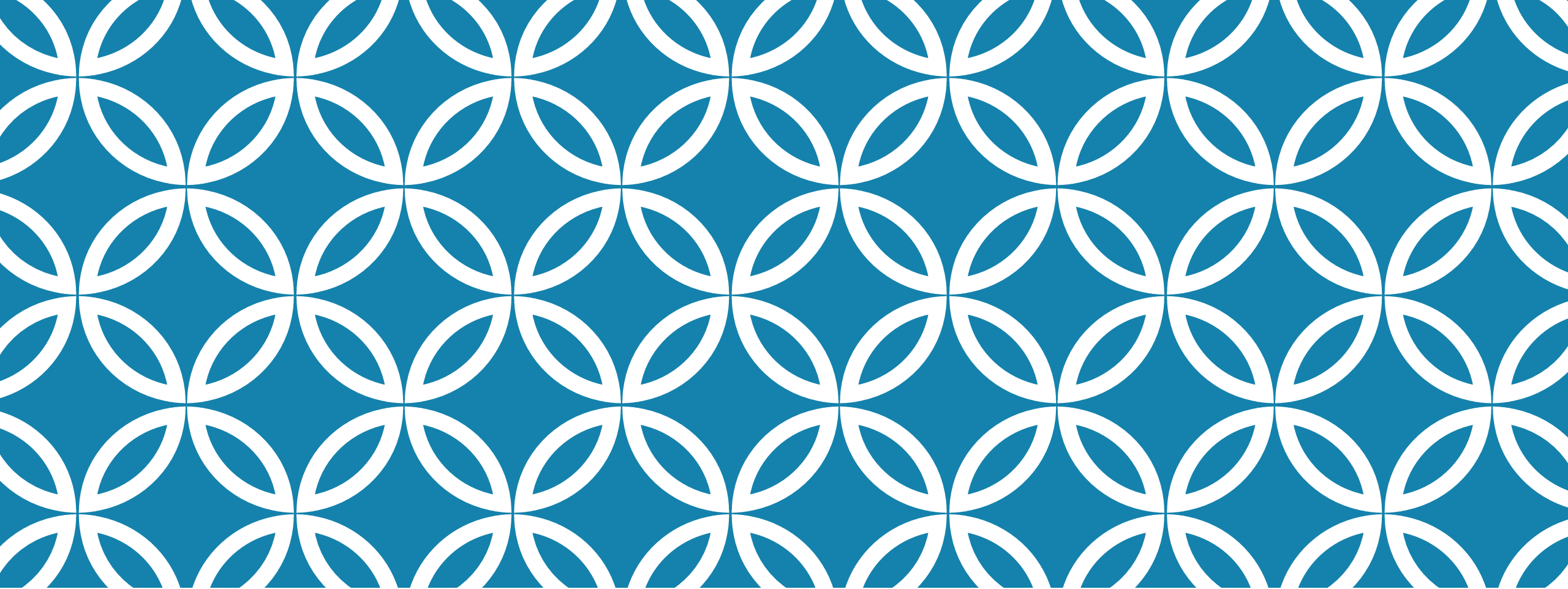
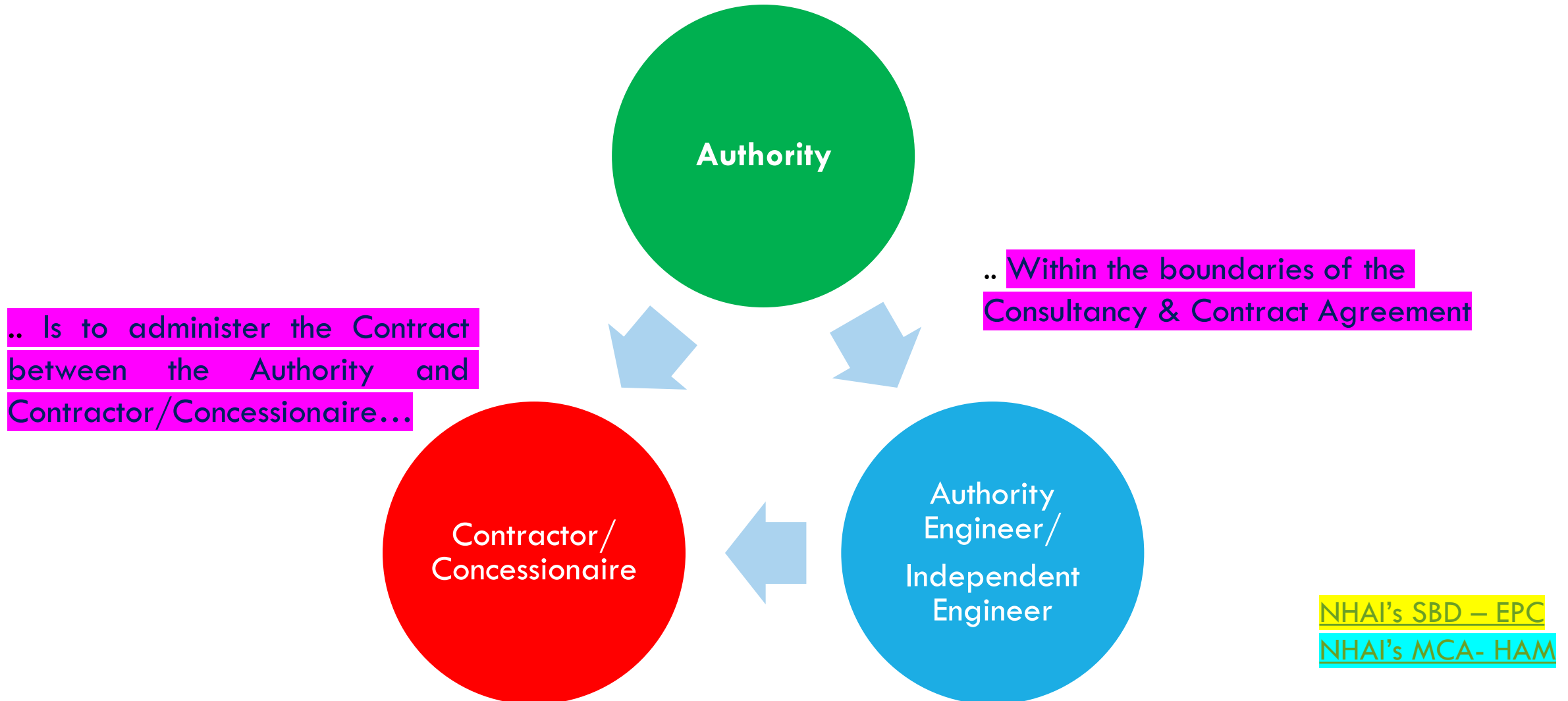




