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**DELHI METRO**

# **GUIDELINES FOR METRO ENGINEERS**

**Vigilance Awareness Week**  
29th October to 3rd November, 2012

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### (Based on stages of project execution)

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*In Delhi Metro Rail Corporation we are determined to build a world-class metro. We have to ensure the highest standards in quality of not only the final product but also of the process to achieve it. By following laid down procedures and taking simple precautions in Civil Engineering and other works we can achieve the above. Here are a few guidelines to serve as a ready reckoner.*

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### Administrative Approval and Expenditure Sanction.

- Non-preparation of preliminary cost estimate (PE) on the basis of standard schedule of rates/current market.
- Taking up works without receipt of administrative approval and expenditure sanction.
- Taking up inflated provisions in the P.E. with intention to re-appropriate savings to other works for which administrative approval and expenditure sanction do not pertain.
- Major changes in scope and specification during execution, thereby indicating the P.E. provisions were not properly contemplated.

### Detailed Estimate(D.E.)

- Non accord of sanction to DE by the Competent Technical Authority of Department.
- Accord of technical sanction to DE without scrutiny and technical soundness of proposal, i.e. without vetting the detailed estimate submitted by the consultant after checking rates, items, specifications, etc.
- Nomenclature of items of D.E. deficient and ambiguous, not framed properly and not indicating clearly the scope of the items of work is inappropriate.
- Not undertaking proper rate analysis of non-schedule/non-SOR items based on N.B.O./CPWD guidelines but adoption of arbitrary rates for such items resulting in unjust increase to estimated cost is inappropriate.
- Sheets containing details of measurements on the basis of which quantities have been worked out, should form part of D.E. so that reasons for deviation during actual execution of work may be checked.

- Providing unworkable or less time in the D.E. for the execution of works.
- Preparing the detailed estimate without supporting detailed drawings and without conducting soil investigation.
- Inflating the cost of D.E. by changing the scope and specifications of work, in variance to sanctioned corresponding provisions of P.E.
- Repetitive stipulation of the same component in more than one item of D.E. thereby resulting in undue over payments.
- Stipulation of same item repeated in other subheads of D.E. resulting in quoting of dissimilar rates by the tenderers.
- Giving of free hand to consultants in the preparation of D.E. with the result that they tend to inflate the cost by providing very costly items on large scale basis, e.g. imported materials, excessive aluminum & granite work, costly structural systems and architectural features etc.
- Provisions of items stipulating use of imported materials taken in the D.E. even though equivalent standard quality of indigenous materials are available. To conserve foreign currency use of imported materials needs to be discouraged while preparing estimate.
- DE is technically sanctioned on the basis of accepted cost of works, which is not proper.

### Appointment of Consultants

- Appointment of consultants without proper publicity through press advertisement & without collecting adequate data about their performance, capabilities and experience.

- Picking up the consultants from very old panel formed by department and allotting the contract in an arbitrary manner.
- Awarding the consultancy contract at pre-determined/adhoc rates and not resorting to competitive price bids.
- Appointing consultants for architectural, structural and other services, even though in house facility is available with the department.
- Not finalizing formal contract agreements with consultants, even though works are completed or are nearing completion.
- Nor taking punitive action against consultants although they have failed in satisfactory rendering of services as per terms of contract.
- Non-inclusion of clause related to submission of performance guarantee by the consultants in the contract agreement to ensure timely and satisfactory performance of the services.
- Not fixing the maximum ceiling of payment. The consultants tend to increase the cost of work for the sake of more fees.
- Not defining nature of repetitive type of work in contract agreement. Fee for repetitive type of work is less.
- Releasing payments, even though services required to be rendered were not completed in all respects.
- Allowing consultants in office for receiving and opening of pre-qualification bids.
- Allowing consultants to receive cost of sale proceeds of tender documents issued to tenderers on behalf of the Organization.
- Liberal terms and conditions of

payment to consultancy such as release of 60% of total payment due even though work has not physically commenced.

- Non-judicious excess amount paid to consultants for travelling expenses, sometimes even more than their fees.

### Invitation of Tenders

- Improper drafting of tender documents containing obsolete, unwanted matter and conflicting, vague and ambiguous provisions resulting in wrong interpretations, disputes delays and loss to the Organization.
- Non-preparation of draft tender documents including N.I.T. and approval of the same from competent authority before call of tenders.
- Inadequate publicity period.
- Wide publicity not given through circulation in local and national dailies of repute in regional & English languages. Notice and Tender document not uploaded on website.
- The eligibility/pre-qualifying criteria either not specified clearly or made very stringent thereby restricting numbers of intending bidders.
- Firms pre-qualified without verifying all the prescribed parameters e.g. proof of satisfactory completed works/ annual turn over, I.T.C.C. enlistment, license etc.
- Pre-qualification criteria laid down in press notice not followed in true spirit and conditions made more stringent which results in fewer parties competing resulting in restricted competition with higher rates.
- Accepting proof of satisfactory completed work executed with private organization without TDS certificate from the intending tenderer.

