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Gauging the Potential of Claims under Design and Build Modality; Analysis of Al Wakra Project

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Abstract: Design and build are widely considered as giving a single point of responsibility for delivering the entire project. However, the level of trust is deterred when design changes are taken place. Various design changes can increase the total cost of a specific project eventually resulting in an adjustment to the contract sum. This has been tested in a road project in Qatar, by closely reviewing the contract documents, claims and defenses, additional questionnaires. Collected data was analyzed and prioritized by multi-criteria decision-making model (AHP). The potential of claim for additional costs is as much as 30 percent of the contract sum.

Key words; design changes, abortive design inputs, contract price adjustment, lump sum fix price, design obligations

I. INTRODUCTION

Contractors tend to demonstrate in form of claims to their clients (known as Employer) and supervisors (known as Engineer) that they are entitled to receive a fair and reasonable cost reimbursement related to design changes caused by the circumstances beyond control and for which the contractor is not contractually liable (Preez 2014). These changes inter-alia include such things encountered as the design is developed either by imposition of new specifications, new directives or changes to the end-user requirements occurred after the Base Date of the Contract (Jayalath, 2012). The additional costs are basically the costs of re-work, abortive work and additional design inputs and the additional costs of subsequent physical execution of works. These changes and additions have been mostly related to diverted traffic in the case of road works and early opening of traffic while works are in progress, to name a few. A gamut of factors; technical, contractual and commercial, is behind this cost overrun. In order to establish the Contractor's entitlement for a Contract Price Adjustment, the contractors warrant a careful analysis particularly when they are operating in a design and build modality (Jayalath C, 2012). Often, the contractors confirm that substantial additional costs have been incurred in respect of the design changes dictated by the Employer, the Engineer, their delegates, local government authorities and end-users (Koch, J. E., et al, 2010). This shows that there is a sizeable influence of these entities on the overall design effort consuming lot of interaction, remarks, re-work and feedback.

In a design and build project, there can be several claimable heads qualifying a reasonable Contract Price Adjustment under the Contract where a detailed account in each claim item is generally presented in the order of brief, eligibility and quantum (Niu J 2015). The total additional cost incurred by the Contractor as the net resultant monetary impact of these changes is finally amounting to a sum of millions. The Contractors in doing so intend that their claims will be treated by the Employer and the Engineer as a formal request to be put in the same position as the Contractor would have had the actual conditions not differed from those described in the Contract. As such, their claim documents entail an overview of the total claim, the issues involved, the grounds of entitlement, the money factor, i.e. the monetary effect, what the Contract said about, the difference between assertions and actual conditions that were material enough to form the basis for entitlement, how the actual facts encountered differed materially from representations, any difference between the means, methods, and costs as set out in the bid and those actually used, forming the basis for quantification, together with their impact on the Contract Price, all supported with facts and figures. More importantly a section is predominantly dedicated to explain the context in which the subject issues have been evolved (Jayalath, 2012). It will avoid upfront denying the claim and returning unevaluated on the general notion that this is simply a design and build lump sum contract where the Contractor is wholly responsible for everything that come into being, including design changes.

The Contractors are of the view that the Employer Requirements cannot range from a very simple specification to a change that is entirely a scope creep to the concept design (for what the parties have bargained for. (Mosey, D. 2009). Alterations of brief can be caused by either changing or enhancing project requirements from stakeholders, and the mechanism is to absorb them in the Variation provision(s). The threshold is the Base date for consider the foregoing argument. As per the Contract, the Contractors intend, and should indeed adhere to, compare and contrast a host of eventualities against this threshold (Jackson, 2011). This 'base date' is a reference date from which changes in conditions must be assessed. If specified conditions change while the Contract is

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implemented, then the Contract may be adjusted to fairly reflect these differences. Also expected is that it will be read by those who are familiar with the project and who will recognize the truth of the statements made. More by way of explanation as to why the claimed amount should be paid rather than an aggressive one, the Contractors recognize that there are different methods of determining costs and that these will not arrive at the same values.