ROLES AND RESPONSIBILITIES OF AUTHORITY /INDEPENDENT ENGINEER

**Presented by
Er.A.KANNAN
ADE(H) on deputation
Date: 22.07.2025**

EPC/BOT PROJECTS – ROLE OF AE/IE



EPC/PPP(HAM) CONTRACTS — ARTICLES & SCHEDULES

▪ Articles – 27 / 42

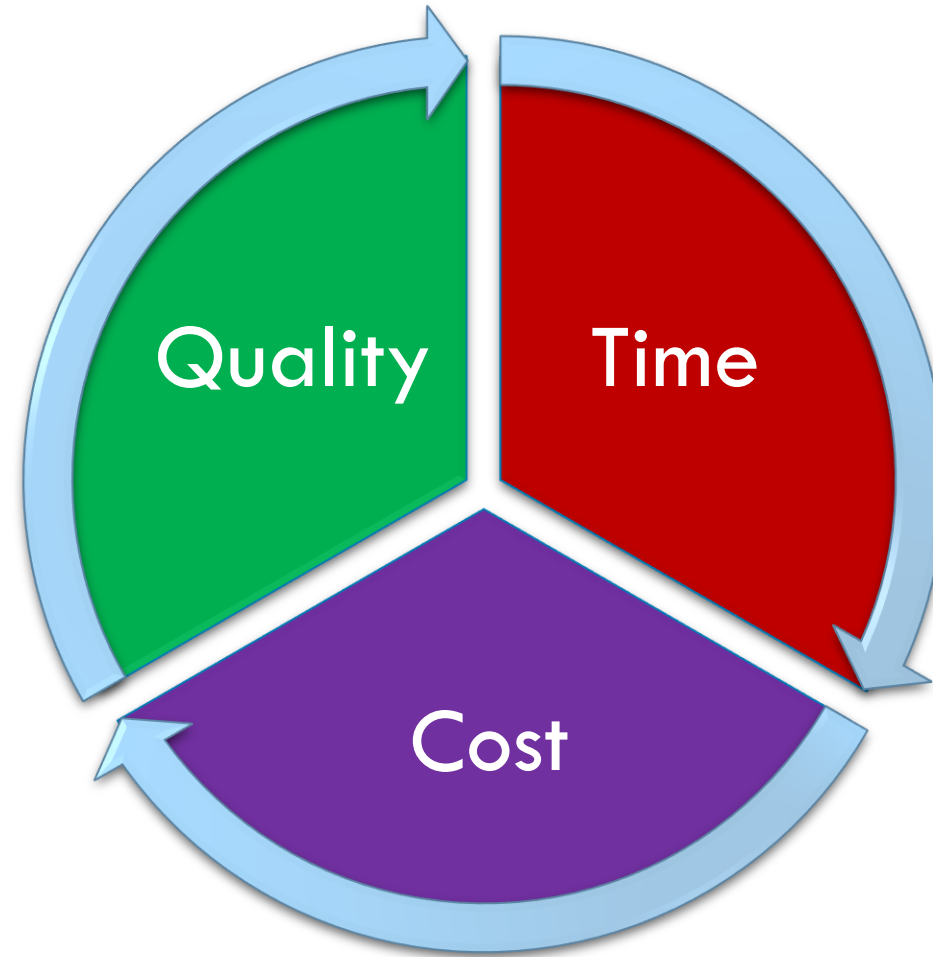
EPC (Schedules)		PPP (HAM) (Schedules)	
A-Site of the Project	K- Test on completion	A-Site of the Project	K- Maintenance Requirements
B- Development of Project Highway	L – Completion certificate	B- Development of Project	L-Safety Requirements
C-Project Facilities	M- Payment reduction for non-compliance	C-Project Facilities	M-Selection of IE
D-Specifications & Standards	N- Selection of AE & ToR	D-Specifications & Standards	N- ToR for IE
E- Maintenance Requirements	O- Forms of payment Statements	E-Applicable Permits	O-Escrow Agreement
F-Applicable Permits	P- Insurance	F- Performance Security	P-Panel of Chartered Accountant
G- Performance Security	Q- Tests on Completion of Maintenance Period	G- Project Completion Schedule	Q-Vesting certificate
H- Contract Price weightage	R- Taking over certificate	H-Drawings	R-Substitution Agreement
I - Drawings	S-Procedure for Dispute Resolution	I- Tests	S- Procedure for Dispute Resolution
J- Project Completion Schedule		J- Completion Certificate	

