficient information to develop the tasks needed to construct it and their durations.

**Coordination.** Coordination of most major building systems can be performed through “clash detection” cycles. There may be instances such as highly congested areas or bulky structural connections, however, where a higher LOD is needed in order to assure clearances.

## G202–2013 Section 2.5

### § 2.5 LOD 400

**§ 2.5.1 Model Element Content Requirements.** The Model Element is graphically represented within the Model as a specific system, object or assembly in terms of size, shape, location, quantity, and orientation with detailing, fabrication, assembly, and installation information. Non-graphic information may also be attached to the Model Element.

A designation of LOD 400 indicates that detail beyond that included in LOD 300 is to be provided, similar to the kind of detail that is traditionally supplied in shop drawings. Structural connections, slab-edge embeds, curtain wall details, and other items requiring special fabrication fall into this category. A Model Element qualifies as LOD 400 once all information necessary for fabrication and installation has been resolved.

Note that “fabrication,” as the term is used here, refers to project-specific fabrication rather than manufacture of standard components. So, an LOD 400 store front Model Element would include the detail necessary to install it, but not to manufacture it. An LOD 400 custom metal railing Model Element would include detail necessary for manufacture.

Examples:

#### **Structural:**

- Steel: Model Element includes such details as bracing, stiffeners, masonry supports, lintels, etc.
- Elevated concrete slabs: Model Element includes rebar, accurate decking, etc.
- Slab on grade: includes gravel base and vapor barrier.
- Concrete block: shows if cells are grouted and any reinforcing within.

#### **Architectural:**

- Walls: metal and wood studs and blocking are shown
- Glass and glazing: thickness and airspace, if appropriate, are shown.
- Window and Door profiles are manufacturer specific and indicate connections, flashings and accessories.

**HVAC:** Model Elements include duct and pipe flanges, hangers, seismic bracing, etc. Required access clearances are modeled.

## G202–2013 Section 2.5.2

### § 2.5.2 Authorized Uses

**§ 2.5.2.1 Analysis.** The Model Element may be analyzed for performance of systems by application of actual performance criteria assigned to the Model Element.

**§ 2.5.2.2 Cost Estimating.** Costs are based on the actual cost of the Model Element at buyout.

**§ 2.5.2.3 Schedule.** The Model may be used to show ordered, time-scaled appearance of detailed specific elements and systems including construction means and methods.

**§ 2.5.2.4 Coordination.** The Model Element may be used for coordination with other Model Elements in terms of its size, location and clearance to other Model Elements, including fabrication, installation and detailed operation issues.

**§ 2.5.2.5 Other Authorized Uses.** Additional Authorized Uses of the Model Element developed to LOD 400, if any, are as follows:



Only selected Model Elements requiring significant detail will be taken to LOD 400. The Authorized Uses are similar to those for LOD 300, but more precision is provided.

## **G202–2013 Section 2.6**

### **§ 2.6 LOD 500**

**§ 2.6.1 Model Element Content Requirements.** The Model Element is a field verified representation in terms of size, shape, location, quantity, and orientation. Non-graphic information may also be attached to the Model Elements.

The LOD 500 field verified representation may be viewed as an “as-built Model. When an as-built Model is required, obviously not every aspect of the Project is field verified. LOD 500 provides for specific indication of which elements will be field verified. This allows the owner to be clear on what is and is not verified, and allows whoever is responsible for producing the as-built Model to determine and price the effort involved. For obvious reasons, an LOD 500 element is the last stage of representation for that Model Element. The end user will be able to rely upon the Model Element’s accuracy for use by other owner-initiated programs and systems that communicate with the Model software. Model data that in an earlier LOD indicated optional selections is replaced by the final installed choice.

Model Elements do not necessarily need to be brought up to LOD 400 before going to LOD 500. Likewise, not all Model Elements will be developed to be LOD 500 in order to be appropriate for the as-built Model. A Model Element representing paint might never be developed beyond LOD 100, but the owner may want the color field verified in certain areas.

