RISK ALLOCATION & SUBSEQUENT LEGAL ISSUES IN CONSTRUCTION CONTRACTS

Deepankar Sharma*

Priya Bhatnagar*

Abstract

The paper aims to shade intensive lights over risks allocation and its related aspects embedded with a construction contract. For this purpose, an in-depth study of different types of risks which generally arisen in large sized construction projects is presented within the paper. For making the context clear, the paper elaborates some significant information about construction contract and different parties which are generally involved within a construction contract. In this section, the nature of different construction contracts is also discussed, which becomes a prime reason behind different types of risk in the contract. Further, the paper discusses different types of risks availed by different parties so that raw data for proper risk allocation can be collected. Further section of the paper is related with the risk allocation in a construction contract. The section explores disclaimer method for transferring risk from one party to other. Furthermore different roles played by different parties in the mitigation of risks in a contraction contract are also explained in the paper.

The contractor under a construction contract is invariably required to carry out and complete the project by a specified date. This requirement is often accompanied by an obligation to produce a construction programme and to keep it up to date. There may be a contract administrator with powers to approve the programme. This paper identifies matters in relation to these obligations over which the parties can be in dispute and examines the legal principles governing their resolution. The matters include the contractor's choice of type of programming method,

* National Law University, Jodhpur, Pursuing LL.M. (Corporate Laws), 2013-14 Batch

consequences of the contractor's failure to comply with its programming obligations, the contractor's right to complete earlier than required and delay from concurrent causes.

Contracts for the construction of roads, buildings and other works present certain special features from the legal perspective. Having regard to the importance of these contracts in the economic life of the country, it is proper that their legal significance be examined in some detail.

Table of contents

Introduction

Most construction contracts require the contractor to carry out and complete the project by a specified date or within a specified period from a commencement date. Intermediate dates may also be specified for the completion of sections of the works. Such dates are referred to as "Sectional Completion Dates." Sadly, such timetables are not complied with in many cases. The proneness of projects to delay has attracted the attention of researchers all over the world. A related problem is high incidence of disputes between the parties as to the sharing of financial responsibility for the consequences of delay. Most of these studies have been aimed at identifying the immediate as well as the root causes of project delays. A common theme from these studies is that project uncertainty and complexity provide a major challenge to the time management capabilities of the parties and their professional advisers and that, for many projects, delay is inevitable.

In existing uncertain and highly fluctuating business environment, risk identification and its proper allocation has become an integral aspect of business management practices undertaken by commercial business organizations. In the same manner, proper risk allocation becomes quite essential and crucial in the industries like construction in which, a huge amount of investments are done by management of business organizations. The failure of proper identification and allocation of risks in major civil, mining and other types of construction projects can lead the concerning parties to pay some dire costs as they are needed to invest some significant amount of time, cost and efforts in construction project. Owing to this reason, it becomes quite essential for management of such types of projects and organizations to undertake some of crucial commercial as well as contractual arrangements for the purpose of allocating and minimizing risks involved within their project.

In recent period of time, there are different examples and incidents in which large construction projects have fallen out due to inappropriate allocation of risks during the entire project. These fallouts in construction projects can be proved quite critical as significant amount of resources have been employed within such projects. In the light of this fact, the paper aims to reflect different types of risks involved within a specific construction project and different measures employed for the purpose of allocating risk in the most effective manner so that the entire

execution of a project as well as outcomes of the project can be managed. In existing dynamic business environment, different norms and practices related with risk allocation process have been changed quite intensively. A number of different measures and models have been started to be used in normal practices by construction business organization in order to manage as well as allocate risks involved in construction contract. The paper highlights different measures which are generally adopted by organizations to manage and allocate risks in different construction related projects.

Construction contracts and parties involved

In order to mitigate risks involved in a construction project, there is a need of some crucial and effective contractual agreements and norms which can govern different construction related practices and norms. The legal agreement among different parties involved within a construction project is known as construction contract. The prime purpose of such contracts is to regulate the entire construction project and mitigate different types of risks. A contract can only be considered as a construction project if it fulfils three different criteria listed as below:

- The project should carry out construction related operations and practices only.
- In the project different construction related operation must be carried out by the concerning party or by other under a subcontract
- In the project, involved parties either provide their own labor or the labor of others in order to carry out different operations related with a construction project carried out at a large scale.

