Contract Form for Building Information Modelling (BIM) Projects Applied on Construction Industry in Vietnam

Dinh Tuan Hai¹, Nguyen Nam Trung² and Khuat Dieu Huyen³
¹Faculty of Urban Management, Hanoi Architectural University, VIETNAM
²Power Engineering & Consulting JS Company 3, Hochiminh City, VIETNAM
³Undergraduate Student on Construction Economics, Hanoi Architectural University, VIETNAM

E-mail: haidt@hau.edu.vn

Abstract. Building Information Modelling (BIM) is a process supported by various tools, technologies and contracts involving the generation and management of digital representations of physical and functional characteristics of places. In general, BIM is researched and applied in many different fields related to construction investment projects. This paper focuses on analyzing the trends of the world in establishing BIM contract terms and assessing the sample of construction contract form in Vietnam piloted BIM. As a result, it proposes next steps for contract terms in projects using BIM in near future in Vietnam.

1. Introduction
Nowadays, digital transformation is happening strongly in all the field of the economy in Vietnam. In construction industry, consultants and contractors are positively shifting from the traditional design – construction model to building information modelling (BIM). However, the legal corridors to transfer are very slow to keep up with the development of the economy and the change of technology.

At the end of 2016, The Prime Minister issued the decision 2500/QD-TTg approving a project to apply the building information model (BIM) in construction activities and operation management. The progress expectation is to prepare necessary conditions and skills training for BIM application in 2017-2019 period; between 2018 and 2010, pilot implementation in some sites, and from 2021, Ministry of Construction will issue a guide circular, BIM can be widely applied in that areas. An important task in this project is to build the legal framework for BIM application by developing basic contract forms with the content of BIM application [1].

This paper compares the trends of incorporating BIM provisions into contract forms in countries to create a contractual framework for projects applying BIM in Vietnam. In additiona, the paper evaluates the appendix form of BIM model used in the pilot projects (issued under Decision 1057/QD-BXD [2]) and proposes some solutions for basic contract samples with the content of BIM application.

2. The Main Trends on BIM Appendix in International Contract Forms
International practices for contracts in projects involving BIM can be classified into several different categories. However in the scope of study, this paper reviews the sample provisions for BIM in turn as below:

- BCA BIM PC form from Singapore Building and Construction Authority
• CIC/BIM Pro form from British Construction Industry Council
• Model X10 in the NEC4 contract from the British Association of Civil Engineers
• BIM Guide in the 2017 FIDIC Contract belonged to the International Association of Consulting Engineers FIDIC

2.1. The Sample Specific Condition of BIM Contract From Singapore Building and Construction Authority (BCA BIM PC)

Singapore Building and Construction Authority (BCA) gave a approach: only one BIM appendix apply to all different types of contract and project, including design, execution, general contract, etc (Table 1). BCA BIM PC considers as one of the pioneering BIM appendix in the world, with the first publishing in the year 2012 and the second version issued in 2015 [3]. The key contents of BCA BIM PC include:

1. Definitions
2. General provisions
3. Building Information Modeling Management
4. BIM Implementation Plan
5. Risk Distribution
6. Intellectual Property Rights
7. Electronic Data Exchange
8. The main contract is terminated, canceled or expired

| Protocol | Contents | Key Clauses |
|----------|----------|-------------|
| BCA BIM Particular Conditions | 1. Definitions 2. General Principles 3. BIM Management 4. BIM Execution Plan 5. Risk Allocation 6. Intellectual Property Rights 7. Electronic Data Exchange 8. Termination, Rescission or Expiry of Principal Agreement | 2.1. The Principal Agreement for any party who is carrying out BIM shall include the BIM Particular Conditions. 2.2. Any party to the Project who has the BIM Particular Conditions in its Principal Agreement shall, by a term in the relevant agreement or contract, include the BIM Particular Conditions in the respective agreement or contract with all of its subconsultants, suppliers and subcontractors who will be involved in carrying out BIM for the Project. 2.5. In the event of any inconsistency between the BIM Particular Conditions and the relevant Principal Agreement, the BIM Particular Conditions shall prevail. |

The BCA guidelines require that in the project, the BIM appendix must be included in the contract by all involved parties including sub-contractors, suppliers, joint venture agreements, etc. Moreover, when conflicting between the terms of the BIM Appendix and the main contract, the BIM Appendix will take precedence. The specific contents of these terms are as below:

2.1. The main contract of all BIM implementers should supplement these BIM Specific Conditions
2.2. All parties having BIM specific conditions in the contract will add them to contracts/agreements with all sub-consultants, subcontractors and suppliers related to BIM implementation for the project.
2.10. In case, there is an inconsistency between BIM specific conditions and other relating terms in the main contract, the provisions of the BIM Specific Conditions will use.

