



**GOVERNMENT OF INDIA
MINISTRY OF ROAD TRANSPORT & HIGHWAYS**

*Indian Academy of Highway Engineers,
A-5, Sector-62, Noida – 201301.*

No. RW/NH-34072/1/2015-S&R(B)

Dated: November 4, 2016.

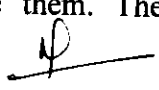
To:

1. The Chief Secretaries of all the State Governments / UTs.
2. The Principal Secretaries / Secretaries of all States / UTs Public Works Department dealing with National Highways, other Centrally sponsored schemes.
3. The Engineers-in-Chief and Chief Engineers of Public Works Department of States / UTs dealing with National Highways, other Centrally sponsored schemes.
4. The Director General (Border Roads), Seema Sadak Bhavan, Ring Road, Delhi 110 010.
5. The Chairman, National Highways Authority of India, Plot G-5 & 6, Sector-10, Dwarka, New Delhi 110 075.
6. The Managing Director, NHIDCL, PTI Building, Sansad Marg, New Delhi 110001.

Sub: Constitution of the National Panel of Experts (NPE) for resolving the technical issues which arise in the implementation of new or innovative technologies, materials, and equipments – reg.

Sir,

1. Highway sector in India has not kept due pace with the new and innovative technologies, materials and equipment used successfully in other geographies across the globe. In order to leverage such technologies specially, for structural strength/ capacity, durability, higher performance, environmental friendliness and cost effectiveness based on life cycle cost approach, the Ministry of Road Transport and Highways (MoRTH), Government of India has decided to implement a “*Value Engineering Program*”. The main objective of this program is to identify and implement technologies and use materials and equipment that are new/innovative with regards to highway construction in India and are suitable to the geo-climatic conditions prevailing in the country. This is expected to achieve a) increase in speed of construction, b) reduction in cost of construction, c) increased asset durability and d) improved aesthetics and safety.
2. In order to encourage and fast track use of new technologies, materials, and equipment in the highways sector, the National panel of Experts (NPE) has been constituted vide MoRTH’s O.M. of even no. dated 4th November, 2016 (enclosed as Annex ‘A’) for resolving the technical issues which arise as a result of differences in views between the Independent Engineer (IE)/Authority’s Engineer (AE) and concessionaires/contractors regarding implementation of new and innovative technologies, materials, and equipment for National Highways (NHs). Such usage / implementation is covered under Clause 1.9 of the “Manual of Specifications & Standards for Two Lanning of Highways with Paved Shoulders (IRC:SP:73)” or the “Manual of Specifications & Standards for Four Laning of Highways through public private partnership (IRC:SP:84)” or the “Manual of Specification & Standards of Six Laning of Highways through Public Private partnership (IRC:SP:87)” as the case may be.

3. This Circular highlights the functions of the NPE. It is applicable to all projects executed either under Public Private Partnership (PPP) mode i.e. through BOT (Build – Operate- Transfer) (TOLL), BOT (Annuity) and Hybrid Annuity models or public funding mode i.e. through Engineering procurement and Construction (EPC) model, in which the concessionaire/contractor is allowed the flexibility to design the projects (road or bridge structure) within the limits set forth in the concession agreements/contracts/manuals/specifications.
4. **Procedure for referring the matter to the NPE:**
- (a) The concessionaire/contractors, who desires to use new or innovative or alternative technologies or materials or equipments, shall prepare the relevant design and drawings along with cost estimate subject to the condition that such use of technologies or materials or equipments may result in to a *minimum saving of 0.25 % of the project cost.*
 - (b) The concessionaire /contractor shall submit all such proposals electronically via email as well as in hard copy *either* directly to Chairman of National Panel of Experts (NPE) with a copy to DG(RD) & SS, (MoRTH) and Independent Engineer (IE) or Authority's Engineer (AE) along with adequate details (e.g. specifications, applicable codes/ guidelines, laboratory results, field experience, literature on the matter etc.) for justifying the use of the proposed option. The proposal shall be substantiated with proven records of performance reports, if any.
 - (c) In each case, the IE/AE shall review the proposal of the concessionaire/contractor and convey its response within 15 days period. In case of disagreement with the proposal submitted by the concessionaire/contractor, the IE/AE may refer the case to NPE within next 7 days with detailed reasons for not allowing the alternative option for materials/technologies/equipments as proposed by the concessionaire or contractor with a copy to him.
 - (d) The concessionaire or contractor may also present his case before NPE during the course of their examination period. The NPE may also call the IE/AE for discussion/presentation as per their discretion. Besides, the NPE may also have the liberty to seek advice from other experts as may be required by Chairman of the NPE.
5. **Cases of field Trials:** Whether any new or innovative technology/materials/equipment needs field trials before its adoption or not, will be decided by the NPE.
6. **Disputes related to technical matters:** During the process of dispute resolution between the concessionaire/contractor and the Authority, the Panel may be called upon by the arbitrator or the conciliator as a subject expert to provide its views on technical aspects of the dispute.
7. **Design and Specification:** The NPE will also finalize associated design approaches, construction methodologies/sequences as well as the relevant specifications/codes/ guidelines so that the contractor may use the proposed new/alternative materials/technologies/ equipments in project highway.
8. **Alternative technologies/ materials:** In addition to the proposals of innovative technologies/ materials (under Clause 1.9 of the Manuals as referred in the para (3) above, the NPE will also be entrusted to examine various alternative technologies when individual proposals from proponents of technology/ alternative materials/equipment are placed before them. The NPE is empowered to approve the
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technologies/materials to be used either on trial stretches in appropriate cases or approve them for use in construction of highways solely based on their assessment.