Nature of construction contracts

The nature of contracts done for construction project is quite complex and distinguished from other types of contracts. There are a number of different specific aspects of a construction project such as size and length of the project, high degree of complexities, huge amount of investment made in the project, and fluctuations in the price agreed and amount of work done in the project with the progress of the project. These differentiated aspects of construction projects

signify that the nature of conduction projects can be different with that of other types of contracts.

Parties involved within a construction contract

In a construction contract there are a number of different parties involved which own their stakes in the contracts. They possess different interests, roles and responsibilities within a construction contracts.

Employer or owner of a project: The employer is a juristic person who owns all rights and ownership of a construction site and project.

Contractor: Contractor is the person who comes under the contract with employer to perform different activities related with construction project.

Subcontractor: subcontractors are the party who contracts with main contractor or employer to perform different supportive construction related activities. Subcontracts not only assist the contractor but it also help in providing different supplies, services, or engineering and specified construction works.

Tenderer: Tenderer is a person who submits a tender offer for the purpose of accomplishing different construction related activities.

Agent: Agent is the party who is not the employer or employee but acts on the behalf of the employer of project.

These are some of the prominent parties involved within a construction contract who are responsible for different activities and practices included within a construction project. In the risk allocation process, these parties mitigate different types of risks involved within the construction project.

Types of risks in a construction contract

Risk is one of the most essential and integral aspects of practices undertaken within a construction projects. In this aspect, Abrahamson Principles of risk allocation in different

construction projects can be considered quite effective. As per the principle, different parties involved within the construction contract face different types of risks in large or small sized construction project. Some of the risks are common for all the parties involved within contract, while some risks are specifically bore by a specific party.

Risks for the owner of the project

As per Abrahamson Principles, owner of the project is known as Principal party. In this context, some critical risks bore by Principal party of the construction contract can be elaborated as below

(1) **Land Acquisition risk:**

This is the prime risk for the principal of the project. The owner of the project needs to have proper and legal acquisition of the land for his construction project. In the absence of proper acquisition of land, the entire project can be hindered due to different legal obligations.

(2) **Insufficient resources**

Insufficiency of some of crucial resources like land, finance, human power can also be proved critical risk for a construction project. As construction project are commenced for a longer period of time, sufficient amount of resources for contingent situation is quite necessary for the owner.

(3) **Delay in the project completion**

The completion of project on time is one of the major factors of the success of a construction project. Delay in the overall completion of the project due to natural or manmade reasons, can cost quite heavily for the owner of the project as he has to invest a significant amount of money and time in such types of projects.

(4) **Increased cost of the project**

As generally construction projects are carried out for longer period of time, fluctuations in the overall cost and prices of raw material and labour over such a long period of time are quite natural phenomena. These fluctuations may lead to increase the projected cost of the entire project. Although, principals generally undertake contingency reserves for such type of

fluctuations, yet still these increments in cost of the project can be probed quite critical risk for the project owner.

(5) **Deficiencies in infrastructure or services**

There are a number of different other infrastructural services that can affect the successful completion of the project. For instance, for a residential or commercial construction project, there is need of better electricity and water facilities and better access of road. Deficiencies in infrastructure or services can lead to make the project unsuccessful.

(6) **Design and construction defects**

Defects in designing and constructing of the project can lead to efficiency of the internal operations and quality of the output of the project. In this direction, the project owner needs to have proper monitoring and effective evaluation of outcome of the project.

(7) **Political risk**

Different types of political risks such as rules and regulations of government regarding construction activities, frequent changes in the government and its priorities, and incentives or tax levied by the government over different construction related activities, can hamper the success of construction projects in the most aversive manner.

(8) **Market risk**

In addition to other risks, risk related with market characteristics as well as trends can also be considered some of the critical risks availed by the owner of the project. Different types of market risks such as advertising of the project, Switching of potential customers of the project towards other alternative projects, and competitive rivalry within the construction industry are some of the prominent market risks which decrease the profitability of the construction project for its owner.

Risk assessments and evaluation

After having a proper understanding about different types of risks associated with a construction contract, parties involved within the projects is required to assess and evaluate risks. In the process of risk assessment, existing as well as potential risks related with the project are indentified and a proper evaluation of impact and ways to mitigate such risks are done. In this direction, there are five important steps for the purpose of assessing and managing risk in a construction contract.