PERFORMANCE CRITERIA

- Adhere to the provisions of the Consultancy and Contract Agreement
- **Notify** the Authority and the Contractor /Concessionaire about the non-adherence to the provisions of the Contract /Concession Agreement
- Adhere to the **timelines** given in the Contract/Concession Agreement
- The AE/IE shall discharge its duties in a **fair, impartial and efficient manner, consistent** with the highest standards of **professional integrity and Good Industry Practice**.

Note: Failure to adhere to any of the above, constitutes non-performance of the AE/IE

PRIMARY OBJECTIVES



PERIOD OF SERVICES



Authority Engineer/**Independent Engineer** shall be appointed within 10 days /**60 days** from the agreement or before the appointed date and perform as per Schedule N/**Schedule M&N**

GLOBAL RESPONSIBILITIES

No	Task	DP	CP	OP
1	Design Review	Yes (PPP)	Yes (EPC)	
2	Inspection & Monitoring of Construction		Yes	
3	Testing upon completion		Yes	
4	Monitoring of O&M			Yes
5	Evaluation of Costs (Change of scope)		Yes	
6	Evaluation of Time (Extension of Time)		Yes	
7	Divestment (PPP)			Yes
8	Dispute Resolution		Yes	Yes

GLOBAL RESPONSIBILITIES — REQUIREMENT PRIOR APPROVAL OF AUTHORITY

- a) any Time Extension;
- b) any additional cost to be paid by the Authority to the Contractor;
- c) the Termination Payment; or
- d) issuance of Completion Certificate or
- e) any other matter which is not specified in (a), (b), (c) or (d) above and which creates a financial liability on either Party.

DETAILED TASKS — DEVELOPMENT/CONSTRUCTION PERIOD

- Procurement of site (handing over of site)
- Design Review — In conformity with the Specifications and Standards — Schedule D
 - Review of Studies and Investigation carried out by the EPC Contractor/ Concessionaire
 - Topographic Surveys
 - Geotechnical Surveys
 - Hydrological Surveys
 - Traffic Studies
 - Borrow Areas and Quarries
 - Review of Designs
 - Geometric designs
 - Pavement Designs (flexible and Rigid)
 - Structural designs
 - RE wall Designs and Miscellaneous

DETAILED TASKS - DEVELOPMENT/CONSTRUCTION PERIOD (CONTD.)

- Design Review

- Review Drawings

- Highways – Plan and Profiles
 - Structures – Bridges, flyovers, underpasses, RoBs, Culverts etc.
 - Miscellaneous – Highways & Structures
 - Safety Report
 - EMP Report

- Review of Construction programme (part I, II & III)

- Review of QA Plan & Procedures

- Review of Construction Methodology

- Review of contracts – EPC, O&M etc (PPP projects) –

Within 30 days of the Appointed date by the Contractor
Comments/approval by AE within 15 days

Art 10.1

Within 30 days of the Appointed date by the Contractor
Comments/approval by AE within 21 days

Art 11.2

15 days prior to commencement of construction by the Contractor
Comments/approval by AE within 10 days

Art 11.3

within 7 days from the receipt

DETAILED TASKS - DEVELOPMENT/CONSTRUCTION PERIOD (CONTD.)

- Review of Setting out
- Review of schedules
 - Adequacy of Documents
 - Scope
- Review of work front
 - Review of Hindrances
 - Review of Clearances
- Review of establishment of Laboratories
- Calibration of Plant & Equipment
 - Adequacy of Capacities as per Agreement

DETAILED TASKS - DEVELOPMENT/CONSTRUCTION PERIOD (CONTD.)

- Check Insurances as per schedule P and as per the requirements of Applicable Law (Art.20)/(Art 26)
- Professional Liability Insurance for design work- 3% of the Contract price (30 days of the Appointed date)
- Other Insurances within 10 days of the Appointed date
 - Insurance during construction period & Operation period
 - Insurance for Contractor's defects liability
 - Insurance against Injury to Person and damage to property
 - Comprehensive All Risk Policy(CAR) – Works, Plants, Materials & Equipment
 - Third Party Liability for goods or property damage
 - Third party motor vehicle insurance
 - Workman's Compensation
 - Concessionaire's general liability arising out of concession
 - Any other insurances (Force majeure events which are insurable)

DETAILED TASKS - DEVELOPMENT/CONSTRUCTION PERIOD (CONTD.)