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- Calling open tenders without any eligibility criteria and subsequently making assessment regarding capability eligibility of the contractors which may be biased or arbitrary.
- Pre-qualification of contractors known to the officials of the department.
- Providing "Rate only or alternate items" in the tender documents, thus receiving abnormally high rates against such items and operating on them during execution.
- Tender documents stipulated for advance payment against old machinery and equipment already in possession of the contractors. Such advances are not admissible. Advances on only new machinery equipments proposed to be purchased for the intended work are admissible.

### Award of Work

- Acceptance of additional conditions having financial implications during negotiations, though these were not initially stipulated by the tenderer.
- Non-finalization of tenders within validity period. Repeated extension of work may lead in withdrawal by L-1 firm.
- Deliberate splitting of work & calling tenders to bring the tender value within the powers of the lower level accepting authority.
- Ignoring lowest tenderer on the plea of being technically unsuitable or due to unsatisfactory performance or on other flimsy grounds.
- Award of work without availability of land or without approval of plans from Local Municipal Authority.
- Short listed firms not brought as par technically before opening of price bids.
- Acceptance of lowest tender without comparing with the quoted/accepted rates of other similar on going works.
- Tender sale and opening registers not maintained properly. Pages not numbered and register not issued and signed by competent authority.
- The work thought labeled as emergent awarded without following set rules and procedures but later on completion abnormally delayed.
- Limited and single tenders accepted without proper-recorded reasons and without approval of competent authority though the same were required as per provisions prescribed in tender manual of the organization.
- Detailed market rate justification prepared by taking inflated market rates thereby increasing the justified cost resulting in acceptance of work at higher rates.
- Drastic reduction in scope after award of work even though the contractor allowed mobilization and other advances on the basis of accepted cost, thereby giving undue benefit to the agency.
- The tender in first call are rejected without proper-recorded reasons. The tenders during second call are accepted at higher rates.
- After opening of price bids, pre-qualified firms are declared incompetent even though they are on the selected list.
- Items are deleted from the tender after the opening of price bids to take the favoured contractor as the lowest.
- Similar identical contracts allotted for the same site and period but at different rates.
- Works awarded to contractors without proper verification of antecedents/

papers furnished by them and are later found to be false.

### Work Agreement

- Contract documents are found to be incomplete and a lot of unwanted papers are kept in the contract documents while vital papers such as original price bids, letters of negotiations etc. which should form part of the contract document are kept elsewhere in loose files.
- Contract documents are not bound and serially page numbered and kept in safe custody.
- Execution of agreement takes place after commencement of work and sometimes even after release of payment.
- Contract agreement is not signed by witnesses and agency in the appropriate pages of the document.
- Insurance as per terms of contract is not undertaken although specific stipulation prescribed in contract agreement.
- Validity of bank guarantee and insurance policies are allowed to lapse prior to the period up to which these documents were required to be valid.
- Bank guarantees furnished by contractors are not verified for their genuineness from issuing banks.
- Non compliance of agreement stipulations with regard to obtaining labour license before starting work, employment of technical staff by the firm, fortnightly labour reports safety precautions and other ancillary facilities to be provided by firms.
- In the schedule of quantities appended in contract agreements, rates mentioned only in figures and not in words.

- Stipulations regarding supply of water and power in the contract are not stated clearly but are ambiguous.
- Although stipulated period of completion as per contract expires, valid extension of time is not issued by the Organization or action taken against firms in case delay is attributable to them.
- Contractor's representative authorized to sign tender documents etc. without proper valid registered Power of Attorney.
- Provisional extension of time granted by the authority not competent to do so.
- Agreement stipulation with regard to approval of samples or materials not adhered to.
- Payment made on account of price escalation although the clause is not included in the contract agreement.

### Payment to Contractors

- Allowing excessive deviations in quantities of agreed items indicates improper estimation and is advantageous to the agency.
- Non-execution or less execution of abnormally low rated items, thereby allowing undue benefit to the agency.
- Substitution/deletion of items for which contractor has quoted very low rates thus giving undue benefit to the agency.
- Increasing quantities of abnormally high rated items to give undue benefit to the agency.
- Payment of inadmissible extra items.
- Allowing exorbitant rates for extra and substituted items.
- Use of loose sheets or registers (unnumbered & unsigned) for recording of measurements.