9. **Distribution of savings:** The NPE will also finalize the savings in the project cost which arises as a result of use of new/innovative/alternative technologies or materials or equipments in the project. The saving in the project cost will be distributed equally among the Authority and concessionaires or contractors.
10. **Recommendations of NPE:** The NPE shall examine all such proposals referred either by IE/AE or concessionaires/contractors in view of stated objectives in TOR enclosed with Ministry's O.M. of even no. dated 4th November, 2016 (Annex 'A') and give their recommendations for approvals or disapprovals within 30 working days to DG(RD) & SS, M/o RT&H who in turn will give his decision within 30 working days. The decision of DG(RD) & SS, M/o RT&H will be binding on all the parties as per contract agreement conditions.
11. **Amendments in EPC agreement:** The amendments enclosed at Annex "B" in clauses 10.2.1, 10.2.4.1 (new clause), 10.2.4.2(new clause), 18.5.1, 26.2, 26.2.1(new clause), and 26.2.2(new clause) of EPC agreement and clause 2.1 of Annex I of schedule-D should be made part of Engineering Procurement and Construction contract agreement. For BOT (Toll), BOT (Annuity), and Hybrid Annuity similar changes in their Model Concession Agreements (MCAs) shall follow.
12. Further details of the NPE are as per Annex 'A' enclosed with this Circular.
13. The content of this circular may be brought to the notice of all concerned in your organization. Feedback on these guidelines may be submitted on yearly basis.
14. This issues with the approval of competent authority.

Yours faithfully,



Encl.: Annex 'A' & 'B' as mentioned above

(Sanjay Garg),
Superintending Engineer (S,R&T) (Bridges),
For Director General (Road Development) & SS.
E-mail: sanjay.garg1@nic.in.

Copy to:

1. All Technical Officers in the Ministry of Road Transport & Highways.
2. All Joint Secretaries in the Ministry of Road Transport & Highways.
3. All ROs & ELOs of the Ministry of Road Transport & Highways.
4. The Secretary General, Indian Roads Congress.
5. The Director, IAHE.
6. Technical circular file of S, R&T (B) Section.
7. NIC for uploading on Ministry's website under "what's new".

Copy for kind information to:

1. PS to Hon'ble Minister (SRT&H) / PS to Hon'ble MOS (SRT&H).
2. Sr. PPS to Secretary (RT&H).
3. PPS to DG (RD) & SS.
4. PPS to SS & FA.
5. PPS to ADG-I / ADG-II / ADG-III/ Coordinators – I/II/III.

***** End *****



Annex 'A'

GOVERNMENT OF INDIA MINISTRY OF ROAD TRANSPORT & HIGHWAYS

*Indian Academy of Highway Engineers,
A-5, Sector-62, Noida - 201301.*

No. RW/NH-34072/1/2015-S&R(B)

Dated: November 4, 2016.

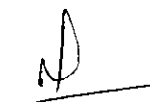
OFFICE MEMORANDUM

Sub: Constitution of the National Panel of Experts (NPE) for resolving the technical issues which arise in the implementation of new or innovative technologies, materials, and equipments – reg.