- Check Permits
 - Quarrying – including blasting
 - Establishing Plants – Pollution Control
 - Hot Mix Plant
 - Wet Mix Plant
 - Batching Plant
 - Crushers
 - Tree Cutting Permission

DETAILED TASKS - CONSTRUCTION PERIOD

- Quality Monitoring
 - Daily Inspections (Art.11.8)
 - Attending to RFIs (Request for Inspections)
 - Issuing Site Instructions
 - Maintenance of existing project highway
 - Issuing Non Conformance Repots, if required
 - Procedural issues
 - Repeated Mistakes
 - Defects in Irreversible works like concrete, asphalt works etc
 - Samples – Manufacturer's test report/std samples of manufactured materials/samples of any other materials
 - Testing (Art.11.10)
 - Rejection with reasons and retest under the cost of contractor/concessionaire (Art.11.12)
 - Removal of works. If not, recommend the Authority to replace the items at the cost of contractor (Art.11.13)

DETAILED TASKS - CONSTRUCTION PERIOD (CONTD..)

- Monthly Inspections Report to Authority (Art.11.8)
 - Defects and deficiencies
 - Issue Monthly Inspection Reports
- Quality Framework
 - Quality Assurance – Concessionaire (PPP)/ Contractor (EPC)
 - Quality Control – EPC Contractor (PPP)/Contractor (EPC)
 - Quality Monitoring /Review – AE/IE

DETAILED TASKS - CONSTRUCTION PERIOD (CONTD..)

- Progress Monitoring
 - Issue Notices for slow progress (Art.11.14/ Art.13.4) – to be addressed within 15 days by Contractor/Concessionaire
 - Monitor Milestones
 - Recommend for Levy of damages
 - Cause revision of Construction Programme
 - Recommend Extension of Time for completion
 - Issue Monthly Progress Reports/Review the Monthly Progress report submitted by Concessionaire/Contractor – 10 days after the close of each month (Art.11.7)
- Monitor Safety of Works, Users and Workers
 - Recommend for suspension of Works
 - Follow procedures to revert the Suspension Orders

DETAILED TASKS - CONSTRUCTION PERIOD(CONTD..)

- Suspension of works in case of serious lapses in Quality of Construction
- Contract Administration
 - Change of scope
 - Change in Law
 - Force Majeure
 - Claims and Disputes
 - Assist in Arbitration
 - Mediation/Conciliation
- Review the Maintenance Manual

DETAILED TASKS — O&M PERIOD

- Maintenance requirements (Art.14) as set forth in Schedule E / Schedule K
- Review Monthly Maintenance Programme (10 days prior to be submitted) (Art.14.3)/45 days prior /within 15 days (Art 17.4)
- Prior approval to be obtained from AE for lane closure(10 days prior to be submitted/within 5 days of receipt) (Art.14.5)
- Work to be taken up within 15 days from the approval of Maintenance Inspection report (Art.14.7)
- Failure to restore lane closure then reduction of payment as per Schedule M (Art.14.6)
- Inspect the Highway on a regular basis and furnish inspection report within 10 days of inspection to the Authority & Contractor (Art.15.1 & 15.2)
- Report of unusual occurrence – every day by email (Art.15.4)
- Rectify any defects by Contractor within 15 days from the notice (Art.17.2)
- Taking over certificate
 - Fulfilled maintenance requirement as per Schedule E
 - Complied all testing as per Schedule Q
 - Taking over certificate to be issued as per Schedule R

RESPONSIBILITIES OF AE/IE





DESIGN REVIEW

Design risk with the EPC
Contractor/ Concessionaire

REVIEW REPORT — REVIEW OF DOCUMENTS & GROUND VERIFICATION

- Procurement of site (Art. 8) / (Art.10)
 - Handover Memorandum (valid evidence/valid license)— within 10 days — signed by Authority, Contractor and AE
 - Contractor, fails to join for site inspection or making dispute — AE shall decide the parts of available site.

REVIEW REPORT — REVIEW OF DOCUMENTS & GROUND VERIFICATION

- Schedule A – Existing Assets
 - Inventory of Road, Structures and other facilities
- Schedule B – Upgradation/Development Proposals
 - Typical cross sections and schedule of application
 - Rehabilitation proposals – widening, overlay, repairs etc.
 - New Proposals – bypasses, underpasses, cross drainage structures etc.
- Schedule C – Facilities (Upgradation or New)
 - Bus bays, Truck Lay byes, Rest areas, Toll Plazas, Lighting etc.
- Schedule D – Specifications and references to Schedules B & C
 - Record deviations, ambiguities and change of scope if any and see it on holistic approach and good industry practice.

SCOPE OF DESIGN REVIEW



Investigations

- Topographical Surveys
- Traffic Surveys
- Geo-Technical Surveys
- Hydrological Surveys



Designs

- Pavement Design
- Geometric Design
- Structural Design
- RE Wall & other Misc.