Contractors generally secure, and indeed should secure, their contractual rights by being complaint (serving proper and timely notice within 28 days and, furnishing detail particulars of the claim, subsequent to such notice) as per clause 20.1 of the Conditions of Contract (the Yellow eversion of the FIDIC series). Regarding the additional costs, they often adopt 'discrete cost' approach where each cause of additional cost is reviewed individually; such costs are therefore determined separately. This method, which is very demanding because it analyzes each event and its associated impact on the Contractor's costs, is nevertheless advantageous as it establishes a clear causal link. The discrete cost method should be given priority whenever circumstances allow it, while keeping in mind that, the Contract operates in the modality of Design and Build Lump Sum where the Contractor has overall design obligation. The fundamental issue is that there are clearly Employer instigated changes to the concept design. The subject changes may have been design modifications and sometimes, enhancement if aptly mentioned (for which the Employer is responsible) resulting in rework, abortive works, and thereby reallocation of resources from time to time. All of these impacts are costly.

As to what representations in the Contract were relied upon by the Contractor at the time of the bid that is pertinent to the claim is of high significance. There are number of ways in which the Contractor has incurred costs beyond the Contractor's liabilities. The Contractor in this claim is asserting his right to reimbursement of these costs. In the main, the Contractor's incurred costs flow down from a gamut of factors including changes to the concept design after the Contract has been entered into.

A claim is an attempt by the Contractor to explain how he has incurred these additional costs, to evaluate those costs and explain why he considers the Employer should reimburse these costs to the Contractor (Rahman, M. 2012). Under circumstances, the Employer and his consultants are to recognize this and evaluate the claim fairly. There are often other ways in which his assessment of the costs may be made, and should the Employer feel that an alternative method of evaluation is more appropriate, it was revealed that, the Contractors are flexible enough to discuss and arrive at a conclusion as to the methodology of calculating losses they may have sustained.

A. Wakra Project

One of the ongoing nearing completion projects the basis and outcome of this research has been related to be the Al Wakrah Bypass (Project 15). This is 11km major south-north freeway connecting to the existing Al Wakrah-Mesaieed Road, just southwest of Wakrah. This new freeway is a continuation of an existing major urban-south high speed corridor referred to as Doha Expressway. At its branches into two directions; one branch moves toward the planned Doha Sea Port to the south and the other joins the existing Al Wakrah-Mesaieed Road towards Mesaieed Industrial area to the west. The main road consists of a 10-lane section (5 lanes in each direction) with additional collectors/distributors roads, frontage roads and ramps. The mainline typical section also has a provision for a future roads, frontage roads and ramps. The mainline typical section also has a provision for a future addition of two more lanes in each direction (totaling to a least 14-lane mainline section). When completed, the freeway will provide access to the existing and planned developments via the four proposed interchanges; namely, IC10, IC11, IC11A and IC12. In addition, there is one major road crossing over the mainline just north of IC 12 and two pedestrian/bicycle overpasses. The scope of work includes complete Design and Construction of a new freeway, including four different grades-separate interchanges with cross roads, Collectors-distributors, overpass and underpass structures, retaining walls, pedestrian and bicycle paths, traffic signs, signals and ITS, landscape and hardscape and arts cape, street lighting, all related infrastructures, etc.

As per the scope of work, the Contractor shall co-ordinate his works with the opening design and construction projects by other contractors and consultants working within his project site and in the vicinity. The contractor shall be fully informed of utilities works including EHV (Extra High Voltage) power lines for Kahramaa, FS (Foul Sewer) and TSE rising mains for the area and ongoing infrastructure works in the vicinity and adjacent to the proposed works within this Contract. The Contractor shall also note the existing Qatar petroleum pipe lines. The Contractor shall ensure compliance with the Kahramaa regulations for clearances and works in the vicinity of Extra-high Voltage installations. Notwithstanding any other provisions of the Contract, the Contractor shall not have exclusive use of the Road Corridor made available by the Employer for the Works. The Contractor shall coordinate with all works that will need to be done in this project area by other contractors and shall adjust his works sequence and schedule to accommodate the works of the projects (road connections, utilities, etc.…) to take place in the field at the same time.

