

GOVERNMENT OF ANDHRA PRADESH
GENERAL ADMINISTRATION (VIGILANCE & ENFORCEMENT) DEPARTMENT

128
12/05
System Improvement Note No. 4 (1326/V & E/EI/04)

Date: 9-2-05

Sub: Vigilance & Enforcement Department - Measurement and payment for Steel reinforcement - Variations - System Improvement Note - Reg
Pr. Secy. (T. W.)

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No. Verification of many reinforced concrete works of various Engineering departments revealed that there are certain infirmities in specifying the measurement and payment for steel reinforcement in agreements. There is a need to adopt unambiguous uniform standards by all the departments. This Note highlights the draw-backs in existing agreements & suggestions for future.

Details are as under:-

2.0 The Section No. 1600 of MORTH specifications for Road & Bridge works (4th Revision) deal with placement of Reinforcement & Bar Splices as under:

Specification No. 1605:

1605. b) Reinforcement bars shall be placed accurately in position as shown on the drawings. The bars crossing one another shall be tied together at every intersection with binding wire (annealed), conforming to IS:280 to make the skeleton of reinforcement rigid such that the reinforcement does not get displaced during placing of concrete, or any other operation. The diameter of the wire shall not be less than 1 mm.

c) Bars shall be kept in position usually by following methods:

- i) In case of beam and slab construction, industrially produced polymer cover blocks of thickness equal to specified cover shall be placed between the bars and form work subject to satisfactory evidence that the polymer composition is not harmful to concrete and reinforcement. Cover blocks made of concrete may be permitted by the Engineer, provided they have the same strength and specification as those of the member.
- ii) In case of dowels for columns and walls, the vertical reinforcement shall be kept in position by means of timber templates with slots cut in them accurately, or cover blocks tied to reinforcement. Timber templates shall be removed after the concreting has progressed upto a level just below their location.
- iii) Layers of reinforcement shall be separated by spacer bars at approximately one meter intervals. The minimum diameter of spacer bars shall be 12 mm or equal to maximum size of main reinforcement or maximum size of coarse aggregate, whichever is greater. Horizontal reinforcement shall not be allowed to sag between supports.

- iv) Necessary stays, blocks, metal chairs, spacers, metal hangers, supporting wires et, or other subsidiary reinforcement shall be provided to fix the reinforcements firmly in its correct position.
- v) Use of pebbles, broken stone, metal pipe, brick mortar or wooden blocks etc., as devices for positioning reinforcement shall not be permitted.

Specification No.1606(Bar Splices)

2.1 All the reinforcement shall be furnished in full lengths as indicated in drawing. No splicing of bars except where shown in the drawing will be permitted without approval of the Engineer. Splicing may be lapped splicing, splicing by welding or mechanical coupling of bars subject to certain conditions.

Specification No 1608(Measurement for Payment)

Wastage, overlaps, couplings, welded joints, spacerbars, chairs, stays, hangers and annealed steel wire or other methods for binding and placing shall not be measured and cost of these items shall be deemed to be included in the rates of reinforcement.

2.2 These specifications, conditions are common for all works whether it is a Bridge work, Building or Irrigation Structure. The agreement rate and quantities of steel reinforcement shall therefore account for all the operations mentioned in the clause.

3.0 Present Agreement Conditions: On Steel Measurement & Payment and Practices

1) Irrigation & Command Area Development Department:(Third AP Irrigation Project)

a) Measurement:

Wastage over laps, couplings, welded joints, spacer bars, dowels and annealed steel wire for binding shall not be measured and cost of these items shall be deemed to have been included in the rates of reinforcement.

b) Payment rate:

The bid rate in bill of quantities for reinforcement shall include cost of steel; binding wire or welding material at site of works; its cutting, bending, cleaning, placing, binding or welding and fixing in position.