CHALLENGES IN DESIGN REVIEW- REVIEW OF DOCUMENTS & GROUND VERIFICATION

- Time lines
 - 1st review in 15 days (maximum); Major Bridge or structure – 30 days/ 15 days in case of PPP
 - 2nd review in 10 days/7days (PPP)
 - If delayed, the designs are deemed approved
 - All design & drawings approved within 90 days from the appointed date
 - As-built drawings/records –before commencement of testing –Art.10.8/Art. 12.2 (g)
- Simultaneous submissions
 - Submission/Clearance as per the construction program
- AE/IE to review& comments
 - Contractor/Concessionaire is solely responsible for the designs irrespective of the approvals/commented by the IE/AE or Authority
- AE/IE to declare if the designs are compliant to scope and specification or otherwise
- Concessionaire's reluctance to adhere to the comments delays the COD



QUALITY ASSURANCE

QA System, Inspection & testing

QUALITY ASSURANCE

- Review of Methodology of Execution
 - Overall Sequence
 - Individual activities- road, structures and miscellaneous (Methodology 15 days before commencement work/10 days from submission Art.1 1.3)
- Review of Quality Assurance Plans (within 30 days of AD/21 days from the submission- Art.1 1.2)
 - For individual components of works
 - Type and Frequency of test
 - Performance criteria
 - Acceptance criteria
- Review of Laboratory set up
- Review of Calibration of Plant and Equipment
- Technical Audit by Authority to review the progress and quality(Art.1 1.4)



CONSTRUCTION SUPERVISION

Tools for supervision

TOOLS FOR SUPERVISION



INSPECTION AND TESTING —QUALITY CONTROL PERFORMED BY THE CONCESSIONAIRE /EPC CONTRACTOR

- Consolidated list of Requests for Inspection (RFIs)
 - IE/AE to select the stretches or components
- Witnessing a minimum of 50%* of the quantity & or tests (Art.11.10)/10% (PPP)
 - AE/IE may choose to witness more, depending on the level of confidence he has on the Concessionaire/EPC Contractor
- AE/IE to joint inspection of the site once in a month or lesser period along with the representatives of the Concessionaire/EPC Contractor and the Authority. Authority shall verify the video recording provided by Contractor/Concessionaire
- Submit a report within 7 days of the subsequent month on the kind of supervision performed /Inspection report on monthly basis including defects & deficiencies to the Authority & Concessionaire (PPP)
- Ensure maintenance of existing road during the construction period (video recording before and after signing agreement).

Note: 100% as per recent amendment

INSPECTION AND TESTING —QUALITY CONTROL PERFORMED BY THE CONCESSIONAIRE /EPC CONTRACTOR (CONTD.)

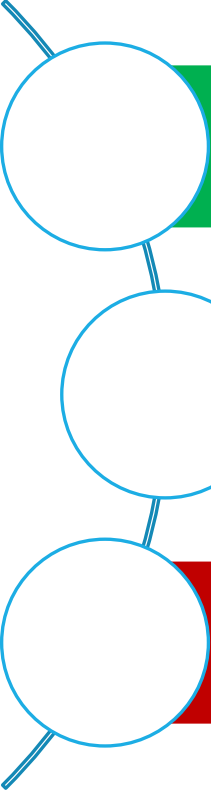
- Submission of all quality control records and documentation before the completion certificate & Road signage plan 6 months prior to issue of completion certificate (Art.11.15)
- Video recording of every month by the Contractor during the construction and biannually during the operation (Art.11.16)/Art.13.6 – NSV survey & drone video mandated twice in a year during the maintenance period
- Concessionaire shall comply the safety requirements as set forth in Schedule L (Authority shall appoint “Safet Consultant” for safety audit Art.18)
- Suspend the unsafe works (through Authority) (Art.11.17/13.5) – Preservation cost to be borne by the Contractor – In the case of suspension of work by the default of Authority, PSD to be extended)



CONTRACT ADMINISTRATION

Important Aspects

CHANGE OF SCOPE (COS) — AE/IE TO CONFIRM IF IT IS A COS



Notification of the Need

Authority or Contractor/Concessionaire, any one can Notify

Change of Scope Notice

Contractor/Concessionaire to prepare preliminary estimates and seek approval

Change of Scope Order

Contractor/Concessionaire to prepare detailed design, estimates and seek COS order

EXECUTION OF COS WORKS — ART.13/ART.16

- Authority may modify/alter (+ve /-ve) within 6 months from AD (Art.13.1)
- Contractor may request any CoS within 90 days from Appointed Date (“Change of Scope Request”-Art.13.2)
- Beyond 6 months but before 50% scheduled completion period with mutual agreement without any claim (Art.13.1)
- AE to issue the Change of scope Notice to the Contractor/Concessionaire and Contractor submit the proposal within 15 days from the notice.
- Change of scope order by Authority (Art.13.2)/ (Art.16.2)

EXECUTION OF COS WORKS — ART.13/ART.16 (CONTD.)