For enormous projects, a large chain of subcontractors and suppliers will be dominated by this BIM appendix as all parties in the project are obliged to include this BIM in all their respective contracts. Your contract is related to that BIM project.
2.2. BIM Protocols of UK Construction Industry Council (CIC/BIM Pro)

Similar to the approach of BCA BIM PC, British Construction Industry Council (Construction Industry Council - CIC) had issued the BIM Protocols for universal application. The BIM Protocols will be applied for the whole project, universal application for all kinds of contract (design, construction, equipment supply, EPC, sub-contractor, sub-consultant, partnership agreement,…), and all kinds of project (traditional, EPC, PPP…) (Table 2). Protocols CIC/BIM Pro was issued for the first time in 2013 and the second edition was issued in 2018 [4]. The contents of CIC/BIM Pro include the following:

1. Definitions
2. Coordination and Resolution of Conflicts
3. Obligations of the Employer
4. Obligations of the Project Team Member
5. Electronic Data Exchange
6. Use of Information
7. Liability in Respect of Proprietary Material
8. Remedies – Security
9. Termination
10. Defined Terms

| Protocol    | Contents                                      | Key Clauses                                                                 |
|-------------|-----------------------------------------------|-----------------------------------------------------------------------------|
| CIC BIM     | 1. Definitions                                | 1.4 This Protocol forms part of the Agreement. In the event of any conflict  |
| Protocol    | 2. Coordination and Resolution of Conflicts   | or inconsistency between the Protocol and any other documents contained in    |
|             | 3. Obligations of the Employer               | and/or forming part of the Agreement, such conflict or inconsistency shall   |
|             | 4. Obligations of the Project Team Member    | be resolved in accordance with the Agreement…                               |
|             | 5. Electronic Data Exchange                   |                                                                             |
|             | 6. Use of Information                         |                                                                             |
|             | 7. Liability in Respect of Proprietary Material |                                                                             |
|             | 8. Remedies – Security                        |                                                                             |
|             | 9. Termination                                |                                                                             |
|             | 10. Defined Terms                             |                                                                             |

In the event of the terms in this protocol conflicts with the main Agreement, the terms of this Protocol shall prevail. Specifically as follows:

1.4. This Protocol forms part of the Agreement. In the event of any conflict or inconsistency between the Protocol and any other documents contained in and/or forming part of the Agreement, such conflict or inconsistency shall be resolved in accordance with the Agreement…. if the Agreement does not include provisions stating how such conflict or inconsistency should be resolved, the terms of this Protocol shall prevail.

2.3. Secondary Option X10 in NEC4 Construction Contract of UK Institution of Civil Engineer

NEC4 construction contract was issued in 2014 which include 14 forms of contract with multiple prepared small secondary Option for the contract creator to come up with the most appropriate set of contracts for the project [5]. The main contract forms:

- ECC: Engineering and Construction Contract
- PSC: Professional Service Contract
- TSC: Term Service Contract
- SC: Supply Contract
- DBOC: Design Build Operate Contract
- FC: Framework Contract
• DRSC: Dispute Resolution Service Contract
In addition, there is short-term contracts and subcontractor contracts as follows:
• ECS: Engineering and Construction Subcontract
• ECSC: Engineering and Construction Short Contract
• ECSS: Engineering and Construction Short Subcontract
• PSS: Professional Service Subcontract
• PSSC: Professional Service Short Contract
• TSS: Term Service Subcontract
• TSSC: Term Service Short Contract
• SSC: Supply Short Contract

In comparison with NEC3 (2013), NEC4 (2017) had changed the contents of secondary Option X10 from “Employer’s Agent” to “Information Modelling”. Secondary Option X10 is applied into multiple types of contract such as ECC, PSC, TSC, SC, DBOC [6]. The content of secondary Option X10 about Information Modelling includes the following items:
1. Defined terms;
2. Collaborations;
3. Early warning;
4. Information execution plan;
5. Compensation events;
6. Use of information model;
7. Liability.