With the approval of the Competent Authority, a National Panel of Experts (NPE) is constituted with the following experts for according expeditious approvals to the proposals pertaining to deployment of (a) new/innovative/alternative materials, (b) new/innovative/alternative technologies and (c) new/innovative/alternative equipments in the highway sector on National Highways covered under Clause 1.9 of the Manual of Specifications & Standards for Two Lanning of Highways with Paved Shoulders (IRC:SP:73) or of the Manual for Specifications & Standards for Four Laning of Highways through Public Private Partnership (IRC:SP:84) or of the Manual of Specification & Standards for Six Laning of Highways through Public Private Partnership (IRC:SP:87) as the case may be.

Sl. No.	Name of Experts	Position in Panel of Experts
1.	Shri S.R. Tambe, Former Secretary PWD, Govt. of Maharashtra	Chairman
2.	Director General (Road Development) & Special Secretary to Government of India	Member
3.	Professor Ravi Sinha, IIT Mumbai	Member
4.	Head of Department (HOD) / his representative not below Professor, of Civil Engineering Deptt., IIT, Delhi	Member
5.	HOD / his representative not below Professor, of Civil Engineering Deptt., IIT Roorkee	Member
6.	Chief Engineer [Standards and Research (Road)]	Member Secretary for Road issues
7.	Chief Engineer [Standards and Research (Bridge)]	Member Secretary for Bridge issues
8.	JICA Expert in Ministry of Road Transport & Highways	Permanent Invitee
9.	Shri S.K. Dharmadhikari	Permanent Invitee
10.	Any other expert(s) as required for examining the referred matter to be co-opted by Chairman.	Co-opt Member, as decided by Chairman of NPE

1. Terms of reference (TOR) for National Panel of Experts is enclosed herewith.
2. The Chairman of NPE will have the liberty to co-opt any other expert(s) as required for examining the referred matter.
3. The Chairman and all other non-official members (including opted members) will be paid @ Rs. 25000/- per day as honorarium in addition to travel expenses on actual basis subject to travel in air in economy class, travel by train in AC first class and travel by road in AC taxi. Besides, all experts residing more than 100 kms away from the place of meeting are also entitled for lodging and boarding charges paid @ Rs. 15000/- per day for Delhi, Mumbai, Chennai & Kolkata and @ Rs. 7000/- for all other cities.
4. Secretarial assistance for the functioning of the NPE will be provided by Ministry through Member Secretary.
5. The expenses towards such expert advice, for holding meetings including tour, travels & other incidental expenditure i.e. secretarial and meeting expenditure etc., shall borne from the quality control provision made for the project to which the case pertains. The expenses of additional tests etc. shall be borne by the concessionaires/contractors. The expenditure of the Committee including travel and other incidental expenses will be paid on the bills processed by Member Secretary and counter signed by the Chairman.
6. The recommendations of the National Panel of Experts should be comprehensive and include all related aspects of structural design and drawings, construction procedure/sequences, interpretation of codes/guidelines/ specifications etc.
7. The National Panel of Experts may also provide guidance to Ministry for the approvals and implementation of the research schemes involving new/innovative/alternative technologies or materials or equipments.
8. This issues with the approval of the Competent Authority.


(Sanjay Garg),

Superintending Engineer (S,R&T) (Bridges),
For Director General (Road Development) & SS.
E-mail: sanjay.garg1@nic.in.

Copy to:

1. All Members of NPE,
2. PS to Hon,ble Minister (S, RT&H),
3. PPS to Secretary (RT&H), PPS to DG (RD)&SS, PS to AS&FA/ADGs,
4. All Coordinators, Joint Secretaries and Chief Engineers.