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- Test checks of measurements not carried out to the required extent by supervisory officers.
- Allowing excessive part rates for the items, even though items are still incomplete and unfinished.
- Granting of secured advance for larger quantities of materials than required for work.
- Payment of secured advance at excessive rates than permissible as per quoted rate of the items.
- Payment of secured advance without adequate testing of materials.
- Non-effecting recoveries of advances in time.
- Non-recovery of water/electricity and testing charges from the contractor where it is their liability under the contract.
- Allowing escalation payment for the work done beyond stipulated period of completion, without valid grant of extension of time.
- Undue payments to the agency by way of wrong/over measurements of items.
- Serviceable materials obtained from dismantling not properly accounted for.
- Recording measurement under wrong items of the work thereby resulting in over payment.
- Retention money was released before it is due.
- Recording fictitious date of completion of work, although work is not completed.
- Rebate offered by contractor not taken into account while working out rates of substituted and extra items.
- Releasing ad hoc/advance payments to the contractor and not regularizing the same with subsequent measured bills.
- Excise duty and sales tax/VAT reimbursed without verifying the proof of payment.
- Remaining work allotted to another agency at extra financial liability to the department instead of taking risk and cost action against the defaulting contractor.

### Site Records

- Registers maintained at site neither page numbered nor issued and signed by Engineer in charge.
- Compliance of instructions issued in site order book not recorded by the Engineer in charge/consultants.
- Copies of invoices/ challans also not kept to ascertain whether materials of required brands have actually been procured for the work from the authorized distributors/dealers.
- Lot wise test certificates of cement and steel issued by the manufacturers not obtained.
- Cement and steel procured by the contractor in very small lots and the same used in work without prior testing.
- Not carrying out mandatory tests on materials as prescribed in contract agreement or in BIS code.
- Proper records of bitumen, paints lead anti-termite and water proofing works from the specialized agencies entrusted with these works.
- Not getting specialized works done from specialized agencies or engaging inexperienced specialized agencies without prior approval of competent authority.
- Materials tested from private unapproved test houses.

- Samples of materials for testing not collected by the contractor in the presence of department/consultants.
- Site laboratory not set up although provisions exist in contract agreement.
- Record of fineness modules (gradation) and silt content of sand not maintained.
- Record of sieve analysis, hardness, deleterious content flakiness etc. of coarse aggregate not maintained.
- Design mix not done by approved lab with every change of source of material make and grade of cement.
- Cube strength Record of design mix if specified on agreement not maintained.
- Cube strength not done as per specified frequency and record not maintained.
- Test of water not maintained and not carried out as per specified frequency.
- Water cement ratio/slump record not maintained or slump provided higher than specified in design mix report.
- Record of check of surface undulations in case of cement concrete pavement/bitumen pavement not maintained.
- Record of test of sample of DBM & DBC for bitumen content, grading of aggregate & field density not maintained.
- Record of test of compaction of earth not maintained.
- Record of testing of earth brought from outside not maintained.
- Record of testing of earth disposed off as unserviceable not maintained.
- Test for deleterious material for sand and coarse aggregate not carried out.
- Testing of piles not undertaken and records not maintained.
- Record of level of bottom/top of GSB, WMM, WBM, DBM & DBC not maintained.
- Record of receipt and consumption of bitumen not maintained.
- Record of temperature of DBM & DBC not maintained.
- Daily bitumen consumption registers of hot mix plant not maintained.
- Record of materials for W.B.M., comparison of theoretical comparison with actual consumption of material of W.B.M. not maintained.

### Quality in Construction (Earth Work)

- Earthwork not computed by plotting cross-section (prepared based on initial and final level) and calculating quantities based on total average area method gives higher results.
- Measurement of hard and soft rock not based on stack measurements and voids not deducted.
- Items include work under water condition or under foul condition as per agreement but in actual fact such situations do not prevail. So payment made is not as per actual site conditions.
- Measurements recorded are not actual and restricted to drawings if lower measurements are mentioned therein.
- Working space apart from offsets or slopes provided in CPWD specifications are given while taking measurements for earthwork.
- Offsets and side slopes exceeding admissible limits.
- At the point of disposal the disposed material is not stacked and leveled or neatly dressed.
- Lead/lift chart is not prepared.
- Place of disposal is not indicated in M.B.

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- Layout is not as per structural drawings/architectural drawings.
- Footing size/column sizes etc. are not cast as per structural drawings.
- Sand filling in foundation is of thickness less than that provided in drawings and recorded in measurements.
- Earth brought from outside is not of good quality
- Surplus earth first disposed off and then imported and paid. Total excavation is more than total filling required but still payment of earth brought from outside is made.
- Although surplus earth has some value, the contractor realizes its disposal as well as sale.
- Measurement of earth disposed off is made as per trucks without deduction of voids.
- Compaction of earth by road roller within building is paid for which is neither feasible nor admissible.
- Earth filling under floors is excessive and done without stabilization or earth or earth compactors/surface vibrators.
- Extra payment for grass cutting and removal of trees is made although the same is included in the item of earthwork.
- Compaction of earth is not done as per O.M.C. and not checked by Proctor density method.
- Design of piles not checked by providing test pile and load testing record is not maintained.
- Strength of concrete of pile is lower than required for specified mix due to excessive slump.