(1) In the first step of risk assessment, some potential sources of occurrence of risk related with the project are spotted. For this purpose, external as well as internal environment analysis for the project is done so that potential weakness of the different crucial factor can be revealed.

(2) In the second step, the entities or areas of operation, which can be got affected due to such risks are revealed. The main purpose of this practice is to identify the potential impact of such risk over the successful completion of the entire project.

(3) Assessment of the degree to which, the risk can harm the construction project and parties related with the construction contract, is done in the third step of the risk assessment.

(4) In the fourth step of the risk assessment plan, some of the crucial measures and procedures for reducing the potential risks are determined. In the step the alignment of the requirement of different measures of risk mitigation is done with the existing available resources.

(5) This is the final step of the risk assessment plan in which, the drafting of the final risk allocation plan is done with the help of thorough review of the different element of risks which can hamper the proper accomplishment of the construction contract.

Control of risk

While assessing and evaluating different types of risks, it is quite essential to reveal the entities or areas where the control of the risk lies. On this basis, overall risk to the project can be graded in five different categories.

(1) Unpredictable External Risk: Risk which cannot be controlled by either project manager or project owner comes under these categories. Such types of risks are quite unpredictable. These risks are arisen and controlled by interference of third party such as society, and government within the consecution contract.

(2) Predictable but uncertain risks: some risks can also hamper the project, which are uncertain despite having predictable nature. For example natural disaster and bad weather are expected in the project but the degree to which, they will affect the project cannot be assured. These risks are also beyond the control of human being. However, for addressing such risk, the owner of the project undertakes agreement with other external parties such as banks, insurance companies.

(3) Internal technical risks: These risks arise due to faults in deigning of projects, tools and techniques used in the project and technical breakdown of the operations of the project. These risks are in the control of the subcontractors who provides facilities of engineering and other technical assistance to the main contractor of the project (Cooke, and Williams 2004).

(4) Non technical internal risks: These types of risks arise due to the failure of proper management of the entire project activities. These risks take place because of lack of proper control and cooperation between different teams employed within a construction. The control of such types of risks is undertaken by both the project owner and contractor of the project.

(5) Legal risks: These risks are related with the incompatibility of the construction project with local legal rules and regulations. Legal risks can only be controlled by the owner of the project as he possesses all the legal rights and responsibility of the entire project.

Allocation of risk in construction contract

The assessment and evaluation of different types of risks involved within a construction contract provide a competent base for allocation of risks throughout the entire project. As there are a number of different risks associated with a construction contract, it becomes quite crucial to have proper allocation of risks to the party that can handle and mitigate risk in the most effective manner. The allocation of risks in the contract is done by prioritizing the risks elements related with the construction project. The prioritization of risks allows the project manager to have a

proper order in which different resources are to be employed in the risk mitigation process. In a construction contract, different risks can be prioritized on the basis of two different criteria:

- Probability of the occurrence of risk during the entire project
- Severity of the ultimate impact of the risk on the successful completion of the entire construction project

The allocation of risks in the contract is done on the basis of these two aspects. As per such criteria, risks, which occur within the project quite frequently and have severe and strategic impact over the project are taken and allocated on priority. Before the allocation and treatment of risk, proper and effective prioritization of different risks is quite necessary as it helps the project owner and manger to employ adequate resources for addressing the most critical risk.

Treatment of risk

Allocation of risk includes the proper treatment of the risk assessed within the contract. The treatment of risks can be done with the help of four different strategies namely:

(1) **Risk Elimination:**

The elimination of risk is done by not preceding the risk further. This treatment is used for risks which occurs rarely and cast least impact over the construction contract.

(2) **Risk reduction:**

Risk reduction strategies imply the project manager to undertake further investigations and lawful actions for the purpose of avoiding the occurrence of the risk in future. Through this strategy, risks which occur quite frequently within the project but are less harmful by nature. Undertaking of this type of risk reduces the chances of the occurrence of the risk in future (Cooke, and Williams 2004).

(3) **Risk transfer:**

Transfer of risk can be done with the help of different legal and contractual agreement with other external parties such as Insurance Company. For transferring the risk over other party different instruments such as guarantees, contractual exclusions, performance bonds, limitations of liability, insertion of a risk premium indemnity clauses, and risk transference are used by the project manager. For risks, which are having unpredictable nature are allocated by this strategy.