It is important not to confuse the Phase or Project milestone with the act of field verification. If the Project milestone is called "Record Model" then the intersection of Model Elements contains the information for an LOD and for the Model Element Author. Some Model Elements might not require field verification, and, if they did not change during construction, that would not change. Those Model Elements would remain at the LOD to which they were previously developed for a "record model" or “as-built” phase. If a Model Element is required to be field verified, then the matrix would indicate them as LOD 500 and the Model Element Author would review the Project site against the Model and field verify the Model Element. There might also be change orders or field changes during construction that necessitate changes to the Model, in which the Model Elements would be updated, and recorded as LOD 500 and the matrix updated to show that condition. The Model Element Author in both cases would likely be the contractor or subcontractor or installer who thereby takes responsibility for the field verification of the Model Element.

Simply stated, a Project milestone called "record model," would consist of a mixture of Model Elements at LOD 100, 200, 300 and 400 that are not field verified and a mixture of LOD 500 Model Elements that have been field verified. The Project milestone of a "Record Model" is an imperfect activity, not unlike a "Record Drawing," as it represents the level agreed to by the Owner, Architect and Contractor as to the appropriate amount of effort for recording and investigating a Model that is prudent for the Owner’s use of the Model after construction.

## **G202–2013 Section 2.6.2**

### **§ 2.6.2 Authorized Uses**

Specific Authorized Uses of the Model Element developed to LOD 500, if any, are as follows:

The Authorized Use of a final as-built Model will carry on into the future. Potential uses might include: the Project repository of existing conditions, specifications and approved product data; operation and maintenance of the building either through owner developed or third party operated facility management software; management of scheduled and reactionary maintenance programs that can be catalogued and archived throughout the life of the building; and future renovations using the Model as a baseline for designing future modifications, such as in a commercial building that may have a turnover of tenants.

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## **Article 3 Model Elements**

### **G202–2013 Section 3.1.1**

#### **§ 3.1.1. Reliance on Model Elements**

**§ 3.1.1** At any particular Project milestone, a Project Participant may rely on the accuracy and completeness of a Model Element only to the extent consistent with the minimum data required for the Model Element's LOD for that Project milestone as identified below in the Model Element Table, even if the content of a specific Model Element includes data that exceeds the minimum data required for the identified LOD.

One of the primary objections to sharing Models (or even CAD drawings) is that they can appear to be at a higher Level of Development than the originator of the Model intends. See the discussion for G202–2013 Section 2.1 above.

Section 3.1.1 puts the Project Participants on notice that, regardless of whether a Model Element looks like it has been developed to a higher LOD, users of the Model Element can only rely on information at the LOD stated in the Model Element table. Thus, if the Model Element table states that the walls are at LOD 200, even though the detail of the Model Element exceeds the content requirement for an LOD 200, the engineer knows that they may change in type and location, and can defer final design of the ductwork in tight spaces until later.

### **G202–2013 Section 3.1.2**

#### **§ 3.1.2 Coordination and Model Refinement**

Where conflicts are found in the Model, regardless of the phase of the Project or LOD, the Project Participant that identifies the conflict shall promptly notify the Model Element Authors and the Project Participant identified in AIA Document E203–2013 Section 4.8 as being responsible for Model management. Upon such notification, the Model Element Author(s) shall act promptly to evaluate, mitigate and resolve the conflict in accordance with the processes established in Section 1.7.7, if applicable.

Modeling has inherent coordination benefits over other design tools. As more Project Participants make use of shared Model data, potential conflicts are likely to be discovered by someone other than the person responsible for the Model Element. Section 3.1.2 addresses the process to be followed in such instances.