### Quality in construction (Concrete Work)

- Over size aggregate containing

- disintegrated and soft pieces used.
- Sand of finer grain size and with more silt content than required used.
- Honeycombing found.
- Thickness of concrete under foundations floors found less.
- Concrete not mixed by mechanical mixer but hand mixed.
- Curing arrangements are not proper. Date of casting not marked.
- Concrete found bulged and not to the plumb.
- Baskets used for aggregate instead of measuring boxes of required sized.

### Quality in Construction (RCC Work)

- Same as for concrete work.
- Reinforcement found less than specified in structural drawings.
- Overlaps in reinforcement were not of required length and not suitably staggered.
- Binding wire of lesser diameter is used and it is not tied at every cross section.
- Broken brick bats/wooden pieces used to provide cover for reinforcement instead of proper cover blocks of adequate strength.
- Spacing of reinforcement not maintained as required.
- Expansion joint not properly located or not provided.
- Steel centering and shuttering specified in agreement but not used.
- Hacking of RCC for having proper key with plastering was not carried out when the concrete was green.
- Lower floors were not suitably supported while casting slabs of upper floors.
- Reinforcement used was not of

- approved brand and not tested before use.
- Thickness of finishing on RCC surface was in excess of requirement.
- Reinforcement found exposed on removal of form.
- Throating and drip mouldings to chajjas not provided.
- Agreement stipulated for controlled design mix concrete, but volumetric concrete mix allowed, thereby compromising with the quality of work and allowing undue benefit to the agency.
- Position and details of construction joints not shown in the structural drawing.

### Quality in Construction (Brick Work)

- Hollow vertical joints in brick.
- The thickness of brick tiles is less than specified.
- Joints in brickwork found wider than required.
- Expansion joints in boundary wall filled up with cement mortar.
- Ordinary bricks used.
- No racking of masonry joints.
- Bricks not being test for efflorescence.
- Ratio of mortar is poor and curing is not adequate.
- Actual measurement of brick wall more than provided in structural drawings. The measurement should be restricted to structural drawings if actual dimensions are more.
- Reinforcement not provided in half brick walls.
- Cross walls not found properly bonded with long walls.

- Queen closers are not used near the end of walls; this results in vertical joints in successive course coming one over the other.

### Quality in Construction (Stone work).

- Stone masonry carried out without use of bond stone or required nos. of bond stones.
- Position of bond stones not marked with paint.
- Leveling course of P.C.C. in case of R.R. Masonry at required places not provided.
- Height of individual stones as compared to length and width not proportional as specified.
- Joints not fully filled with mortar.
- Quality of cement mortar is poor.
- Thickness of masonry joints in excess.
- Cramps, pins and dowels not provided for stone veneering/lining work.
- Dressing of stones not as per specification.
- Workmanship of poor quality with reference to lines and levels.

### Quality in Construction (Wood work/ Aluminium Work/ Glass work).

- Different species of wood used other than specified.
- Wood used was not free from cracks, stakes and dead knots.
- Dimension of various members of frames and shutters not found within the laid down tolerance.
- Portion of timber coming into contact with masonry not treated with coal tar/wood preservative.
- Size of hold fast found less.

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- Plaster rebates in doors and windows not provided.
- Glass of specified approved brand not used. Glass thickness found less.
- Non-ISI marked door & window fittings used.
- Screws sizes in fittings not proper.
- Glues were not used in joint of woodwork.
- Door/windows fabricated at site and not at approved factory.
- Flush door shutters of local make.
- Size of hinges is less.
- Aluminium sections of approved brand not used.
- Aluminium sections were lighter in weight than specified weight.
- Proper sealing between aluminium frame and masonry opening not done.
- PVC weather strip/EPDM lining not provided.
- Thickness of anodizing powder coating found less.

- Aluminium work specified in square meter unit, but detailed drawings of aluminium work not appended with tender document, resulting in acceptance of erratic rates. Subsequent issue of drawings at the advantage of contractor.
- Wire gauge fixed without turning at right angles in the rebates of styles and rails, and further not turned back and fixed tight.

### Quality in Construction (Steel Work)

- Non-standard steel sections used.
- Priming coat not done on steel work.
- Standard steel sections found under size than specified.
- Structural steel members with joint in

between used instead of using in single length as per specification.

- Welding not found of required size(not filled and ground smooth).
- Thickness of steel sheets and size of the frame members of Shutters found less.
- Metal beading & glazing clips not provided though specified.
- Hinges and fittings of doors & windows of inferior quality.
- Glass panes of lesser thickness are used.
- Steel hinges in M.S. Frames not fixed by cutting slots.
- Thickness of top and bottom lids of fan clamp found less than specified.
- Striking plates fixed in steel windows were of M.S. instead of brass/aluminium.
- Fixing of top of window by hold fast/anchor fastener not done.
- Angle frames provided instead of required T frames.

