

Georgia Tech Digital Building Laboratory

Proposed Participation in Phase II of the Building Information Modeling for Masonry Initiative

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This proposal presents the scope and budget for the participation of the Georgia Tech Digital Building Laboratory in Phase II of the Building Information for Modeling Initiative. The Georgia Tech DBL was the prime contractor on the first phase of the BIM-M initiative, which produced a 5-year roadmap for the industry (In this short document, we assume that the reader is familiar with the roadmap). At this time, the industry, under the leadership of the BIM-M Executive Committee and David Biggs and, is raising funds to implement the roadmap. From our perspective, Georgia Tech has four roles to play in the Phase II project, as follows:

1. Sole contractor (providing leadership and staff) for one or more of the projects identified by the roadmap
2. Participant (but not leader) in one or more of the tasks identified by the roadmap
3. Participant and expert, providing guidance and oversight to the overall BIM-M effort – to the degree requested by the BIM-M Executive Committee and David Biggs
4. Representative of the BIM-M initiative to national-international organizations such as the National BIM Standard

Phase II of the initiative is intended to start in June 2013 and run until January 2015, approximately 18 months. Four projects were slated for Phase II of the initiative:

1. Masonry Unit Model Definition
2. BIM-M Benchmark
3. Masonry Wall Model Definition
4. BIM-M Contractor Input

In the text below, we discuss our recommendations for initiating and our participation in the four projects slated to be started in Phase II of the roadmap.

Project 1: Masonry Unit Model Definition: Masonry suppliers seem eager to begin the work necessary to produce electronic product catalogs in a neutral, BIM-readable format, and so we feel that this project is ready to start. Tyler Witthuhn, the chair of the Masonry Supplier Working Group, and current staff engineer at NCMA, will be joining Georgia Tech in Fall 2013, to begin graduate work in Civil Engineering. He will be supported by funds earmarked for the BIM-M initiative, much of which will come from the NCMA contribution. We suggest that Tyler will work on this project while at Georgia Tech, with oversight from Georgia Tech faculty member and a graduate student with an engineering databases focus. The possible addition of the BIA to the BIM-M Executive Board will hopefully allow us to initiate this project with strong representation from both clay and concrete masonry perspectives.

Project 2: BIM-M Benchmark: From our perspective, the primary project that needs to begin immediately is the BIM-M Benchmark. In this project, we will begin working with software suppliers to

assess the current state of the art of BIM platforms and their ability to represent masonry. Georgia Tech will continue developing relationships with the software vendors (many are already members of the GT Digital Building Lab) and determining the steps necessary to integrate our vision of BIM for masonry into commercial software. This is a high-level project that cannot be delegated to junior staff – it will require the attention of Profs. Gentry and Eastman, along with support from a graduate student in design computing.

Project 3: Masonry Wall Model Definition: The masonry wall model definition is important, and will ultimately form the basis for the BIM-M software specification. Initial work will begin with the both AMWG and SMWG with on-going input from the Georgia Tech DBL. A progress report on the overall progress of the Georgia Tech projects will be provided to the Executive Committee in January 2014 and a recommendation for further work on this project will be made at that time.

Project 4: BIM-M Contractor Input: We feel strongly that mason contractors (and the masons who work for them) represent the stakeholder group that needs the most attention as masonry practice transitions to BIM. The early goal of the BIM-M Contractor project is to clearly define the BIM needs for masonry contractors – and to document masonry project workflows, so that we can understand the information requirements for masonry contractors, which will ultimately be embedded into BIM. In addition, masonry contractors have identified the need for BIM training, and we anticipate that an early success of the project will be to begin providing training to mason contractors and their staff. The BIM-M initiative will need to begin formally characterizing the needs of mason contractors, in a way that can be communicated to software companies (both BIM software authoring tools and allied tools for scheduling and cost estimating). The Georgia Tech DBL does not envision being the prime contractor on this project, but does expect to participate in a limited fashion. We suggest that the prime contractor provide a work plan and budget based on the project description found in the roadmap. We will help elicit and document mason contractor needs, so as to represent these needs in our discussions with BIM software providers, and to document these needs in the BIM-M software specification. Therefore, it is our intent to participate in MCAA and IMI activities with masons and mason contractors.

Project Management

Our experience with the Phase I Roadmap project is that the day-to-day management of the BIM-M activity falls to David Biggs and Russell Gentry. Therefore, we include time and travel resources in our budget for co-managing the overall activity. In addition, we all recognize that the success of the activity depends on publicity and publications – and these activities will be funded by the project management budget dedicated to the Georgia Tech DBL budget.

Georgia Tech Project Participants

Russell Gentry will continue to be the Georgia Tech lead on the project. He will supervise the graduate students working on the benchmark and masonry unit definition project. He will coordinate day-to-day activities of the BIM-M initiative with David Biggs, and serve as a liaison of the project to the National BIM Standard. He will act as the lead on the BIM Benchmark and will co-lead the Masonry Unit Definition project with Tyler Witthuhn, representing concrete masonry and another participant from the clay masonry industry. Chuck Eastman will continue to advise the BIM-M initiative and Georgia Tech. He will work with Dr. Gentry to strengthen ties to BIM software suppliers and will review the scope of the initial BIM challenge. Prof. Eastman has limited time to dedicate to the project, but his expertise brings great value to the team. Tristan Al-Haddad will continue to participate in the BIM-M project, but may have limited scope of work in the early stages of Phase 2. He will definitely participate in the Masonry

Wall Definition Project. Tyler Witthuhn, currently at NCMA, is considered a Georgia Tech resource in the context of this proposal as he will be joining Georgia Tech as graduate student in Civil Engineering in Fall 2013. His primary role will be in the Masonry Unit Definition project. The Georgia Tech Digital Building Lab is fortunate to have a large number of graduate students who have worked on BIM and even on Masonry BIM, including Andres Cavieres, Francisco Valdes, Shani Sharif and Laura Florez. All of these students participated in the BIM-M Symposium at Georgia Tech. It is likely that one or two of these students will be supported by the BIM-M initiative in Phase 2 – working on a day to day basis on BIM-M supported projects.

Georgia Tech Budget Request for Phase II

The budget request from Georgia Tech is outlined in the attached spreadsheet. The budget request is for an 18 month (1.5 years) period of performance and is summarized below, broken out on an activity basis. Non-GT costs are not included.

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| Project 1: Masonry Unit Definition Project | |
| Project 2: BIM-M Benchmark Project | |
| Project 3: Masonry Wall Model Definition – Phase II | |
| Project 4: BIM-M Contractor Input – Phases II and III | |
| Total | |

The majority of the funds requested here are for graduate student support – with the working assumption that one architecture student, one design computing student, and one civil engineering student (Tyler Witthuhn) will receive support to work on the projects. The loaded rate (stipend plus tuition) for one graduate student for one year at Georgia Tech is around \$50,000.