First, any Project Participant that identifies a conflict must promptly notify both the Model Element Author and whoever is providing overall Model management. A classic example is the above-ceiling conflict. The Model Element Author (perhaps the HVAC engineer) may seek to change the ceiling height when there are other Project consequences to consider. Both the entity managing the Model and the Model Element

Author need to be part of the initial notification. The Model Element Author for other affected Model Elements may also need to be brought into the conversation.

Second, upon notification the Model Element Author (with assistance, or at least concurrence from the entity managing the Model) has a responsibility to promptly resolve the conflict consistent with the protocols established in G202–2013 Section 1.7.7 for design coordination and clash detection procedures.

## **G202–2013 Section 3.2**

### **§ 3.2 Table Instructions**

**§ 3.2.1** The Model Element table in Section 3.3 indicates the LOD to which each Model Element shall be developed to at each identified Project milestone and the Model Element Author.

**§ 3.2.2** Abbreviations for each Model Element Author to be used in the Model Element Table are as follows: *(Provide abbreviations such as “A—Architect,” or “C—Contractor.”)*

The Model Element Table is intended to be flexible and each Project will have its own unique requirements to identify the Model Element Author. If the table is used within a small firm, employee initials or indication of the consulting firm may be all that is needed. With greater complexity, other indications can be used.

## **G202–2013 Section 3.3**

### **§ 3.3 Model Element Table**

The Model Element Table is the heart of G202–2013 and will be of greatest value if it accurately reflects the input and expectations of the Project Participants. Sufficient time and effort should be allocated to the process of completing the Model Element Table because the interrelated activities and reliance are important to the success of the Project and the Project Participants.

Each horizontal row in the table corresponds to a Model Element—a building system, assembly, or component—i.e., physical objects in the building. Each major vertical column corresponds to a Project milestone. At the intersection of each Model Element line and Project milestone column are three cells of data. These are, in order, the Level of Development (LOD), Model Element Author (MEA), and Notes. Thus for each Model Element at the conclusion of a given Project milestone, the Project Participants will know who is doing what, when, and with any additional information included in the notes.

The table has two primary purposes:

- a) To define reliance: to assure that users of Models do not infer more precision or information than the designer of the system or component intends at a given point in the design process, and
- b) To coordinate between disciplines: to give the Project team an overview of who needs to provide what information at what time in order to meet milestones.

There are several approaches to the task of filling out the table. One that works well is to fill out the LOD and MEA cells with the Architect’s in-house standards for phase completion, and then adjust as necessary for the requirements of other disciplines. Beginning with the Architect’s standard has the advantage of minimizing changes to the usual workflow.

The identification of the MEA for each Model Element for each Project milestone is in many ways a communication tool. For conflicts it provides a map by which subsequent MEAs and the entity responsible for

managing the Model can navigate back through Model development to identify the relevant MEA(s) to obtain the best resolution to the conflict. The MEA(s) may not be the ultimate decision makers on the resolution or the entities that actually change the model. That will be done by the individual or entity responsible for the change. In the example of an above-ceiling conflict, the MEA for the ductwork (HVAC engineer) may participate in the resolution that is ultimately decided by the responsible design entity (the architect).

**Determining the Project Milestones.** The first step in completing the Model Element Table is to determine the points in the Project’s development at which the Model should reach a measurable condition. Traditionally, in architectural practice, these milestones correspond with the conclusion of the phases of the services—Schematic Design, Design Development, Construction Documents, etc.—and reflect the creation of deliverables and other materials that define the Project.