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Kahramaa is expected to undertake design and construction works for the dismantling/relocation of its existing overhead power lines (interchange 11A) to be done by August 2012. The Corridor shall take this information into consideration and plan his work activities and schedule accordingly. The Contractor shall be aware of the fact that his files area adjacent to power lines may be restricted; and thus his construction sequence and programme must be planned accordingly. Particularly, the Contractor shall not have exclusive access to, and use of, the project areas in the project that are required to be shared with other contractors for any and all works including utility works and for any of the adjacent construction projects and activities. The Contractor shall co-ordinate his work with all neighboring sites.

B. Key Contractual Provisions

Contractually, it was found that the following provisions have direct bearing on establishing eligibility and claiming additional costs.

1) Clause 1.1.6.4 Permanent Works; permanent works to be designed and executed in accordance with the Contract
2) Clause 1.1.6.2 Variations; any alteration/modification to the Employer Requirements, which is instructed by the Engineer or approved as a variation by the Engineer in accordance with clause 14
3) Clause 1.1.1.2; Employer Requirements; the "Contractor has 'overall' design responsibility to be developed from and be consistent with the concept and preliminary designs
4) Clause 5.6 - As Built Drawings (kindly write the clause in short)
5) Clause 5.7 - Operation and Maintenance Manual (kindly write the clause in short)
6) Clause 9.1(Contractor obligations) - The Contractor shall carry out the tests on completion according to Clause 7.4 (Testing) (kindly write the clause in short)
7) Clause 10.1 (Taking Over Certificate) – if the all test satisfactorily passed the tests on completion, the Engineer shall, on receiving a written undertaking by the Contractor to finish any outstanding work in accordance with the Sub Clause 12.1(Defect liability)
8) Clause 14 Variations; (a) there must be written instructions to initiate variations by the Engineer. (b) A request by the Engineer for a proposal shall not constitute a variation nor will the Contractor be reimbursed for the Cost of the proposal including design services incurred if the Engineer elects not to proceed with the proposal. (c) The Contractor shall not make any alteration and/or modification of the Works unless and until the Engineer instructs or approves a variation. If the Construction Documents or Works are not in accordance with the contract, the rectification shall not constitute a Variation
9) Clause 14.3; Variation Procedure; If the Engineer requests a proposal, prior to instructing a Variation, the Contractor shall submit as soon as practicable: A description of the proposed design and/or work to be performed and a programme for its execution, The Contractor's proposal for any necessary modifications to the programme according to Sub-Clause 4.14, and The Contractor's proposal for adjustment to the Contract Price, Time for Completion and/or modifications to the Contract. The Engineer shall, as soon as practicable after receipt of such proposals, respond with approval, rejection or comments. If the Engineer instructs or approves a Variation, he shall proceed in accordance with Sub-Clause 3.5 to agree or determine adjustments to the Contract Price, Time for Completion and Schedule of Payments
10) Clause 14.4; Valuation of Variations; The Engineer shall determine the amount (if any) which in his opinion should be added or deducted from the sum named in the Tender in respect of any additional work omitted by his order. The adjustments to the Contract Price shall reflect the true value of the additional work or work omitted based on the labour, material, transport and plant necessary for the execution of the work taking into account the Tender Price and pricing and tender rates, etc. if applicable. Adjustment of the Contract Price shall include reasonable profit, and shall take account of the Contractor's submissions under Sub-Clause 14.2 if applicable
11) Clause 20.1; Procedure for Claims; If the Contractor intends to claim any additional payment under any Clause of these Conditions or otherwise, the Contractor shall give notice to the Engineer as soon as possible and in any event within 28 days of the start of the event giving rise to the claim. The Contractor shall keep such contemporary records as may be necessary to substantiate any claim, either on the Site or at another location acceptable to the Engineer. Without admitting the Employer's liability, the Engineer shall, on receipt of such notice, inspect such records and may instruct the Contractor to keep further contemporary records. The Contractor shall permit the Engineer to inspect all such records, and shall (if instructed) submit copies to the Engineer. Within 28 days of such notice, or such other time as may be agreed by the Engineer, the Contractor shall send to the Engineer an account, giving detailed particulars of the amount and basis of the claim. Where the event giving rise of the claim has a continuing effect, such account shall be considered as interim. The Contractor shall then, at such intervals as the

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Engineer may reasonable require, send further interim accounts giving the accumulated amount of the claim and any further particulars. If the Contractor fails to comply with the clause, he shall not be entitled to additional payment.