The unit rate shall also include cost of all devices for keeping reinforcement in approved position, cost of joining as per approved methods and all wastages, over laps, dowels, binding wire or welding material and spacer bars and cost of all incidental operations necessary to complete the work as per specification.

2) Roads & Buildings Department :

For Bridge works in AP State Highway Project & NH works the MORTH conditions are being adopted. However in some of the building works the specific condition on what is included in the rate of steel is not mentioned specifically. Interaction with field Engineers revealed that there is some ambiguity on overlaps as in cases of bridges the overlap percentage would be 10 to 15 % for long span bridges. There is a feeling that either Mechanical splices or laps have to be measured and paid for separately.

3) Panchayat Raj & Rural Developmental Department:

The agreement specifies that the cost of subsidiary reinforcement such as chairs, spacers hangers etc shall be included in the steel price quoted and will not be paid. But in number of cases it is observed that the field Engineers are recording the quantity of chairs, spacers, overlaps, support bars etc. and payment is made accordingly. (eg. Construction of creek bridge on road between Calingapatnam to Bandaruvanipeta in Srikakulam District.)

4) AP State Police Housing Corporation:

There is no specific clause in Agreements on the items which are included in steel rate with the result payment are made for chairs, overlaps, spacer bars etc separately recording the quantity (eg. Administrative Building at PTC, Vizianagaram).

4.0 FINDINGS:-

- 1) The departments of Irrigation & Command Area Development, Roads & Buildings Department who follow the BIS & MORTH specifications are specific in agreement condition payment & Measurement of steel.
- 2) In many corporation or departments who have less bridge/building works are recording/ making payments for chairs, laps etc may be because of non incorporation of clauses in agreements or ignorance even if it is provided.
- 3) The MORTH standard data book for Analysis of rates (2003) and the data Book published by the Ministry of Rural Development (GOI) for Rural roads provides for addition of 5% in the steel quantity towards laps & Wastage in rate of steel itself. However In any of the estimates of Roads & Buildings Department or Irrigation & Command Area Development Department this addition is not being made. As there is restriction on the tender percentage to be quoted, the data should be realistic and incorporate all activities of construction. Hence if the MORTH data is adopted for the steel rate (at least to the quantity part) the ambiguity on overlaps, wastage, chairs etc would not be there and rate would be nearer to reality.

SUGGESTION:-


The Board of Chief Engineers may re-evaluate the agreement conditions on this aspect and incorporate clause 1605 to 1609 of MORTH with modifications if any required to suit the Irrigation works & Building works. The material component data also may be

as per MORTH (Sl.No.14.2) duly deleting binding wire component as the fabrication charges as per SSR includes binding wire cost.

RECOMMENDATIONS:-

The respective Principal Secretaries & Secretaries are requested to issue necessary instructions on the above lines.

Action taken may be informed at an early date..


(A.K. MOHANTY)
DIRECTOR GENERAL (VIG. & ENFT.) &
E.O. PRL. SECY. TO GOVT. GAD

To
The Principal Secretary to Government,
Irrigation & Command Area Development Department,
The Principal Secretary to Government,
Panchayat Raj & Rural Development department,
The Principal Secretary to Government
Home Department,
The Principal Secretary to Government,
Tribal Welfare Department,
The Principal Secretary to Government,
Social Welfare Department,
The Principal Secretary to Government,
Revenue (Endowments) Department,
The Secretary to Government,
Transport, Roads & Buildings Department
The Secretary to Government,
Municipal Administration & Urban Development Department,
The Secretary to Government,
Housing Department
Copy to Engineer-in-Chief(I & CAD),
Engineer-in-Chief(R &B)
Engineer-in-Chief(PH),
Engineer-in-Chief(PR & RC).
Chief Engineer (AP State Police Housing Corporation)
Copy to RVEo/SKM w.r.t SINote 20/V &E/SKL/Eng/04
Dt. 20-10-04
Copy to all RVEO's/ V &E Dept.