2.4. BIM Guidance in FIDIC 2017 From International Federation of Consulting Engineers
In the end of 2017 International Federation of Consulting Engineer FIDIC had given the first guide to draft the FIDIC contract in the BIM application project at the end of FIDIC 2017 [7]. FIDIC’s guidelines do not provide specific provisions but only list the points to note, needing revisions and most importantly recommend the participation of experts in design, construction, laws, and insurance when compiling the contract for BIM project [8]. The list of terms and items that need revision when applying BIM is as follows:
1. Key general conditions: 1.1 Definitions; 1.3 Notices and Other Communications; 1.5 Priority of documents; 1.10 Employer use Contractor’s document; 1.11 Contractor use Employer’s document; 1.15 Limitation of Liability.
2. The Employer: 2.3 The Employer’s personel and Other Contractors; 2.5 Site data and Items of Reference
3. The Engineer : 3.2 Duties and authorities of the Engineer ;
4. The Contractor : 4.1 General duties of the Contract; 4.6 Collaboration; 4.7 Positioning of control points; 4.9 Quality managment and compliance verification system; 4.20 Progress report
5. Design: 5.2 Document of the Contractor;
6. Staff and Labour: 6.8 Supervision of the Contractor; 6.10 Contractor’s document
8. Commencement, Delay, and Suspension of Work : 8.3 Implementation plan
9. Completion test : 9.1 The Contractor’s Obligation
13. Change and Adjustment : 13.3 Change procedure
17. Construction supervision and remedy: 17.3 Intellectual and Industrial Property rights; 17.4 Remedy by the Contractor; 17.5 Remedy by the Employer; 17.6 Sharing of remedy duties
19. Insurance: 19.2.6 Other insurance required by applicable law and local practice

To undertake this review, BIM guidelines from FIDIC require for every contract in every applicable project for BIM to have at least 3 experts in design, construction and legal to join the compilation of the terms about BIM, and the professional liability insurance specialist is needed for the project's BIM management role, and the BIM project contract should be checked by a lawyer.
eventually. Although FIDIC announced the goal when preparing the FIDIC 217 contract is prepared by engineers for engineers, in reality BIM guidelines do not help the consulting engineers to use it independently, but emphasize the role of lawyers in contract control [7]. The mentioned approach by FIDIC will have difficulties to fit in Vietnam, because the consulting companies and project management units usually rely on engineers with legal knowledge and project management experience to draft a contract, rather than to have their own.

3. Contract for BIM – Applying For Construction Investment Projects in Vietnam

3.1. Regulations for Contracts

In Vietnam, there are distinct regulations of contract regarding to particular fields. According to the Civil Code Law 2015 of Vietnam [9], the most common-based regulations, contract refers to an agreement between the parties to establish, change or terminate civil rights and obligations. There is no detailed regulation about the contract form in the Civil Code Law 2015 but the contract suggestion might following content as below:

- a) Object of Contract;
- b) Quantity, Quality;
- c) Cost, Method of Payment;
- d) Duration, Location, Method of implementing contract;
- e) Right, Obligations of each party;
- f) Liability of breach of contract;
- g) Method of dispute settlement.

In the construction investment field, the Construction Law No.50/2014/QH13 [10] defines construction contract as civil contract that is agreed by document between the employer and the contractor to implement one part or all of the work within construction investment acts. Depending on the characteristics and content of implemented work, the construction contract includes:

- a) Contract of Construction Consulting;
- b) Construction contract;
- c) Equipment supply and installation contract for construction;
- d) Design – Procurement of materials, equipment – construction contract, turnkey contract;
- e) Other construction contracts.

3. In the form of applicable contractual prices, construction contracts includes:

- a) Lump sum contract;
- b) Fixed unit price contract;
- c) Adjusted unit price contract;
- d) Time based contract;
- e) Expense plus fee contract;
- f) Combined price contract;
- g) Other construction contract;

Construction Law No.50/2014/QH13[10] also stated that the construction law include the followings:

- a) Applicable legal basis;
- b) Applicable language;
- c) Content and volume of work;
- d) Quality, technical requirement of the work, acceptance and hand over;
- e) Time and schedule of contract;
- f) Contract price, advance, currency used in payment and payment of construction contract;
- g) Contract guarantee, guarantee of contract advance;
- h) Adjustment of construction contract;
- i) Rights and obligations of the parties in the construction contract;
- j) Responsibility of contract breach, bonus and penalty;
- k) Suspension and termination of contract;
m) Resolve of construction contract disputes;
 n) Risks and force majeure events;
 o) Finalization and liquidation of construction contract;
 p) Other contents