(4) **Risk retention:**

The retention of risk is done for risks which occur due to internal deficiencies in the project management. These risks can be measured and identified quite easily. For this purpose, different measures like self-insurance, internal management of risk, and bearing large deductibles are undertaken by the management.

Roles of external and internal parties

In a construction contract, there are a number of different external and internal parties involved. These different parties play different role in the proper mitigation and diversification of different types of risks. Role of different parties can be discussed as below:

(1) Project Owners: Project owner is the party which directly got affected with the success or failure of a construction projects. This party can minimize legal and political risk by accomplishing different legal requirements in the most effective manner before commencing the project.

(2) Project Contractor: project contractor helps in coping up with different risks arises due to internal operations of the projects. In addition to this, different predictable risks related with scarcity of raw material, lack of adequate human resource and skilled man power, faults in technical equipments and processes are also dealt by project contractor. The role of project contractor is quite important in mitigation of risk as different project related activities are managed and monitor by the contractor. This is the party which is directly involved in the project activities. Owing to this reason, contractor can find faults in the existing practices undertaken within a construction contract (International Marine Contractors Association 2006).

(3) External Parties: Different external parties can play a vital role in minimizing some of critical and unpredictable risks related with project. Different external parties such as bank guarantor and insurance company aim to address different unpredictable risks such as natural disasters, bad weather, which can hamper the project deliverables. For the purpose of sharing risk of the project, such external parties charge their fees from the owner of the project.

(4) Employees: Employees of project owners or contractor also play an important role in minimizing risks in a construction contract. The successful completion of a construction project heavily depends upon the efficiency and efforts employed by employees for accomplishing their assigned tasks. They are required to handle a number of different operational risks related with the working conditions, project tools and equipments, raw material and so on. An employee can manage such operational risks with the help of his skills and attitude

In this manner, different parties involved in a contract are important in sharing and allocating risk in order to practice the construction contract and project in the most effective way.

Perspective of delay- contractor's view

From the contractor's perspective delay on an activity can cause inefficiency in the carrying out the works and/or prolongation of the overall project duration. Inefficiency often arises from the contractor being compelled to abandon carefully designed work plans for less efficient work methods. This impact is therefore that the contractor incurs additional costs, thus reducing profitability. The prolongation impact often has more disastrous consequences on profitability but in a different manner.

Resources have to be kept on the project longer than planned. The cost of the resources during the period of prolongation is therefore extra. Furthermore, the contractor looses the opportunity of redeploying his resources tied up on the delayed project on alternative work from which to earn additional contribution to its profit and head office overheads. Contractors therefore have a very strong incentive to lay the blame for delays on employers and demand financial compensation.

There is therefore an unavoidable tension between the parties' financial interests in relation to delay. Whoever is ultimately determined to be responsible for the event that caused the delay must bear the financial consequences. Considering the wide range and mutually interactive nature of events that may impact negatively on progress, identification of the event or events that caused the delay and, where they impact concurrently or sequentially, delineating individual causative impacts have been matters of the greatest controversy.[1] A number of closely interacting factors lend considerable challenge to this task, for example: the geographical spread of the project site; long term nature of projects; complexity of operations; involvement of many subcontractors; and large volume of information to be stored, retrieved and analysed. It is therefore a matter of concern that comparatively much less research attention has been directed at developing knowledge and understanding of the issues often in dispute. It is hoped this paper will not only assist identification and implementation of avoidance strategies but also promote amicable settlement of unavoidable disputes through shared knowledge and understanding.

Consequent Legal Issues in Construction Contracts Jurisprudence

Contracts for the construction of roads, buildings and other works present certain special features from the legal perspective. Having regard to the importance of these contracts in the economic life of the country, it is proper that their legal significance be examined in some detail.

The element of contracting

A good deal of construction activity has been going on in the country, for the last four decades. Both the public sector and the private sector have been engaged in projects of varying magnitude. One feature common to most construction activities is, that they involve a good deal of "contracting". There may be only one contract, if the work is small in magnitude. Or, there may be a number of contracts, where the project is a large one - a case of "horizontal multiplicity". If the contract is a complex one, then there may be a hierarchy of contractors, involving several "sub-contractors". That can be called an instance of "vertical multiplicity". But, whatever the nature and magnitude of the contract involved, it is obvious that the transaction is a consensual one, intended to have "defined legal consequences". It is in this respect, that the law of contracts becomes very relevant.