Term of References

- (i) The National Panel of Experts (NPE) need to examine the proposals pertaining to deployment of (a) new/innovative/alternative materials, (b) new/innovative/alternative technologies and (c) new/innovative/alternative equipments in the highway sector on National Highways covered under Clause 1.9 of the Manual of Specifications & Standards for Two Lanning of Highways with Paved Shoulders (IRC:SP:73) or of the Manual for Specifications & Standards for Four Laning of Highways through Public Private Partnership (IRC:SP:84) or of the Manual of Specification & Standards for Six Laning of Highways through Public Private Partnership (IRC:SP:87) as the case may be.
- (ii) The NPE shall examine all technical matters including structural design and drawings, construction procedure/sequences, interpretation of codes/guidelines/specifications etc. involving new/innovative/alternative technologies or materials or equipment **only** referred either by Independent Engineer (IE) / Authority's Engineer (AE) or concessionaires/ contractors (as the case may be) and to be executed on project highway either under Public Private Partnership (DBFOT – Design-build-finance-operate-transfer, BOT (Built-operate-transfer) with toll, BOT with annuity), or under EPC (Engineering Procurement and Construction) mode of contract, in which the Contractor/concessionaire is allowed to design the projects (road or bridge structure) within the limits set forth in the concession agreement/contract/manual/specifications.
- (iii) The NPE is also assigned the task for deciding the disputes relating all technical matters including structural design and drawings, construction procedure/sequences, interpretation of codes/guidelines/specifications etc. involving new/innovative/alternative technologies or materials or equipments **only** as required for successful completion of the project consistent with the Project Completion Schedule.
- (iv) The NPE is also assigned the task for deciding the disputes relating all technical matters including structural design and drawings, construction procedure/sequences, interpretation of codes/guidelines/specifications etc. involving the use of new or innovative or alternative technologies or materials or equipments only as required for successful completion of the project consistent with the Project Completion Schedule.
- (v) The NPE will also finalize associated design approaches, construction methodologies/sequences as well as the relevant specifications/codes/guidelines so that the contractor may use the proposed new/alternative materials/technologies/ equipments in project highway.
- (vi) The NPE will also decide whether any new or innovative technology/materials/equipment needs field trials or not before its adoption.
- (vii) The NPE shall also examine all such proposals in view of their structural feasibility, constructability, maintainability and durability subject to



condition(s) that it (a) should meet all design and acceptability parameters prescribed in concession agreements/manuals/ specifications, (b) may have higher performance, (c) may have low maintenance needs over its service life, (d) may be environmentally friendly, (e) may reduce construction time without affecting the durability and overall performance and (f) should be cost-effective.

- (viii) The NPE will also finalize the savings in the project cost which arises as a result of use of new/innovative/alternative technologies or materials or equipments in the project.
- (ix) The NPE shall examine all such proposals referred either by IE/AE or concessionaires/contractors and give their recommendations for approvals or disapprovals within 30 working days to DG(RD)&SS, MORT&H.
- (x) The NPE may call the IE/AE for discussion/presentation as per their discretion. The concessionaires or contractors may also present their case before NPE during the course of their examination period. Besides, the NPE may also have the liberty to seek advice from other experts as may be required by Chairman of the NPE.
- (xi) The NPE shall also provide guidance to the authorities in the approvals and implementation of the research schemes of the Ministry involving new/innovative/alternative technologies or materials or equipments. The NPE may also suggest required changes in IRC codes/ Ministry specification for the adoption of new/innovative/alternative technologies or materials or equipments in Indian condition on other National Highway projects.

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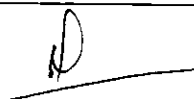
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Annex "B"

Enclosure to Ministry's letter no. No. RW/NH-34072/1/2015-S&R(B) dated 04.11.2016

Amendment to EPC (Engineering Procurement and Construction) Agreement

Clause no.	Existing provision	Modified provision
10.2.1	Design and Drawings shall be developed in conformity with the Specifications and Standards set forth in Schedule-D. In the event, the Contractor requires any relaxation in design standards due to restricted Right of Way in any section, the alternative design criteria for such section shall be provided for review of the Authority's Engineer.	Design and Drawings shall be developed in conformity with the Specifications and Standards set forth in Schedule-D. In the event, the Contractor requires any relaxation in design standards due to restricted Right of Way in any section, the alternative design criteria for such section shall be provided for review of the Authority's Engineer. In the event of use of new or innovative or alternative technologies or materials or equipments, the design and drawings shall be developed in accordance with the provisions of Clause 10.2.4.1 and Clause 10.2.4.2.
10.2.4.1	(New Clause)	If the contractor desires to use new or innovative or alternative technologies or materials or equipments, he shall prepare the design and drawings in accordance with the provisions of Clause 10.2.4(a) subject to the condition that such use of technologies or materials or equipments may result in to a minimum saving of 0.25 % of the project cost. The contractor shall submit all such proposals electronically via email as well as in hard copy <i>either</i> directly to Chairman of National Panel of Experts (NPE) with a copy to DG(RD) & SS, M/o RT&H and Authority's Engineer <i>or</i> to Authority's Engineer along with adequate details (e.g. specifications, applicable codes/ guidelines, laboratory results, field experience, literature on the matter etc.) for justifying the use of new/ innovative/alternative option substantiated with proven records of performance reports, if any. In each case, Authority's Engineer shall review the proposal of the contractor and convey its response within 15 days period. In case of disagreement with the proposal submitted by the contractor, Authority's Engineer may refer the case to NPE on 16th day with detailed reasons for not allowing the alternative option for materials/technologies/ equipments as proposed by contractor with a copy to him. The contractor may also present his case before NPE during the course of their examination period. The NPE may also call the Authority's Engineer for discussion/presentation as per their discretion.