### Quality in Construction (Flooring)

- Glass strips used in flooring lesser in width and thickness.
- Size of marble chips in terrazzo flooring was smaller than specified. Pigment and cement not added as per specification.
- Thickness of CCT/Terrazzo flooring found less.
- Terrazzo tiles of local branch used without prior testing.
- Thickness of tiles/kota stone/marble stone/granite found less than specified.
- Flooring/tilling done both on dado and floors found sounding hollow indicating poor workmanship.

- Stones of smaller size used instead of specified size.
- Exposed edges of stones not machine cut.
- Panel size of CC/Terrazzo floor is larger than required.
- Floors laid are not to lines and levels.
- Joints of tile/stone flooring & skirting found to be thick and crude.

### Quality in Construction (Roofing)

- GI and AC sheets of local brand used. Thickness was found less.
- Side and end laps of sheets were found less.
- Rusted GI hooks of lesser dia used.
- Dia. and thickness of GI & bitumen washer was less.
- Brick coba treatment was found with surface cracks, local undulations, hollow sound and with inadequate slope and thickness.
- Water proofing treatment not carried out by approved specialized agencies and guarantee bond not obtained.
- Joints of brick tile lining thin and not grouted properly.
- Khurras are of less size. Thickness of PVC sheet is less.
- Weight of GI/MS rain water pipe found less. The same were not I.S. mark.

### Quality in Construction (Finishing)

- Ceiling plaster of 10mm to 20mm thickness instead of required 6mm.
- Finished surface of plaster not smooth and uniform and not true to lines.
- Strength of cement mortar used in plastering found to be of poor quality.
- Smaller size grit used in external stone

- grit plaster.
- Double scaffolding not done, though specified in agreement.
- Thickness of cement plaster found less than specified.
- Use of local brand primer distemper & paint not conforming to specifications allowed.
- Surface not properly treated before painting.
- Distemper, whitewash coming on hand when rubbed slightly.
- Brush marks apparent. Required no. of coats not applied.

### Quality in Construction (Water Supply, Sanitary Installations & Drainage).

- CI/GI pipes of non-ISI mark used.
- Clamping of GI pipes either not done or done at inadequate spacing.
- Size of M.S. flat used in M.S. holder bat clamps for fixing CI pipes was less.
- Clamps were not fixed in C.C. blocks.
- Quantity of lead used in joints of CI pipes found less than required.
- Defective Nahani traps used and other traps were found with insufficient seal.
- Water supply and sanitary system not tested as per specifications prior to covering the same.
- Non ISI marked and commercial quality sanitary fixtures used.
- Bib taps/pillar tap/stop cocks etc. of less weight/local brand used.
- Brackets of washbasins, sinks & flushing cisterns were not of required material and size. The same were not painted.
- P.V.C. Water storage tanks were under weight & substandard.

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- Gully gratings and manhole cases were not of required size and weight.
- Size of gully clammers and manhole were not as per agreement/provisions.
- Local brand, inferior quality, S.W/ R.CC. pipes used for drainage.
- Water tightness of joints and slope of lines not checked.
- While refilling under floors earth was not properly consolidated.

### Quality in Construction (Road Work)

- Finished bituminous surface not true to slope, line & levels. The surface was having undulations.
- Over size stones aggregates used for WBM, GSB, WMM, B.M., & DBC.
- Stacks of stone aggregate not made & measured accordingly taking into account voids.
- Payment of laying of WBM not made as per compacted thickness but as per stack measurements.
- Contents of bitumen & constituents aggregate for bitumen macadam and DBC not as per desired mix.
- Required quantity of bitumen not used for tack coat.
- Density of compacted bitumen layers found at variance to required limits.
- Flexural strength of CC pavement not found as per specified requirements and action for reduced strength not taken.
- Expansion/construction joint in CC pavements not made true to dimensions, lines & levels and spilling of bitumen filler in joints was apparent.
- Undulations on finished CC pavements were deep and wide.

- Job mix formula not got approved before start of DBM, DBC etc. work.

### Quality in Construction (Horticulture)

- Estimate not prepared as per landscape plans.
- Landscape plans do not indicate location of plants with their species.
- Species not selected as per environmental conditions.
- Details of plants e.g. species, their height etc. not mentioned in the nomenclature of items of estimate.
- In the absence of proper details of plant the contractors tend to supply plants of cheaper species and of less height.
- Mode of measurement of earth supply is not indicated. Deductions of voids not made.
- Pit sizes for different types of plant not mentioned in nomenclature of items.
- Proportion of refill mixture of earth and manure etc. not mentioned as per requirement of particular species.
- Market rate justification not prepared on the basis of cost of plants, their placing, maintenance cost etc.
- Periodical maintenance contracts do not incorporate activities like cutting of grass, weeding, adding earth and manure wherever required, application of fertilizer etc.
- Quantity of materials like earth, manure, chemicals required for execution not properly accounted for..
- Manure mixed with earth, stone and other extraneous matters used.
- Doob grass mixed with weeds and rank vegetation.