[1] Pickavance, K., 2005, Delay and Disruption in Construction Contracts, 3rd Ed., (London: LLP)

Sources of the law

Undoubtedly, there is no separate set of legal rules for construction contracts, as such. The law relevant to such contracts is to be derived (in a broad sense) from the same sources of law, as are the sources relevant for any other contract. These sources (in the main) are - the law of contracts, and the law of dispute resolution (through courts or otherwise).

However, certain aspects of the law of contracts acquire special relevance in the context of construction contracts. So do some aspects of the law of dispute resolution and the law of arbitration (as will be dealt with, presently). In particular, in a construction contract, the number of persons interested in its successful completion would be large. Hence, the number of persons who can benefit from prompt and peaceful settlement of disputes is also correspondingly large.

Nature of Construction projects and problems involved

The special features of the construction industry can be thus enumerated:

(a) The industry itself is a specialised one, with its own patterns and practices.

(b) Planning and execution of a construction project involves numerous parties and organisations, who must work in unison - though temporarily. A small deviation (real or alleged) affects numerous parties.

(c) A construction project is a continuous one, usually spread over a number of years. A dispute that operates as an impediment at any single stage may upset the entire time-table, unless the dispute is speedily resolved.

(d) Some of the problems that arise in the working of the project are not foreseeable or, even if they are foreseeable, their magnitude may not be foreseeable. If litigation is resorted to, then such problems may increase (rather than resolve) the tension generated by the emergence of various problems.

Proper approach

When a legal question arises pertaining to a construction contract, one has first to study and apply the provisions or rules of the general law of contracts, and then to see whether any special or peculiar approach (in applying those rules) is needed, in the light of the fact that one is concerned with a construction contract. And, of course, the specific terms of the particular contract under consideration have to be kept in mind.

Legal issues

Theoretically, any legal issue that can arise under a contract (in general) can arise in relation to a construction contract also. These include issues relating to formation of the contract, legal validity of the contract, performance of the contract, effect of force majeure, assignment of the contract, damages and so on. However, in the case of construction contracts, some of these issues, arising as they do against the background of a contract of some magnitude or complexity, present a few peculiar features, requiring special attention. Some of these peculiar problems will be dealt with, at this place.

Quantity of work and escalation

A question may, for example, arise as to the quantum of work. In a recent case decided by the Supreme Court of India, involving a construction contract with the State, the drawings and designs were changed in the course of construction of the works. This resulted in an abnormal increase in the quantum of work and, consequently, the contractor claimed a higher amount. It was held that the court cannot interfere, in the circumstances. The argument of the State, that under the terms of the contract, the contractor was not entitled to a higher rate, was not accepted, as there had been a material change of drawings and designs.[2]

Escalation claimed for increase in wages

Escalation may also be in issue, where an increase in the wages of labourers (engaged by the contractor in the construction work) is put forth by the contractor, as a ground for proportionate enhanced payment (to the extent attributable to statutory or departmental increase in wages).

[2] State of U.P. Vs. Ram Nath International Construction Private Ltd., AIR 1996 SC 782, 784, 785

How far such a claim is legally justified will depend on the language employed in the particular contract. It is obvious, that if the contractual clause refers, say, to the wages fixed by the Public Works Department and it is increased then the contractor would be entitled to claim a proportionate increase. In such a case, the judges do read a "meeting of the minds" (of the parties), in so far as the claim of escalated payment on account of increase of wages is concerned, because of the wording of the contract.[3]

Unjustifiable claim

A claim by the contractor which is unjustifiable cannot be granted by the arbitrator. Thus, in an Allahabad case, the arbitrator had awarded certain amounts in contravention of the contractual provision. He had awarded to the contractor a certain amount for "de-watering", even though the Schedule of "bids and quantities" clearly stipulated that the rates included de-watering. The award was set aside, as suffering from illegality.[4]

Documents and their incorporation of documents

A works contract usually involves numerous documents, namely:

(a) The main agreement,
(b) The general conditions,
(c) The specifications,
(d) The bills of quantities,
(e) The drawings,
(f) The schedule of rates,
(g) The form of tender, and
(h) The bond.