The Model Element Table allows the insertion of Project milestones that best fit the Project Participants’ needs. For example, there might be an interim submittal during a phase of the work where the Model would be used to develop a Guaranteed Maximum Price cost estimate. It will be important for the Project Participants to understand the Level of Development and reliance characteristics of the Model at this Project Milestone. In this case the column headings might look like this:

<p><b>§ 3.3 Model Element Table</b> Identify (1) the LOD required for each Model Element at each Project milestone, (2) the Model Element Author (MEA), and (3) references to any applicable notes found in Section 3.4.</p> <p><i>Insert abbreviations for each MEA identified in the table below, such as "A—Architect," or "C—Contractor."</i></p>	<b>Conceptual Design</b>			<b>Criteria Design</b>			<b>Detailed Design</b>			<b>50% Implementation Drawings</b>									<b>Notes</b> <small>(See Sec. 3.4)</small>		
	LOD	MEA	Notes	LOD	MEA	Notes	LOD	MEA	Notes	LOD	MEA	Notes	LOD	MEA	Notes	LOD	MEA	Notes	LOD	MEA	Notes
Model Elements utilizing UniFormat™																					

Carefully consider each Project milestone. The Model constantly evolves through the life of the Project and each unique milestone involves efforts that may or may not be adequately represented in the compensation structure.

**Construction Classification System.** Once the milestones have been established, the next step is to identify the Model Elements that will be represented by the Model. The Table in Section 3.3 can be created in three different formats. The first format utilizes the CSI UniFormat™ classification system as the default system to identify Model Elements.<sup>4</sup>

UniFormat is useful because it is based on locations, systems, and assemblies within a building. A Model Element can always be assigned a unique UniFormat code, while it may comprise multiple CSI MasterFormat® codes (which relate to the trades needed to produce the system or assembly). The breakdown for the line items, however, can be part of on any system-based scheme.

<sup>4</sup>  UniFormat™ is produced jointly by The Construction Specifications Institute (CSI) and Construction Specifications Canada (CSC). U.S. copyright is held by CSI and Canadian copyright by CSC. All Rights Reserved. For more information, visit [csinet.org/uniformat](http://csinet.org/uniformat).

The second format utilizes OmniClass™ Table 21.<sup>5</sup> Table 21 is another system-based scheme consisting of a number of different elements. According to the OmniClass Web site, the OmniClass elements represent “a major component, assembly, or *“construction entity part which, in itself or in combination with other parts, fulfills a predominating function of the construction entity”* (ISO 12006-2). Predominating functions include, but are not limited to, supporting, enclosing, servicing, and equipping a facility. Functional descriptions can also include a process or an activity.”

The final format available allows the user to create the Model Element Table without any pre-filled system for identifying the Model Elements. This allows the users to customize the list of Model Elements to fit their specific needs and utilize their own system of identifying Model Elements.

The selection of the classification scheme to be used is an important one that should consider the variables of the Project, such as the complexity of the classification system, the number of differing users, and their familiarity with the classification system. If much of the Model content will be evaluated by another use, such as a cost estimating program or energy model program, the right classification may be the one that translates well to other programs. In other words, there is no single best system for classification of the Model content. Project Participants should seek the best fit for the Project circumstances. It should also be noted that regardless of the classification system used, G202–2013 allows users to tailor the Model Elements in the Model Element Table to fit their specific needs.

The following is an example of a table that has been edited to add additional Model Elements to the preexisting UniFormat elements.

§ 3.3 Model Element Table <i>Identify (1) the LOD required for each Model Element at each Project milestone, (2) the Model Element Author (MEA), and (3) references to any applicable notes found in Section 3.4.</i>  <i>Insert abbreviations for each MEA identified in the table below, such as “A—Architect,” or “C—Contractor.”</i>		Schematic Design			Design Development			Construction Documents												Notes <i>(See Sec. 3.4)</i>
		LOD	MEA	Notes	LOD	MEA	Notes	LOD	MEA	Notes	LOD	MEA	Notes	LOD	MEA	Notes	LOD	MEA	Notes	
<b>Model Elements utilizing UniFormat™</b>																				
B SHELL	B10 Superstructure	B1010	Floor Construction	100	A		200	S		300	S									
		B1020	Roof Construction	100	A															
			Framing Elements				200	S		300	S									
			Roof Openings				200	A/M		300	S									