- Contractor/Concessionaire to
 - commence the COS works only after receiving COS order
 - Claim Interim payments through RA bills as per payment schedule defined in the COS Order/Claim bills with 20% advance as per Change of scope order (Art.16.3)
 - COS Not more than 10% contract value and 10% (continuous period of 3 yrs) & 25% upto Concession period
- AE/IE to
 - Recover the advance if any in monthly RA bills
 - Pay as per actual quantities
 - Reduce the percentage of –ve COS works in each bill

TIME FOR COMPLETION — PROJECT MILESTONES

- Appointed date
 - Commencement date
- Scheduled Completion date
 - Complete 100% works within xx days from the Appointed Date
 - Punch list allowed
 - Sometimes xx % completion is also allowed for issuing the certificate
- Milestones (requirements vary)
 - 35% schedule construction period / 20% progress in 240 days from the Appointed date
 - Commence construction & 10 % stage payment
 - 60% schedule construction period / 35% progress in 430 days from the Appointed date
 - Commence structures and 35% stage payment
 - 85% schedule construction period / 75% progress in 730 days from the Appointed date
 - Commence facilities & 70 % stage payment

EXTENSION OF TIME — WHEN DO WE EXTEND THE COMPLETION DATE

- If the EPC Contractor/ Concessionaire/ cannot complete the Project within the SPCD due to the following reasons, AE/IE will determine the eligible extension time
 - Delay in giving vacant access and RoW or work front
 - Change of scope
 - Force majeure
 - Suspension of works
 - Delay in procuring clearances
 - Environmental clearance
 - Coastal Regulatory Zone
 - Tree cutting permission (exceptional cases)
 - Utility clearances – water, electrical , gas , telephone etc.(exceptional cases)
 - Issuing GADs for RoBs/RUBs
 - Forest Clearances
 - Wild Life Clearances

EXTENSION OF TIME- BY OBJECTIVE EVALUATION

- Break the Project into as many small segments as required that would reflect the hindrances – Hindrance Register
 - Land acquisition
 - Removal of structures
 - Removal of utilities
 - Felling of trees
 - Public resistance
 - Public representation for new structures
 - Date of clearance
 - Scheduled
 - Actual
- Recommend Extension of Time for completion – (Art.10.5)
- 15 days notice furnished by the Contractor
 - within 15 days additional particulars to be called upon
 - resubmission within 10 days/
 - 30 days determination of EoT

EXTENSION OF TIME- BY OBJECTIVE EVALUATION (CONTD..)

- Critical date of clearance
- Time required for completion of activity
- Delay on account of Contractor/Concessionaire
 - Actual date of completion – Anticipated date of completion
- Delay on account of Authority
 - Actual date of handing over – Scheduled date of handing over
- Weighted delay
 - Lengthwise proportionate delay
- Aggregate delay – Concurrent delay



CONSTRUCTION PROGRAMME

A tool for analysing claims

CONSTRUCTION PROGRAMME - A TOOL FOR ANALYSING CLAIMS

- Qualities of a good construction programme
 - Micro-level
 - Separate Program
 - For road portion of 1 to 2 km
 - For culverts in each section
 - For each structure, bridge etc.
 - For each toll plaza
 - For the hindered works
 - Responsive
 - All activities are properly linked so that effect of delay in any activity can be reflected in the date of completion
 - Resource based – with actual no. of plants and equipment
 - Can be tracked and kept live by updating with % progress
 - Linked to BoQs, Raw Materials, Plant & Equipment and cash flow

FORCE MAJEURE — CONTINUOUSLY FOR 24 HRS, > 10 DAYS IN A YEAR

Article – 21 / Article 28



Political Event

Change in law, unlawful acquisition of assets, hold clearances

Indirect Political Event

Act of war, Industry/State wide strikes

Non-Political Event

Act of God, floods, earthquakes, local strikes or boycotts(not the contractor)