[3] Tarapore & Co. Vs. State of M.P., (1994) 1 Arbi. LR 341, 351 (SC)
[4] State Vs. Allied Construction Engineers & Contractors, AIR 1996 All. 295, 298, 299 (DB). (Case under the 1940 Act)

Ordinarily, reference in the work order (or in the agreement), to a particular document, suffices to incorporate that document in the contract.[5]

This is subject to two important qualifications:

(a) Intention to incorporate the document should exist;

(b) A document incorporated for one purpose will be treated as incorporated for that purpose only.[6]

Conclusion and Recommendation

As the risk is an inevitable aspect of a construction contract, it is quite important for the project owner to take some important steps to mitigate risk. In this direction, allocation of entire risks of the project among different related parties involved within a construction contract can be understood as an important measure adopted by project owners. In relation to this, the paper has shaded lights over different types of risks and their allocation within a construction contract. On the basis of the entire findings of the paper, it can be concluded that there are a number of risks embedded with a construction project which are quite necessary to be managed. These risks are having different nature and impact over the contract. In this context, in a contract, allocation of risk in a contract is done on the basis of frequency of the occurrence of risk in a project and severity of the impact of the risk over the project. For the purpose of allocating risk in a project, there is a need of including a disclaimer within the construction contract which is designed for the purpose of shifting risk from one party to another in the legal manner.

Recommendation

Allocation of risks among different parties can be proved quite critical in a contract as it can lead to enhance dispute and adverse relationship among different parties involved in the contract. In this direction some of the crucial recommendations can be given for undertaking risk allocation effectively within a contract. The proper assessment and prioritization of different risks should

[5] Royston U. D. C. Vs. Royston Builders Ltd., (1961), 177 Estates, Gazette 589; Halsbury 4th ed., Vol. 1, para 1107.

[6] Moore Vs. Shawcross, (1954) JPL 43, Davis Contractors Ltd. Vs. Fareham UDC, (1956) 2 All ER 145 (HL), Dunlop and Ranken Ltd., (1957) 3 All ER 344

be done effectively before allocating risk. For this purpose, past data and experience should be used. All the norms and terms related with risks allocation should be mentioned in the disclaimer presented within the contract. Proper and adequate compensation should be given to the party to which, a particular risk is transferred or allocated so that its interest in the contract can be secured.

The above discussion is intended merely to highlight certain aspects of constriction law, particularly as they have come up in the course of legal proceedings. The treatment is not intended to be exhaustive. As was stated at the outset, there is no separate code or set of legal rules applicable to construction contracts. But the size and complexity of such contracts lends importance to certain issues.

Bibliography

- Abrahamson, M., 1979, Engineering Law and the ICE Contracts, 4th Ed., London: Applied Science Publishers Ltd.
- Baker, E., Bremen, J. and Lavers, A., 2005, The Development of the Prevention Principle in English and Australian Jurisdictions, International Construction Law Review, 22(2), 197-211.
- Bell, M., 2006, Scaling the peak: the prevention principle in Australian construction contrac- ting, International Construction Law Review, 23(3), 318-354.
- Fletcher, A., 1998, Key Issues in Time Extension Claims, Building and Construction Law, 4, 193-208.
- Furst, S. and Ramsey, V. (Editors), 2006, Keating on Construction Contracts, 8th Ed., (London: Sweet & Maxwell), at paragraph 8.018.
- Holborn, G. (2001). Butterworths Legal Research Guide. 2nd Ed. (London: Butterworths).

- Lal, H., 2002. Extension of Time: the Conflict Between the Prevention Principle' and Notice Requirements as conditions Precedent. (Wantage, Oxfordshire: Society of Construction Law)
- Lane, N., 2000, Constructive Acceleration, Construction Law Journal, 16(4), 231-241.
- Marrin, J., 2002, Concurrent Delay. Construction Law Journal, 18(6), 436-448.
- Pickavance, K., 2005, Delay and Disruption in Construction Contracts. 3rd Ed., (London: LLP)
- Pickavance, K., 2006, Calculation of a reasonable time to complete when time is at large, International Construction Law Review, 23(2), 167-186.
- Smith, G., 2002. The "prevention principle" and conditions precedent: recent Australian developments, International Construction Law Review, 19(3), 397-404.
- Suryawanshi. C.S(Dr) (2006) "CONSTRUCTION CLAIMS THEIR BASIS/ GROUNDS" Indian Highways Published by Indian Roads Congress
- Wallace, I.D. (1995). Hudson's Building and Engineering Contract, 11th Ed., (London: Sweet & Maxwell).
- Wilmot-Smith, R., 2006, Construction Contracts: Law and Practice, (Oxford: Oxford University Press).