- Good earth mixed with grass/vegetation and building rubbish supplied.
- Unhealthy/diseased plants provide.

### CHECK POINTS AT VARIOUS STAGES

**Appointment of consultants** as well as in operating the consultancy contracts

- Appoint consultant in a fair and transparent way.
- Decision-making should rest with the executives. The consultant's role should be only advisory.
- Fix upper ceiling for fees.
- Provide safeguards against consultant's failure such as performance guarantee, professional liability insurance etc.

### Preparation of tender documents

- Adopt updated standard bidding document
- Ensure conformity among nomenclature of items, specifications, drawings, general and special conditions.
- Avoid stipulating such conditions in the contract, which are not feasible to be operated.
- Stipulate performance guarantee clause to eliminate non serious bidders
- Conduct pre-bid meeting i) to bring clarity regarding spirit of various provisions & ii) to bring necessary modifications, if required. Make minutes of the pre-bid meeting as part of agreement.
- Provide clause to deal with ambiguous provisions (order of precedence) in the tender document and ambiguity in the tender submitted by the contractor.

- Provide enough safeguards against misuse of mobilisation advance
- Notify objective evaluation criteria in the tender document.
- Stipulate condition regarding splitting of quantities, if required, in the tender document
- Notify criteria of splitting in the tender document itself if splitting of work / supply order is envisaged (splitting is envisaged when L1's capacity is less than required or to avoid heavy reliance on one firm)

### Inviting tenders/ tender stage-

- Prefer open tendering as far as possible
- In case limited tenders are resorted to, prepare & update panel of contractors/vendors in a transparent way.
- Ensure adequate & wide publicity. (Web publicity is necessary even in case of limited tenders)
- Ensure adequate time for submission of offers.
- Upload NIT & tender document on web site, even in case of limited tenders.
- Notify complete address of place of tender submission.
- Pre-qualification criteria is notified and applied as per notified criteria. In case of relaxation in pre-qualification criteria tenders are to be recalled.
- Past experience or observations of audit / vigilance etc to be taken into account.
- Commission's circular regarding negotiations with L1 are to be complied with.
- Conditions of tenders are not relaxed after price bids are received.



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### Opening of Tenders

- Open the bids in presence of bidders.
- Attest and account for corrections, omissions, insertions, overwriting
- Prepare 'on the spot summary' in tender opening register

### Pre-qualification

- Keep the PQ criteria neither too stringent nor too lax.
- Prepare the PQ criteria specific to the requirement of the work in clear terms.
- Notify the evaluation criteria in the PQ document.
- Verify PQ credentials.
- Evaluate the bids exactly as per the notified criteria
- Retender if relaxation in PQ criteria is necessary

### Evaluation and award of work

- Evaluation of tenders exactly as per the notified criteria.
- Timely decision within validity period.
- Complying with commission's circular regarding negotiation.
- Ensuring that conditions / specifications are not relaxed in favour of contractor to whom the work is being awarded.
- Ensuring that work order / supply order is placed within justified rates.
- Match the offered BOQ with tender BOQ.

### Preparation of tender contracts

- Compare & match tender document with agreement
- Ensure that agreement is signed & sealed properly in time.
- Verify and match bank guarantees.
- Watch deviations, especially in abnormally high rate and high value items.
- Ensure recoveries as per contract.
- Reimburse taxes and duties, if applicable, only on the production of relevant document.

### Execution stage-

- Conditions regarding insurance policies, P.G., Labour license etc. Complied with.
- Major deviations not done.
- Recoveries are made as per contract.
- Proper record of hindrance maintained.
- Mandatory tests are carried out.
- Ensure compliance of conditions regarding licensees, insurance policies and deployment of technical staff and prescribed tools & plants.

## COMMON IRREGULARITIES OBSERVED IN FIELD / SITE INSPECTION OF VARIOUS, WORKS

1. As per General Conditions of Contract various policies such as Contractors All Risk and Workman Compensation, Professional Indemnity Insurance Policy, etc are to be provided by contract in the joint names of the employer and as per prescribed time frame. But, number of instances have been noticed where due care has not been taken to ensure compliance to Insurance Policy requirements.
2. It is also seen that the contractors, during execution of work deviates from approved make, prescribed in tender document citing one or other reason. This practice should be discouraged as it may defy the very purpose of fair competition among the participants; any apprehension about approved makes should be brought to the notice of employer during pre-bid meeting, pre-tender stage itself.
3. It has also seen that regarding the quality of Material Agencies completely rely on the manufacturer Test Certificate and refrain from getting the material tested at approved laboratories. The cross checking of qualities of material by other approved laboratories should also be given due importance.
4. Testing of materials by DMRC representatives or from independent lab, despite being prescribed in Contract specifications / conditions is generally waived off. This should be resorted to only in exceptional circumstances, after recording suitable reasons on the files
5. Check the year of manufacturing to avoid use of obsolete items/electronic components.
6. Prefer testing with the Testing Equipment to be supplied under the contract.
7. It is observed that Pile Integrity Tests were not carried out on 25% Piles as per contract stipulation in Phase – II. Most of the contracts were lump sum Design and Build contract.
8. Liquidated Damage (L.D) – In the special condition of the contracts, there is provision for levying liquidated damages of certain fixed total amount per day for each mile stone. However, it was noticed that LD was calculated on pro-rata basis for incomplete portion of work, thus violate contract conditions and dilute penalty.
9. Interface works : It is seen that some interface work i.e cable tray support, D.G. Set, pump set foundation works are included in both civil and E&M contracts. Thereby causing duplication of payments.
10. Each contract delay is justified based on delay caused by other contractor. Finally no one is responsible & delay gets accepted.
11. No proper record kept for utilization of Mobilisation.
12. Interest on Mobilisation advances is not recovered even after expiry of stipulated contract period, despite the provisions in GCC.