3.2. Ordinary Contract Forms for Construction Investment Projects
Currently, the popular contract sets for the projects in Vietnam are the contracts forms issued by Ministry of Construction (MOC) and Ministry of Planning and Invesment (MPI) (from [11] to [17]).

| Implement Method | Contract Form | Circular on the Form of Contract from MPI | Circular on the Form of Contract from MOC |
|------------------|--------------|------------------------------------------|------------------------------------------|
| Traditional      | Consulting contract form | 01/2015/TT-BKHĐT | 08/2016/TT-BXD |
|                  | Procurement of goods contract form | 05/2015/TT-BKHĐT | | |
|                  | Construction contract form | 03/2015/TT-BKHĐT | 09/2016/TT-BXD |
| Mixed contract EP/EC/ EPC | EPC contract form | FIDIC 1999 (11/2016/TT-BKHĐT) | 30/2016/TT-BXD |

3.3. Contract Form Guidelines for the Pilot BIM Construction Investment Projects
The first legal document mentions BIM is the Construction Law No. 50/QH13/2014 since 2014, in which BIM is mentioned in Article 4 and 66. Since then, many other regulations has gradually provide frameworks for BIM applications [10]. On the year of 2017, the Ministry of Construction announced the Decision No.1057/QĐ-BXD providing the temporary guidance on the application of Building Information Modeling (BIM) in the pilot phase, in which part II includes some forms of contract for the BIM applied projects, a general guidelines and an appendix form BIM [2]. In the general guidelines, “To minimize the adjustment when applying the issued contract form, the contents of regulations relating to BIM need to be drafted in the form of appendix which is added to the main contract”. The contents of BIM protocols include six main articles as follows:

- Article 1. Definitions and interpretations
- Article 2. General provisions
- Article 3. Managing BIM
- Article 4. BIM implementation plan
- Article 5. Risk distribution
- Article 6. Intellectual property rights for the BIM model

The note-worthy points in the contents of BIM protocols:

2.1. When it is needed to implement BIM for the project, the parties in the main contract will add the BIM protocols to the main contract
2.2. All parties in the project that have BIM protocols in the main contract will supplement the BIM protocols into all contracts with the sub-consultant, sub-contractor or the supplier that involved with BIM implementation in the project.
2.6. Unless specifically requested in the BIM implementation plan, BIM model is not meant to provide the level of detail to accurately extract the materials, specifications and estimated volumes
2.10. In the event of inconsistency between BIM protocols and the relevant articles in the main contract, the provisions in the BIM protocol will prevail.

Through comparision, we can see that the BIM protocol in 1057/QD-BXD is based on BCA BIM PC from Singapore. This approach creates a potential risk for the project when a BIM protocol can control every contracts and agreements between all parties in the project, especially all the main
contract in the project all follow the civil law whole the content of the BIM protocol come from a country which apply common law.

4. The Survey on the Pilot BIM Construction Investment Projects

In 2018, Ministry of Contruction have announced the list of construction investment projects that pilot the application of BIM in the Decision No.362/QĐ-BXD. This interview was done by sending surveyed questionaires to selected persons who works in 20 pilot BIM projects listed in Decision 362/QD-BXD [18]. There are 7 interview answers among 34 recipients, count for 20%. Information of interviewees as follows:

- Occupation of interviewees: two interviewees from the Employer, three from Project Management Board, one from Design Consultant and one from BIM Consultant
- Source of fund/ or investment type: three interviewees working in Public investment projects, two in state-owned enterprise investment projects, one in private investment project, one skipped answer.

Results of the interviews/survey are provided in Table 4 and Table 5. Meanwhile, the authors have carried the interviews for some BIM pilot project members in the list, the summary project is as follow:

- Contract form: 3/10 use the contract form from MIP, 3/10 use the contract form from MOC, 2/10 use the contract form from FIDIC and 2/10 draft their own contract without any guidelines.
- BIM protocol: 4/6 surveyed individuals did not use BIM protocol in the decision No.1057/QĐ-BXD; 4/5 surveyed individuals requested to create each BIM protocols for every specific contract types (design consulting, BIM consulting, construction, EPC,…)