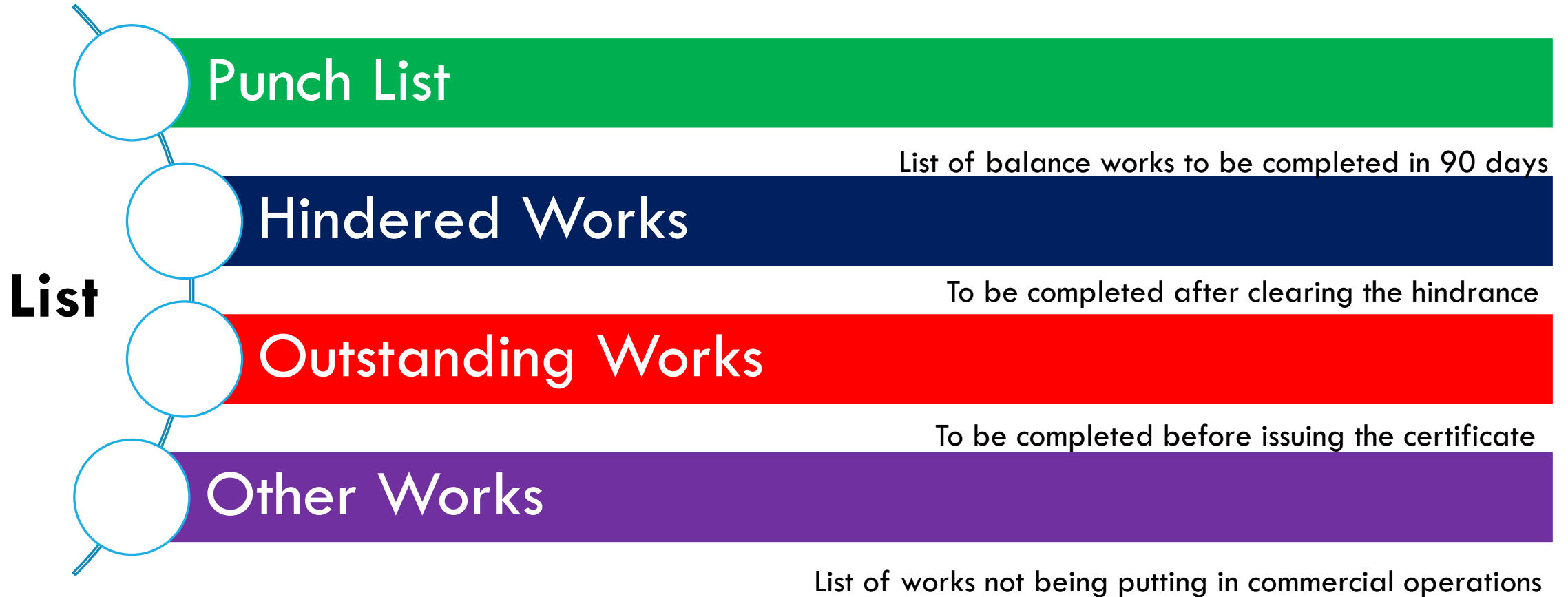
COMPLETION CERTIFICATE

Commercial Operation Date
(COD)

COMPLETION CERTIFICATE

- Test on completion (Art 12.1)/(Art 14.1)
 - Contractor shall notify 30 days prior to completion of project highway or section to test
 - Schedule date & time to be notified to the Authority by AE/IE for witnessing the test (Any delay by IE – Concessionaire shall issue notice to IE)
 - Tests shall be as per Schedule K/Schedule I
 - Before testing the AE/IE shall notify the contractor to rectify any defects or deficiencies
 - All test data including test results shall be furnished by the AE/IE to the Contractor and Authority
 - Authority Engineer can order additional tests also
 - Issuance completion certificate as per (Schedule L) (Art 12.2)/ Schedule J (Art 14.2)
 - Rescheduling of test (Art.12.3)/(Art. 14.6)
 - Review the Maintenance Manual – 60 days prior to PCD-90 days prior to PCD /15 days review comments(Art.10.7/Art17.3 to be updated every 3 years)

ISSUE OF PROVISIONAL CERTIFICATE - BOT



PROVISIONAL COMPLETION-PUNCH LIST ITEMS - BOT

- Concessionaire/EPC Contractor to complete (Art.14.3)
 - All the works from shoulder to shoulder including Median Plantation
 - High Embankment Portions
 - Sign Boards, Pavement Marking, HTMS, and safety appurtenances
 - Toll Plaza, Equipment related to tolling and incident management
- Punch List can include
 - (i) plantation of avenue trees along the edge of the RoW and other landscaping works within RoW
 - (ii) completion of work on Provision of Unlined Roadside Drains
 - (iii) lining of roadside drains in identified stretches
 - (iv) construction of rest areas, as approved
 - (v) completion of Fencing Works of RoW
 - (vi) turfing on embankment slopes in identified sections
 - (vii) pointing to Stone Masonry works in identified Cross Drainage Structures
 - (viii) stone Pitching at identified locations

PROVISIONAL COMPLETION-PUNCH LIST ITEMS - BOT

- Concessionaire should be able to complete them in 90 days/
List A must be completed in 90 days, else the Concessionaire is liable to pay damages
- Time to complete the PL works can be extended by another 120 days subject to payment of damages
- Non-completion within 210 days may lead to termination of the Concession

OPERATION & MAINTENANCE PERIOD

- Maintenance requirements as set forth in Schedule E / Schedule K
- Review Monthly Maintenance Programme (10 days prior to be submitted) (Art.14.3)/45 days prior /within 15 days (Art 17.4) / O&M inspection Report Art.19
- Inspect the Highway on a regular basis (Art.15.1 & 15.2) /Art.19.2
 - Ensure Pre-monsoon/Post-monsoon inspections and maintenance work carried by the Contractor
 - Submit Monthly inspection report (10 days / 7 days from the date of inspection)
 - Notify the defects and maintenance requirements and to be rectified within 15 days
 - Follow the warrants given in schedule for the time period
 - Levy damages in case of default & Suspension of works in case of serious lapses in Quality of Construction
 - Recommend the Authority to rectify through other party if it is delayed by 15 days from Maintenance inspection report – cost & damages to be recovered from the contractor
 - Certify the Monthly maintenance statement within 10 days and 3 days prior notice for inspection
 - Non-compliance of maintenance requirement – reduce the payment (non-refundable) as per the formulae given in Schedule M
 - Obtain report on unusual occurrence in the project highway on daily basis and summary on Monthly basis

OPERATION & MAINTENANCE PERIOD (CONTD.)