C. Frequent Design Changes and Abortive Works

There have been numerous design changes, not only changes imposed well in advance which could have been dealt with before they reached to site, but changes throughout the period whilst the works have been on site as well. Abortive work refers to work that has been started or carried out, but is not needed, or is no longer needed, and will not form part of the final development. The work will be wasted. Very broadly, the costs may be borne by the Employer in high risk situations such as ground conditions. Quite precisely, where a change has been instructed by the Employer in accordance with the Contract that might result in abortive work, this may give rise to additions to the Contract Price.

Design and construction of 270 m long, 500 mm dia, sleeve in GRP is accepted as a valid varied work. However, the rates have been disputed by the Engineer. The Contractor is of the firm view that the TSE related Schedule of Rates is not appropriate to the technicalities involved in the subject works. Change in Specifications from 2005 to 2015 (Procurement of Wrapping) overlapping will increase high as 11% to 55% as per Clause8.2 (ii).c of 2005 and Clause 4.1.5 of 2015 respectively and subsequent instructed to revert back to the 2005 Specification has made the design inputs abortive. At the time the Kahramaa's position received, materials required for the installation had been already procured. The removal of the dead cable connected to Wakrah 2 primary substation near IC 110 became an issue unsettled. As was evident in given information, two cables were supposed to be dead but the reality was far from being provided given that one cable out of two is still live whilst being connected to the substation. Kahramaa Electrical – Additional VCB in Tunnel S/S (Outside ROW) and Kahramaa Electrical: QPC (Qatar Power Construction WLL) cable relocation in P15 Electrical Corridor also constituted additional design effort and time and money.

In the new Ezdan Traffic Diversion (Temporary Road to Permanent Road Conversion), the Contractor incurred significant amount of money to energize street lights, (generators) signals and other services including temporary barriers while works are going-on i.e landscaping, temporary signs etc. Almost all temporary services need to be continued until all the Works completed and handed over. Under circumstances, the Contractor claims actual cost incurred for road opening from time to time in order to secure beneficial use prior to the date of contractual completion. Re-work (Cycle Path) due to Kahramaa Appointed Contractor (M/s Cat Boom JV) is also a part of this claim.

The client's requirements for contractor's design will generally be set out in the tender documents as 'Employer's Requirements' in response to which the Contractor will submit 'Contractor's Proposals'. The contract contends that NFPA specifies the design guide for fire protection system in tunnel to protection from the fire. Further in to, Post tender Query No 12 of tender Addendum No 03, Interim Advance Note 20 was provided to the Contractor in which Category X (Tunnel length not less than 90m) and Category C (Tunnel length equal or exceeds 300 m) were specified in the Table 7.2. There is no requirement specified for fire sprinkler system. As was evident, whilst being vested with authority over section the fire protection system, the Employer ignored the potential cost overrun owing to the selected solution. This is far in excess of actual requirement given that tunnel lengths are not that long.

There are some structural changes in the tunnel in terms of height due to ventilation fans. To accommodate this particular installation, the overall height of the tunnel needed to be increased by 1000 mm (1600 mm clearance required instead of 600 mm envisaged in the Tender) constituting a structural change particularly in concrete and rebar quantities. The Contractor had also developed a design based on the redundancy requirement on Electrical Power Supply and Distribution Vol 2 Section 02, Part 9 BD 78/99 (with two transformers (live) and one redundancy) even though a redundancy transformer was not being referred to in the Specification. The additional requirement of two redundancy transformers in a Sub Station UPS and Generator etc. could have not reasonably been foreseen by the Contractor. Further, Kahramaa required the Contractor to replace concrete encasement with precast reinforced concrete slab with lifting hooks for the protection of pipe inside the carriageway. Changes in the QAF Scope of Work constitute extra cost for the supply of materials; QAF Works being excavating and laying the ducts, supplied by QAF under the Provisional Sum.