Clause no.	Existing provision	Modified provision
10.2.4.2	(New Clause)	The contractor may use new/innovative materials/technologies/equipments in field trials as decided by NPE as set forth in Annex-I of Schedule-D. The NPE will also finalize the savings in the project cost which arises as a result of use of new/innovative/alternative technologies or materials or equipments in the project. The saving in the project cost will be distributed equally among the Authority and concessionaires or contractors. The expenses of additional tests etc. shall be borne by the concessionaires/ contractors.
18.5.1	The Authority's Engineer shall consult with each Party in an endeavour to reach agreement wherever this Agreement provides for the determination of any matter by the Authority's Engineer. If such agreement is not achieved, the Authority's Engineer shall make a fair determination in accordance with this Agreement having due regard to all relevant circumstances. The Authority's Engineer shall give notice to both the Parties of each agreement or determination, with supporting particulars.	The Authority's Engineer shall consult with each Party in an endeavour to reach agreement wherever this Agreement provides for the determination of any matter by the Authority's Engineer. For all technical issues including structural design and drawings, construction procedure/sequences, interpretation of codes/guidelines/specifications etc. involving the use of new or innovative or alternative technologies or materials or equipments <i>only</i> as required for successful completion of the project consistent with the Project Completion Schedule, if such agreement is not achieved, the Authority's Engineer shall make a fair determination in accordance with this Agreement having due regard to all relevant circumstances and the case will be referred to the NPE. The NPE will examine the referred matter and convey its recommendations for approvals or disapprovals within 30 working days to DG(RD) & SS, M/o RT&H who in turn will give his decision within 30 working days in accordance with the provisions of Clause 26.2.1. This decision of DG (RD) & SS, M/o RT&H will be binding on all parties. Excluding the matters referred to NPE, if such agreement is not achieved, the Authority's Engineer shall make a fair determination in accordance with this Agreement having due regard to all relevant circumstances. The Authority's Engineer shall give notice to both the Parties of each agreement or determination, with supporting particulars.
26.2	Conciliation: In the event of any Dispute between the Parties, either Party may call upon the Authority's Engineer, or such other person as the Parties may mutually agree upon (the "Conciliator")may refer the Dispute to arbitration in accordance with the provisions of Clause 26.3.	Conciliation: In the event (excluding the events as stated under Clause 26.2.1) of any Dispute between the Parties, either Party may call upon the Authority's Engineer, or such other person as the Parties may mutually agree upon (the "Conciliator") may refer the Dispute to arbitration in accordance with the provisions of Clause 26.3.

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Clause no.	Existing provision	Modified provision
26.2.1	(New Clause)	For all technical matters including structural design and drawings, construction procedure/sequences, interpretation of codes/guidelines/specifications etc. involving the use of new/innovative/alternative technologies or materials or equipments only on project highway, Independent Engineer/Authority's Engineer or contractor/ concessionaire may refer the matter to the National Panel of Experts (NPE). The NPE shall examine all such referred proposals and give their recommendations for approvals or disapprovals within 30 working days to DG(RD) & SS, M/o RT&H who in turn will give his decision within 30 working days. The decision of DG(RD) & SS, M/o RT&H will be binding on all parties. The concessionaires or contractors may also present their case before NPE during the course of their examination period. The NPE may also call the Independent Engineer / Authority's Engineer for discussion/presentation as per their discretion.

Annex - I
(Schedule-D)

Specifications and Standards for Construction

2 Deviations from the Specifications and Standards

- 2.1** The contractor will be allowed to use new/alternative materials/technologies/ equipments in project highway along with associated design approaches, construction methodologies/sequences in view of relevant specifications, applicable codes/ guidelines, laboratory results/field experience/field performance evaluation report of some another site/project, literature on the matter etc. as decided by National Panel of Experts (NPE). Whether any new or innovative technology/materials/ equipment needs field trials before its adoption, it will also be decided by NPE.