Another use of the Model Element Table is to define what will not be included in the Model to make clear to all Project Participants what they can expect to find in the Model, and what they will have to look for in other sources of information. The example below shows the initialism “NM” used to indicate Model Elements that are not intended to be modeled. Carefully consider the difference between construction elements that are to be included in the Project, but not modeled, versus elements that are not in the Project. Project elements may be adequately designed or specified in data such as specifications or non-model drawings, schedules or other data. The Model Element table is primarily intended to define and coordinate the progressive development of Model data over the Project Milestones. As such, it is a

<sup>5</sup> OmniClass™ is produced by CSI (hereinafter “The OmniClass Secretariat”) in its role as Secretariat for the OmniClass Development Committee. U.S. copyright is held by The OmniClass Secretariat. All Rights Reserved. For more information on OmniClass, visit [omniclass.org](http://omniclass.org). OmniClass is intended to be an open standard; however, certain limitations to its use apply. For more information, visit [omniclass.org/license](http://omniclass.org/license).

somewhat limited subset of all the Project data and this should be discussed with all the Project Participants. For example an estimator may rely on the LOD of the Model Elements but may also have to look outside the Model to complete the estimate.

<b>§ 3.3 Model Element Table</b> <i>Identify (1) the LOD required for each Model Element at each Project milestone, (2) the Model Element Author (MEA), and (3) references to any applicable notes found in Section 3.4.</i>  <i>Insert abbreviations for each MEA identified in the table below, such as "A—Architect," or "C—Contractor."</i>				Conceptual Design			Criteria Development			Detailed Design			Implementation Drawings						Notes <small>(See Sec. 3.4)</small>		
				LOD	MEA	Notes	LOD	MEA	Notes	LOD	MEA	Notes	LOD	MEA	Notes	LOD	MEA	Notes	LOD	MEA	Notes
<b>Model Elements utilizing Uniformat™</b>																					
G BUILDING SITEWORK	G10 Site Preparation	G1010 Site Clearing	NM			NM			NM			NM									
		G1020 Site Demolition & Relocations	NM			NM			NM			NM									
		G1030 Site Earthwork	NM			NM			NM			NM									

**Assigning the Level of Development.** With the milestones and construction classification system set in the Table, the Model Element Author and LOD can now be assigned.

Some Model Elements may not be developed beyond a lower LOD simply because it is not useful to the Project. Door Hardware may not be modeled, fire extinguisher cabinets may never be modeled higher than LOD 200, and typical light fixtures may remain modeled as graphic symbols only. Careful coordination of the needed LOD in consideration of the reliance and Authorized Uses of all the Project Participants is the most important single task of completing the G202–2013.

At its core, the Model Element Table is intended as a communication tool to aid in the efficient development of the Model across disciplines and to facilitate Model sharing amongst the Project Participants. It should be noted that, for design professionals, the LOD designations in the Model Element Table are not intended to define, replace, or alter the applicable standard of care.

Further, users should understand that the AIA’s LOD definitions are intended to reflect the generally accepted and current standards in the industry. It may be necessary to modify the AIA LOD definitions and/or to supplement them in order to fit the particular needs of the Project. For example, the BIMForum’s Level of Development (LOD) Specification referenced above adopts the AIA’s standard LOD definitions and suggests an additional LOD 350. According to BIMForum, LOD 350 can be used to define model elements sufficiently developed to facilitate coordination between disciplines—e.g., clash detection/avoidance, layout, etc. The requirements for this level are higher than those for 300, but not as high as those for 400. Thus it was designated LOD 350.<sup>6</sup> If users feel this interim LOD, or any other LOD definition, is appropriate for use on their Project, it can be easily inserted into G202–2013.

**Adding Clarifying Notes to the Table.** In many instances additional information would be useful regarding some of the Model Elements. The Model Element table provides space to relate longer notes to a numerical or other key placed in the notes cells.