Approximately 742 #s traffic signs have been envisaged in the design of the whole project; In actual, a total of 1622 sign posts designed and installed in the whole project. This is in addition to increase in the number of cantilever gantries where the design of footings took some changes resulting in larger and longer piles. Abortive work in street lighting bases at bridges and MSE walls is on the other hand a classic design change where there is no high masts (14m and lower), a maintenance factor of 0.7 is to be used, No 1000W luminaires will be used in this project and those already included in the design will have to be replaced with the 600 W luminaires (MOM Para 3.3)

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In many instances, the Contractor is claiming financial costs; of these, there are number of instances where the cost is a financial cost, for example in exerting more professional inputs to meet the Employer's additional requirement. This might sometimes entails abortive wasted resources too. Street lighting luminaire, as mentioned earlier, is a classic example of that nature where the Contractor prepared original design of streetlights based on ER with 1000W luminaria (Preliminary Design report Street Lighting, Lighting Design Recommendation) as Rev 01 for approval. Subsequently, the Contractor received comments from PWA to change 1000W to 600W (Minutes of meeting dated Sep 3, 2014). Accordingly the Contractor had to revise the design that warranted additional poles, arms and light fittings in the attempt to maintain the specified luminance level as per the ER. This eventuality is not only abortive but physically obstructive due to changes at site level such as additional poles, accessories, associated works that differed from the original concept. The Contractor confirms that his approach to arrive at the amounts reimbursable follows the way the Contract stipulates.

Related to traffic diversions, the diversion plan has been oftentimes changed since the Base Date of the Project which prolonged throughout the project construction depending on Stakeholders, Engineers and Employers Requirements due to the possession of Site, Specially, IC 10. Therefore the Contractor strongly believes that there is a fundamental change between the proposed TDP in the Tender and what is actually implemented on site (11 Phases). Also, it should also be noted that ER did not specify the requirements of the QNBN ducts in this project all the civil works and associated works done as an in order to fulfill QNBN requirements as per new IFC drawings are an additional scope to the Contract.

D. Approach To The Claim

As reiterated, the Contractor has been experiencing abortive works because, as it is apparent, "the Employer, Engineer, his delegates, local government authorities, and/or end users changed their minds" about what it actually required to be built. In spite of the entitlement for changed circumstances, the Contractor's cost proposal has been either challenged or disputed on the notion that the extra work is not necessarily extra but mere outcome in the process of design development falling within the ambit of D&B lump sum price under the Contract. Hence the Contractor finds that best approach to fix this problem is to compare and contrast post contract eventualities against the front end engineering documents.

Front end engineering documents basically include Employer Requirements, Contractor's proposal, Design intent given separately if any, Concept drawings, Pre bid queries and clarifications/responses, and Post tender circulars (addendums) and any other documents referred to in the Contract, such as QCS 2010, Qatar Highway Design Manual. The post contract stuff basically includes Variations (Clause 1.1.6.2- modifications to Employer Requirements), and those are reflected in latest approved IFC drawings, Notices (20.1), Site instructions, Engineer consent(s), Pre execution certificates, design check certificates, QCS 2014, International Best practice (1.1.6.16 of the Conditions of Particular Application), and any other correspondence that may have relevance such as those communicated in writing (1.8).

Best international practice includes methods, specifications, standards of safety and performance and standards employed by international design and construction industries, that are available and appropriate.

The principle of a claim for costs is that the party who has suffered these costs should be reimbursed thereby be put in the same position as if the costs had not been incurred.

Design changes beyond D&B Contractor's liability are predominantly a result of subsequent imposition of various directives that constituted Variations under the Contract by definition (Clause 1.1.6.2 of the Conditions of Contract). Design changes shall be evaluated as per Clause 14.2. The Contractor has relied upon the Schedule of Rates in the Contract as far as possible, and where inappropriate, referred to industry applicable rates and prices, which the Contractor strongly believes, they reflect the true value of the additional commitment exerted by the Contractor. This will help make the adjustment to the Contract Price including a reasonable profit giving due regard to the circumstances involved, in meeting the rationale behind the Clause 14.4, Valuation of Variations in the Contract.