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13. For non submission of Performance guarantee, deduction from bills is accepted, this should be avoided.
14. Delay in payment to the sub-contractors and material suppliers by the main contractors.
15. Payments of wages less than specified as per Minimum wages Act.
16. Test Reports of material by the Agencies without concluding remarks i.e. satisfactory / unsatisfactory, should not be accepted.
17. Non – preparation of proper Inventory of critical items of E&M work at the time of handing over.
18. Due attention is not being paid by firms for transfer of technology (TOT) and Training to the staff as per stipulation of contract provisions.
19. Extra payment is made for modification in pile and pile cap design for avoiding shifting of utilities. The cost was inbuilt in lump sum package.
20. Extra item paid for steel liners for piling in drain, cost of which in Built in lump-sum package.
21. Block Board of local brands were used in staff quarter in place of proven brand specified in the contract.
22. Geysers of heavy capacity (35 ltrs commercial use) have been specified in civil contracts for Type-I and Type-II staff quarters, O&M wing not consulted.
23. Envelope of financial Bid not authenticated at both ends by Tender Opening Committee (TOC). Resulting in tempering of financial bid prior to opening.
24. Tree cutting below 300mm girth though included in lump sum cost was paid as extra items.
25. Cable trays, not provided as per contract specification in underground corridor.
26. All species of trees were clubbed in one item, cheaper species were planted.
27. For earth work , initial level were not recorded/taken.
28. Site dumping earth changed from the contract stipulation.
29. Frequency of testing water samples not followed as per codal provisions.
30. Birla/JK white putty 3.5mm thickness approved as extra item for basement parking @Rs.157 per sq.m. Actual thickness was measured, found 1mm. At other locations rate was Rs.40/-per sqm. For normal putty 1mm similar item available in DSR at much less rate was not considered for the same.
31. Synthetic Enamel painting done on door frames made of 1st class teakwood. Thus incurring infructuous expenditure.
32. Maintenance charges for trees for three years were paid in advance.
33. Fake credentials have been detected.
34. Forgery by submitting affidavits on current stamp paper used for past MOUs
35. Recovery for non deployment of project/safety personnel as per contract provisions not done.
36. Recovery for machinery tools and plants not provided as per contract provisions.
37. 20% Test checks are not being done by some of the Dy.HODs. Despite the issue of circular in this regard.
38. In one of the E&M contract, stipulated server of 64 bit was to be provided.

## Philosophy of Life

Besides this, even honest persons who are well up with rules and regulations, face vigilance cases because of attitudinal problems leading to lopsided decisions which fail the test of PECT. Behind various lopsided attitudes that we develop, lies an erroneous philosophy of life. It is necessary to review our philosophy of life to correct such attitudinal problems. Let's look into this aspect so that we may develop a correct philosophy of life which will keep us from developing attitudinal problems which lead to vigilance cases.

Five - **Rights of procurement:** Public procurement should be based on PECT. These four keywords should enable each procurement to be done to obtain "5-Rights" of procurement:

- (i) Right quality;
- (ii) Right price;
- (iii) Right time;
- (iv) Right place and
- (v) Right quantity.

The above "5-Rights" can only come if the procurement is done from the right source. We will derive certain dos and don'ts by application of PECT to the "5-Rights".

Right Quality: To obtain right quality, we must ensure right description, right specifications, right drawings and right inspection (DSDI). PECT in obtaining right quality would demand:

- (i) Description, Drawing, specification and inspection should be bare minimum as per the ultimate use.
- (ii) DSDI should not suite only a particular firm or a group of firms.

During execution contractor provided server of 32 bit citing reason that performance of 64 bit as new product yet to be tested/established, credit proposed for the same was very marginal.

However, on the management persistence, the issue was deliberated in length credit as per the highest rate quoted by the bidders was taken resulting into a recovery of Rs.2.25 crores from the contractor.

Therefore, all efforts be made to ensure that suitable caution is observed.