Table 4. Current Contractual Practices in Pilot BIM Projects

| No | Questionaire                                      | Answers                                                                 | %   |
|----|---------------------------------------------------|------------------------------------------------------------------------|-----|
| 1  | What contract form was used for your pilot BIM projects? | Contract forms issued by Ministry of Planning and Investment 33.3 |     |
|    |                                                   | Contract forms issued by Ministry of Construction                      | 33.3|
|    |                                                   | FIDIC Contract forms                                                  | 16.7|
|    |                                                   | Contract form issued by Bank/Lender                                    | 0   |
|    |                                                   | NEC Contract forms                                                    | 0   |
|    |                                                   | Bespoke contract, no standard contract form was used                   | 16.7|
| 2  | How were the BIM models incorporated or referred to in the contract documents? | There is specific Protocol/ Particular Conditions on BIM 85.7         |     |
|    |                                                   | Using Employer’s Information Requirements (EIRs)                      | 0   |
|    |                                                   | Requirement for BIM models was mentioned in the “output”, “handover information” and “as-built document” of the Contract | 14.3|
|    |                                                   | There is no referenced to BIM                                         | 0   |
| 3  | How were the procedure for managing a common data environment (CDE) set out in the contract documents of your pilot BIM project? | Owner manages CDE 57.1                                               |     |
|    |                                                   | Design Consultant manages CDE                                         | 28.6|
|    |                                                   | General Contractor manages CDE                                        | 0   |
|    |                                                   | BIM Consultant manages CDE                                            | 14.3|
|    |                                                   | Does not mentioned                                                   | 0   |
| 4  | Who fulfilled the role of BIM Manager in your BIM Projects? | Owner 0                                                              |     |
|    |                                                   | BIM Consultant                                                       | 50  |
|    |                                                   | Design Consultant                                                   | 50  |
|    |                                                   | EPC/EC Contractor                                                   | 0   |
| No | Questionaire                                                                 | Answers                                                                                   | %  |
|----|-----------------------------------------------------------------------------|------------------------------------------------------------------------------------------|----|
| 5  | How were the interoperability dealt with in bidding /contracts documents of your pilot BIM projects? | Specific choice of software platform                                                      | 57.1 |
|    |                                                                             | Requirements on export/import in IFC platform                                             | 14.3 |
|    |                                                                             | Does not mentioned                                                                        | 28.6 |
| 6  | What documents described the roles and responsibilities of each party in relation to BIM? | Contract Agreement                                                                      | 42.9 |
|    |                                                                             | Contract Protocol/ Appendix/Addendum                                                       | 28.6 |
|    |                                                                             | BIM Execution Plan                                                                        | 14.3 |
|    |                                                                             | Refer to BIM Guidelines 1057/QD-BXD                                                       | 0   |
|    |                                                                             | Does not mentioned                                                                        | 14.3 |
| 7  | What documents described deadlines for each party to achieve agreed progress in its BIM model development to the agreed Level of Development and in its comments/ feedback on BIM models? | Contract Agreement                                                                      | 40  |
|    |                                                                             | Contract Appendix on Project Schedule                                                     | 40  |
|    |                                                                             | BIM Execution Plan (BEP)                                                                  | 0   |
|    |                                                                             | Employer’s Information Requirements                                                      | 0   |
|    |                                                                             | No requirements                                                                           | 20.0 |
| 8  | In what ways did your BIM project involve appraisal/ supervision consultants providing comments/ feedback on BIM models? | Providing comments/feedbacks on CDE                                                      | 0   |
|    |                                                                             | Review 3D Model on CDE, provide comments/feedback by emails                             | 50.0 |
|    |                                                                             | Review on drawings (pdf/hardcopies) and comment by report/ letter                       | 50.0 |
| 9  | On what basis did you arrange ownership and licensing of intellectual property rights in BIM models and their permitted uses | Same as with drawings, no difference                                                     | 33.3 |
|    |                                                                             | The copyright and Intellectual Property rights are shifted to the Owner                  | 33.3 |
|    |                                                                             | Model Author own the copyright and intellectual property right, Owner is not permit to use BIM Model in other projects | 0   |
|    |                                                                             | No formal agreement                                                                       | 33.3 |