The Contractor seeks an "equitable adjustment" to the Contract Price where a series of design variations have been occurring throughout the project, based upon different rates to those set out in the Contract for valuing some of the items where it can be shown that the original rates are no longer applicable because of the extent or amount of the Employer's changes. The actual construction works executed at site as a direct result of design changes have been considered in this claim giving due regard to the circumstances involved. Meanwhile, lump sums quoted in the BOQ in affected items have also been revisited so as to maintain tender pricing level and arrive at a Contract Price Adjustment which the Contractor strongly believes, is fair and reasonable in all respects.

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E. Contract price adjustment

Design changes have been identified as Variations under the Contract and the Contract has no dedicated provision to deal with design related variations. Variation means an alteration and/or modification to the Employer's Requirement, which is instructed by the Engineer or approved as a variation by the Engineer in accordance with Clause 14 of the Conditions of Contract part 1 (1.1.6.2). Permanent Works are inclusive of design works (1.16.4) executed in accordance with the Contract. The Engineer shall determine the amount which in his opinion should be added or deducted from the sum named in the Tender in respect of any additional work or work omitted by his order (Valuation of Variations, 14.4).

The foregoing paves towards an adjustment of the Contract Price, in spite of the lump sum fixed price, which should reflect the true value of the additional work on the labour, material, transport and plant necessary for executing the work, which is inclusive of design work. The basis will be Contract rates as far as possible and fair rates in the event the Contract rates are no longer appropriate on technical or economic grounds. Adjustment of the Contract Price shall include a margin of reasonable profit. In these particular cases, in the light of relevant contract provisions, the claim essentially relates to adjustments, not damages.

1) If the Contractor intends to claim any additional payment under any Clause of these Conditions or otherwise, the Contractor shall give notice to the Engineer as soon as possible and in any event within 28 days of the start of the event giving rise to the claim.
2) The Contractor shall keep such contemporary records as may be necessary to substantiate any claim, either on the Site or at another location acceptable to the Engineer.
3) Without admitting the Employer's liability, the Engineer shall, on receipt of such notice, inspect such records and may instruct the Contractor to keep further contemporary records.
4) The Contractor shall permit the Engineer to inspect all such records, and shall (if instructed) submit copies to the Engineer.
5) Within 28 days of such notice, or such other time as may be agreed by the Engineer, the Contractor shall send to the Engineer an account, giving detailed particulars of the amount and basis of the claim.
6) Where the event giving rise of the claim has a continuing effect, such account shall be considered as interim. The Contractor shall then, at such intervals as the Engineer may reasonable require, send further interim accounts giving the accumulated amount of the claim and any further particulars.
7) If the Contractor fails to comply with the clause, he shall not be entitled to additional payment.

II. CONCLUSION

Changes in specifications and flaws and errors in the process of approval are predominantly the main reasons for claims. Thus, owners prefer to use these authorities to reduce the costs of the project and usually ignore claims. Clearly, this will reduce the financial capabilities of the contactors and discourage standard performance. Moreover, the claims may lead to disputes between entities; these disputes may lead to early termination and extension of the delivery schedule. Precisely how the claim is put forward will depend on the facts in each case and will be bolstered if the Contractor can demonstrate that the Employer required the Contractor's assistance in establishing precisely what the Employer's actual requirements were, for example through the unplanned and piecemeal nature of the finalization of the design. Such arguments may well persuade a Tribunal applying UAE or Qatari law that an award of compensation should be made. Alternatively, such an approach may be sufficient to start a settlement dialogue which may produce a beneficial outcome for the Contractor. The challenging nature of these arguments reinforces the importance of monitoring change closely throughout the life of a project and where possible taking full advantage of contractual rights as they arise to avoid more difficult arguments at a later date such as timely notice and mitigatory measures. In so far as further drawings or specifications are necessary to develop that design intent into something that can be built, the further drawings will be henceforth part of the design. In nutshell, the contractor has an implied obligation of buildability where the employer often has contractual ground to defend. This idea has been reinforced with the fitness for purpose, which is most of the times, implied into contracts. Each individual potential change notice should therefore be wetted from the perspective of the extent of design obligation, warranty of buildability and fitness for purpose and judge whether they are merely request for information constituting no contract price adjustment.