Above list is only indicative in nature & is to cite certain instances / practices which may amount to irregularities or undue favour to the Contractor.

## Developing a philosophy of life for public procurement

### Lurking Fear

Employees, even honest ones, have lurking fear of landing in vigilance cases which withholds them from giving their best to the organization. This fear not only arises from uncertainties about the view that would be taken by vigilance organization in case of a genuine mistake without any mala-fide intention but also from plethora of ever-changing rules.

### A common sense Touch-Stone

Seeds of all the rules, procedures and regulations are fundamental principles – like the rules of financial propriety which can be further distilled to four commonsense keywords:-Prudence, Equality, Consistency and Transparency (call it 'PECT'). We can use 'PECT' as a touch-stone for judging our knowledge and application of rules.

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(iii) DSDI should be complete by itself. There should be no ambiguity. All tenderers must get equal opportunity in getting all relevant details.

(iv) Procurement of items "as per sample" creates lack of transparency and should be resorted to only in cases where feel and finish cannot be specified. Even in such cases it will be best to display stock samples and call for tenders and inspection conforming to such samples instead of inviting submission of samples.

**Right Price:** PECT in this case can be ensured if:

(i) Rate justification is based on tangible factors like last purchased rates, published maximum retail price, raw material cost, prices of similar or alternative products, prevalent industry unit rate price etc.

(ii) Unnecessary negotiations/counter-offers just to extract a small price advantage even from reasonable offers will vitiate the tender system itself. Remember the tender system is designated to obtain best possible price. Its purpose is not to obtain unreasonably lower price by coercion.

(iii) Be diligent to look at all pages of all the offers received howsoever beyond the range of consideration. There are likely to be lurking price implications at unlikely places in the offer.

(iv) Be extra alert in case of closely competitive tenders and in case of unhealthy cartel type of situations.

**Right time & place:** PECT in this case will require:

(i) The right time and place which have bearing on price should be specified

exactly in the tender. The offer accepted should conform to specified time & place.

(ii) Logistics of supply/mode of transport etc. should also be clearly specified.

(iii) Payment terms which are related to right place and time should also be specified.

**Right Quantity:** PECT in this case will demand:

(i) Right quantity to be justified taking into account all the stocks available; including the ones in subsidiary stores/in safe custody; the pending orders in hand; past pattern of consumption tempered with operational changes. Club as many requirements for the same item as possible, duly taking into account the shelf-life of items.

(ii) Major change in the tendered quantity creates lack of transparency.

(iii) In case of distribution of quantities among more than one tenderer, PECT needs to be maintained.

### Predisposing Attitudinal problems:

Following general attitudinal problems predispose people to vigilance cases.

(i) A reputation for lack of balanced/controversial approach also leads to vigilance cases. Using one-sided arguments in favour or against a particular proposition attracts controversy. The employee involved in procurement must consistently take decisions which avoid controversy.

(ii) Being too intellectual or getting swayed by smart arguments is not very good.

Arguments of 'penny wise and pound foolish' often lead to questionable decisions. Do not use any criteria for judging offers which are not advertised in the tendered documents.

(iii) Too secretive or lack of openness is also detrimental. Lack of access to the officer and failure to be a good listener also prevents relevant facts and inputs for decision making. Allowing sufficient access to authorized tenderers to explain their cases and being a good listener would avoid many wrong decisions. Helpful attitudes, maintaining equidistance from all vendors helps you stay away from vigilance cases arising out of vindictiveness.

(iv) Too much ego and a feeling of being 'master of all that one surveys' is very dangerous.

(v) Covering up of lack of timely planning by procedural shortcuts is dangerous. Timely planning, timely action would avoid urgent/emergency procurements using shortcuts procedures. It is these shortcuts procurements which may lead to vigilance cases. Therefore a uniform timely action should be preferred rather than display of gutsy shortcut skills. The philosophy of life to correct attitudinal problem:

**The right attitudes have their seeds in the 'philosophy of life' that we develop.**

A right philosophy for persons involved in public procurement is based on:

(i) Maintain innocence and a sense of enquiry - it is not only the source of creativity and innovation but also makes you uncontroversial.

(ii) Keep a watch on your ego, worries or fears – these generate attitudes leading to violations of PECT. This can be corrected if the employee takes himself lightly, develops a sense of humour and irony and realizes that each and every procurement is not the end of the world itself.

(iii) Avoid partisan identity based on caste, region or group politics – these lead to decisions violative of PECT.

(iv) Develop an attitude of empathy with all those with whom you come in contact. Empathy will alert you whether your actions are going to violate PECT.

(v) Temper your desire for the wealth or expensive life-styles. Do not compete with others in this area. Accept that a government job can not provide extravagant wealth or life-style. If this is unacceptable, you are in a wrong job.

**To sum up:** Development of a right philosophy of life leads to right attitudes which incorporate PECT as a part of your personality. Such personality is the ultimate shield against vigilance cases.