There are two levels of notes contained within the table. On the far right, the notes column provides information for the Model Element, regardless of the Project phase or milestone point. For example, a preselected elevator manufacturer can be identified or a sustainable objective for daylighting can be noted in the windows line item.

<sup>6</sup> The LOD Specification is currently in draft form and is available to download ([bimforum.org/lof](http://bimforum.org/lof)).



The notes columns for each individual milestone allow for modification of the specification for each Model Element for that milestone only. For example, a Model Element might have an LOD of 200, with a note that indicates that it may be used for LOD 300 cost estimating purposes. This is also a good place to identify the granularity at which the Model Element is represented. For example, at an early milestone, electrical conduit might be represented only where it is 2” or larger, whereas at a later milestone conduit 1” and larger might be represented.

### **G202–2013 Section 3.4**

#### **§ 3.4 Model Element Table Notes**

Notes: *(List by number shown on table.)*

To the extent the Project Participants utilize the notes columns in the Model Element table, Section 3.4 provides a space to list the notes and their meaning.

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## RESOURCES

The list and links below provide resources relevant to Building Information Modeling and Digital Practice. Suggestions for resources are welcome for subsequent editions of this Guide.

**buildingSMART alliance.** The buildingSMART alliance™ is a council of the National Institute of Building Sciences devoted to helping to make the North American real property industry more efficient by leading the creation of tools and standards that allow projects to be built electronically before they are built physically using Building Information Modeling. As part of its efforts, the buildingSMART alliance has developed a National Building Information Modeling Standard, which it is currently revising. For more information, visit [buildingSMARTalliance.org](http://buildingSMARTalliance.org).

**BIMForum.** The BIMForum is an organization formed to facilitate and accelerate the adoption of building information modeling in the design and construction industry. For more information, visit [bimforum.org](http://bimforum.org).

**Penn State University's Computer Integrated Construction (CIC) Research Program.** The CIC Research Program's goal is to develop and disseminate structured procedures for the adoption and implementation of BIM on Projects and in Organizations. In furtherance of this effort, the CIC Research Program has published significant amounts of research related to Modeling as well as a detailed BIM Execution Plan and a planning guide for owners interested in implementing BIM on projects. For more information, visit Penn State's BIM Planning Web site ([bim.psu.edu](http://bim.psu.edu)).

**General Services Administration's 3D-4D-BIM Program.** According to GSA's Web site "the primary goal of the National 3D-4D-BIM Program is to promote value-added digital visualization, simulation and optimization technologies to increase quality and efficiency throughout GSA project lifecycles and beyond. The long-term objective is to use innovative 3D, 4D, and BIM technologies to complement, leverage, and improve existing technologies to achieve major quality and productivity improvements." For more information, visit GSA's 3D-4D-BIM Web site ([gsa.gov/portal/category/21062](http://gsa.gov/portal/category/21062)).

**AIA's Technology in Architectural Practice Knowledge Community (TAP).** TAP serves as a resource for AIA members, the profession, and the public in the deployment of computer technology in the practice of architecture. Technology in Architectural Practice monitors the development of computer technology and its impact on architecture practice and the entire building life cycle, including design, construction, facility management, and retirement or reuse. For more information, visit the AIA's TAP Web site ([network.aia.org/TechnologyinArchitecturalPractice](http://network.aia.org/TechnologyinArchitecturalPractice)).

**AIA's Center for Integrated Practice (CIP).** CIP is the AIA's online clearinghouse that contains useful reports, relevant industry events, contractual information, podcasts and discussion forums necessary to lead the industry toward collaborative design practices. The purpose of the CIP is to help remove barriers to collaboration, serve as a collector and conductor of project delivery outcomes and research, and develop resources and tools for AIA members, the profession, and the public. For more information, visit the AIA's CIP Web site ([network.aia.org/CenterforIntegratedPractice](http://network.aia.org/CenterforIntegratedPractice)).

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