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Determine the Coefficients of the System of Canonical Equations of the Displacement Method and the Free Bounds, Solve the System

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Annotation: *The procedure for calculating the static nonlinear Ram by the method of displacement under the influence of external loads. Determine the coefficients and release thresholds of the canonical equation and check them. Draw the final bending moment, Cross-and longitudinal force eptures, as well as check them.*

Keywords: *the procedure for calculating the method of migrations of static indefinite frames, unknowns of the method of migrations, the canonical equations of the main system and the method of migrations, the coefficients of the canonical equation and their verification, the final bending moment, drawing and their verification of cross-and longitudinal force epyras.*

1. The procedure for calculating the static nonlinear Ram by the method of displacement under the influence of external loads.

The calculation of the static unbalanced Ram by the method of displacement under the influence of external loads is carried out in the following order.

1. The degree of kinematic uncertainty of the given RAM is determined.
2. For Rama the method of displacement is selected from the basic system.
3. The method of displacement is formed from the canonical equation.
4. Unit and external load-bearing torque epaulets are built.
5. The coefficients of the canonical equation and the free bounds are determined.
6. The coefficients and release thresholds of the canonical equation are checked.
7. The canonical equation is solved and unknown displacements are found in the entered connections.
8. Corrected bending moment epaulets are built.
9. The final bending moment Mx EPI will be built.
10. The final bending torque is checked on the EPI Mx.
11. Cross-power QX EPI will be built.
12. Bo the ylama power NX EPI will be built.
13. A general static check is conducted.

2. Determine the coefficients and release thresholds of the canonical equation and check them.

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Coefficients of canonical equations and free bounds are determined. To do this, in the main system of rama, epigrams of torque are built, which are formed from the effects of unit displacement and external loads. EPI of this moment 3.1 table alone

the finished torque of the sterjenes is drawn using epigrams. Then the coefficients of the canonical equation and the free bounds are found using kinematic or static methods. The kinematic method is based on the multiplicitytirishga of moment epyrs, which is determined by the rule of Vereshchagin, that is, the coefficients of the canonical equation:

$$r_{ik} = \sum \int \frac{\overline{M}_i M_k}{EI} dx \qquad (3.1)$$

the limits of release determined by using the formula $R_{ip} = -\sum \int \frac{\overline{M}_i M_p^0}{EI} dx$ it is found

according to the formula.

The determination of the coefficients of the canonical equation and the free bounds in the static method is based on the formulation of the static equilibrium equations for it by crossing each of the links from the moment epaulettes built into the main system. This method makes it much easier to calculate.

It is checked that the coefficients of the canonical equation and the free bounds are found correctly.

a) universal verification is carried out to check the coefficients of the canonical equation. .

$$r_{ss} = \sum \int \frac{\overline{M}_s^2}{EI} dx = \sum r, \qquad (3.2)$$

here is the sum of the epics of the unit moment:

$$\overline{M}_s = \overline{M}_1 + \overline{M}_2 + \cdots + \overline{M}_n$$

$\sum$r - unit the sum of the reactions:

$$\sum \mathrm{r} = \mathrm{r}_{11} + \mathrm{r}_{22} + \cdots + \mathrm{r}_{\mathrm{nn}} + 2(\mathrm{r}_{12} + \mathrm{r}_{13} + \cdots + \mathrm{r}_{\mathrm{n-1,n}})$$

If this check is not done, then it is possible to check the coefficients of the canonical equation in a row.

$$\sum r_1 = r_{11} + r_{12} + \cdots + r_{1n} = \sum \int \frac{\overline{M}_1 \overline{M}_s}{EI} dx,$$

$$\sum r_2 = r_{21} + r_{22} + \cdots + r_{2n} = \sum \int \frac{\overline{M}_2 \overline{M}_s}{EI} dx, \qquad (3.3)$$

. . . . . .

$$\sum r_n = r_{n1} + r_{n2} + \cdots + r_{nn} = \sum \int \frac{\overline{M}_n \overline{M}_s}{EI} dx.$$

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Carrying out a row check using a static method can make it easier to calculate. In this case, the sum of the coefficients in the first row of the canonical equation is equal to the sum of the moments in the first connection of the epyura of the sum of the epyura of the moment of the unit and is determined from the same node equilibrium. In this order, the coefficients in the remaining rows of the canonical equation are checked.

b) Column inspection is conducted in order to check the thresholds released from the canonical equation $R_{sp} = R_{1p} + R_{2p} + \cdots + R_{np} = -\sum \int \frac{\overline{M}_s M_p^0}{EI} dx,$ (3.4)

Here – an epi of torque built from an external load to a static concrete frame.

After checking that the coefficients and the free bounds of the canonical equation are correct, they are put into the canonical equation and solved and unknown Z1,Z2 . . . .,The amount of Zn migrations is determined.

3. The final bending moment, Cross-and longitudinal force drawing epyras and check them.

The bending moment in the optional section of the Ram is determined by the following formula (3.5)

Here the epigenvalues are called corrected moment epigenvalues. So, in ramada, the final bending moment EP is drawn by adding the ordinates of the characteristic cross-sections of the corrected torque epures to the ordinates corresponding to those cross-sections of the external load moment EP. Moment epyras are built on the side of the elongated fibers of the Ram.

A static check is performed to check the final Mx bending torque EPI. In this review, the Raman nodes are clipped and the effect of the rest of them is replaced by the corresponding torque voltages. For each node, the conditions of equilibrium are written. Because each node of RAM must be in balance. In the case of the displacement method, the static verification of the bending torque EPI of the Ram will be sufficient, together with the necessity. This method does not need to conduct a deformation check.

Drawing the cross-and longitudinal force epigraphs of the Raman, as well as its general static verification, is performed as follows the method of forces

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