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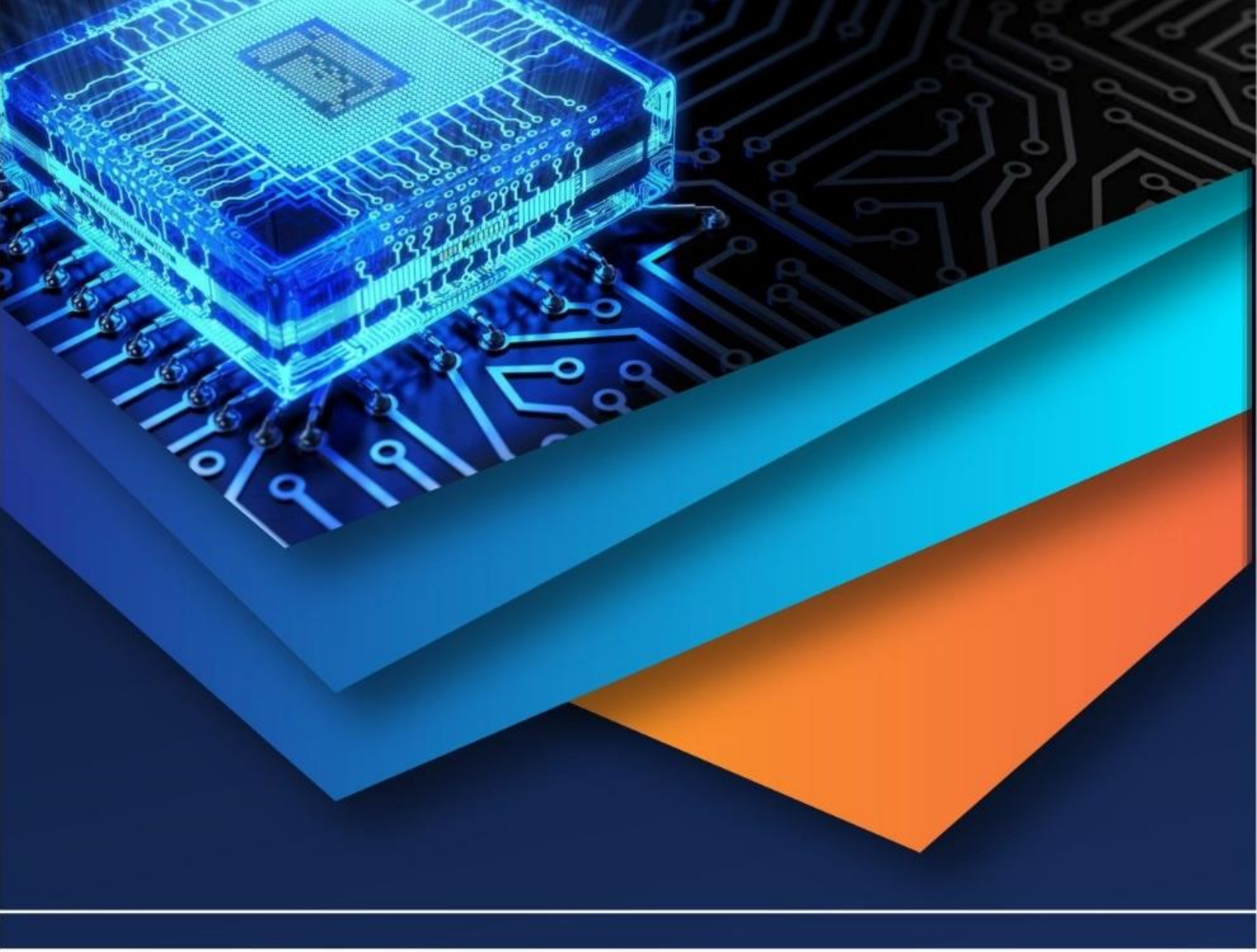

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