Table 5. Application of BIM Protocol/Particular Conditions

| No | Questionaire                                                                 | Answers                                                                                   | %  |
|----|-----------------------------------------------------------------------------|------------------------------------------------------------------------------------------|----|
| 1  | Have you ever applied BIM Protocol, issued by in part II of Guideline attached to Decision 1057/QD-BXD by Ministry of Construction | Yes                                                                                       | 33.3 |
|    |                                                                             | No                                                                                       | 66.7 |
| 2  | Are you aware of Interim Guidelines on application of Building Information Modelling (BIM) in pilot stage, issued by Decision 1057/QD-BXD by Ministry of Construction | Yes                                                                                       | 66.7 |
|    |                                                                             | No                                                                                       | 33.3 |
| 3  | In your opinion, how is BIM Protocol should be                              | As per current form: a common BIM protocol which will be annexed to other contracts      | 20.0 |
|    |                                                                             | Should be revised to separated BIM protocols for construction contract, design consulting contract, BIM consulting contract, EPC contract | 80.0 |

Through the above statistics and surveys, the author finds that the application of contracts in the form of Ministries and FIDIC is popular in BIM-applying projects in Vietnam. Thus, among the trends
to adjust contracts for BIM projects, NEC4’s approach with separate BIM appendices for each type of contract and the project will be more suitable than using only one Appendix or just giving general instructions only.

5. Conclusions and Recommendations
Through the survey, it can be seen that there are three main trends in the world when adjusting the contract for the BIM application projects:

a) A single BIM protocols for all contracts, and for all types of project: CIC/BIM Pro from UK and BCA BIM PC from Singapore.

b) One form includes multiple BIM protocols for each type of contract and each type of project: secondary option X10 in UK’s NEC4

c) General guidelines to self-revise the provisions that need amendments: BIM Advisory Notes in FIDIC 2017.

Through the comparison between the issued BIM protocols by decision No.1057/QĐ-BXD and the approach of BCA BIM PC. The survey results of some members participating in the BIM pilot project show the need to develop a set of BIM protocol for the types of construction contract that are commonly used in Vietnam.

References
[1] Prime Minister (2016), Decision 2500/QĐ-TTg 2016 approving the project of applying Building Information Model in construction activities and management operation.

[2] Ministry of Construction (2017), Declaration 1057/QĐ-BXD dated 11/10/2017 temporarily guide the Building Information Modeling in pilot phase.

[3] Building and Construction Authority (2015), BIM Particular Conditions. Version 2. Singapore(2015).

[4] Construction Industry Council - CIC (2018), Building Information Modelling (BIM) Protocol, Second Edition, London.

[5] NEC (2017), NEC4-box one- the contracts, 2nd Edition, NEC, London

[6] Centre of Construction Law and Dispute Resolution - King’s College London (2016), Enabling BIM through Procurement and Contracts, London.

[7] International Federation of Consulting Engineers - FIDIC (2019), Contract provisions of construction equipment and design, Construction Publishing House, Hanoi.

[8] International Federation of Consulting Engineers - FIDIC (2019), Contract Users’ Newsletter, Issue One.

[9] Congress of the Social Republic of Vietnam (2015), Civil law no.91/2015/QH13 dated 24th November 2015.

[10] Congress of the Social Republic of Vietnam (2014), Construction law no.50/2014/QH13 dated 18th June 2014.

[11] Ministry of Planning and Investment, Circular No.01/2015/TT-BKHĐT dated 15/4/2015 detailing the preparation of Request for Proposals, bidding documents, and request for consulting services

[12] Ministry of Planning and Investment, Circular no. 03/2015/TT-BKHĐT dated 6/5/2015 detailing the preparation of bidding documents for construction

[13] Ministry of Planning and Investment, Circular no 05/2015/TT-BKHĐT dated 16/6/2015 detailing the preparation of bidding documents for goods procurement

[14] Ministry of Construction (2016), Circular No. 08/2016/TT-BXD dated 10/3/2016 guiding on the consulting contract

[15] Ministry of Construction (2016), Circular No.09/2016/TT-BXD dated 10/3/2016 guiding on the construction contract

[16] Ministry of Construction (2016), Circular No30/2016/TT-BXD dated 30/12/2016 guiding the contract of Engineering design - Procurement of technological equipment and construction (EPC contract)
[17] Ministry of Planning and Investment (2016), Circular No.11/2016/TT-BKHĐT dated 26/7/2017 guiding the preparation of bidding documents for Engineering design, Procurement and Construction (EPC).

[18] Ministry of Construction of Vietnam (2018), Decision 362/QD-BXD on Announcement on list of pilot projects involved Building Information Modelling (BIM) during construction and operation-maintenance of facilities.