- Monitor closure of lanes (lane closure – 10 days prior- 7days prior/within 5days- 3 days) (Art.14.5 – Art.17.7)
 - Failure to restore lane closure – Levy damages (Art. 14.5) /impose damages and recover from annuity (Art 17.7)
- Damages to be recovered in the case of defects and non-complying maintenance activities (Art. 17.8)
- Inspection before divestment /termination
- Taking over certificate
 - Fulfilled maintenance requirement as per Schedule E
 - Complied all testing as per schedule Q
 - Taking over certificate to be issued as per schedule R

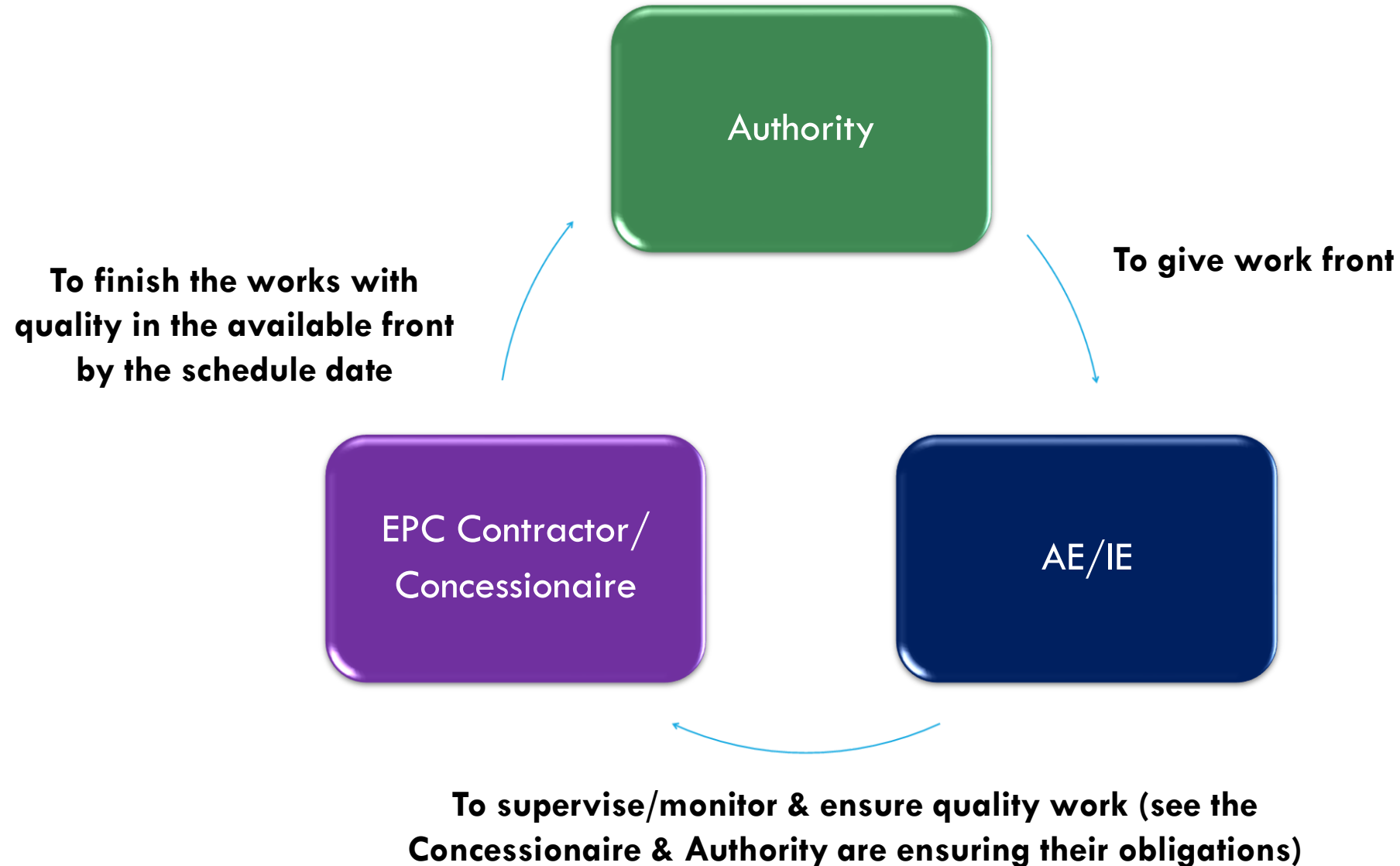
PAYMENT (ART.19)

- Advance payment (specific recommendation in case of new equipment advance) and recovery of advance payment
- Interim Payment shall be certified as per the stage (length, number or area) defined in Schedule H
- Stage payment statement in 3 copies with all supporting documents- 7th day of the Month as per schedule O
- Within 10 days of receipt (in full shape) – determine & recommend 90% of payment pending issue of IPC
- Within 15 days, IPC shall be issued by AE & can withhold amount with proper reasons
- Monthly Maintenance Statement in 3 copies - 7th day of the Month as per schedule O
- Certify the payment within 15 days (carry out reduction of payment as per Schedule M if schedule E is not met with)
- Final payment statement in 6 copies – within 60 days after issuance of completion certificate
- Within 30 days – certify final payment certificate
- Final payment statement for maintenance in 6 copies – within 30 days after issuance of completion certificate
- Within 30 days – certify final payment certificate

FINANCIAL ASPECTS (PPP) — ESCROW ACCOUNT (ART 25)

- All funds to be routed through an Escrow Account as per escrow agreement
Schedule-O
- Escrow Account to have suitable sub-accounts to track various payments
 - EPC payments
 - Taxes
 - Revenues
- Concessionaire to submit
 - Balance sheets
 - Profit & Loss Account Statements
 - Cash flow Statements
 - Statutory Auditor's Certificate for expenditure (Schedule P)

FOCUS ON ONE'S JOB



*Thank
you!*

For the Attention