

Dismantling of Bridge No 1 over Sealdah Yard

Bridge No. 1 was an open web girder type bridge in Sealdah yard of 33.55 m span and had four railway tracks over it. The bridge was constructed in 1862 and was an early steel girder bridge. The work of regirdering of this bridge was sanctioned in 2005-06. The regirdering work was completed in 2007-08 by construction department. The new plate girders were inserted by cutting the cross girder of the existing open web girder bridge. The remaining structure however could not be dismantled till date due to various reasons.

The dismantling of this bridge was an herculean task for the following reasons-

- i) The bridge spans a canal & road on either bank of the canal. Thus the bridge was also a RUB apart from being a water way.
- ii) The bridge has 4 main lines on it namely Up sub-urban, Dn. Sub-urban, Up Main line and Dn. Main line .
- iii) On the southern end of the bridge, there is another bridge semi through type girder which has one track (line no.5) over it.
- iv) Above site constraints implied that Road cranes could be deployed on one side of the bridge only. This was also required because one line had to kept at least diesel fit as remaining 4 lines were to be blocked. Another constraint was narrow road width of 3 m on either side of the canal where crane had to be placed and propping had to be done but consolidated ground was not available .
- v) The challenge posed by the bridge was not only civil engineering in nature but also from TRD point of view. The OHE arrangement over the bridge was tramway type. There was double contact wire supported through 'V' clamps on steady wire. The OHE was unregulated. The OHE arrangement was taking support from the girder bridge. The clear distance between TRD mast on either side of the bridge was 72 m. In unregulated OHE section, only 30 m span is allowed.
- vi) The solution to problem was arrived by making OHE mast foundations on the bridge pier, thus the span was divided into 30 m & 42 m span. The OHE foundation was made but the mast could not be grouted as it would have infringed crane operations . This posed a unique challenge that a mechanism was needed to grout the TRD mast in such was that they could be able to take load in shortest possible time . Epoxy grouting was resorted to tackle the problems.

Two TTC upright were erected on both sides . Stringing of deck span and cross span wing was done on the two upright to support OHE on 4 lines.

vii) The entire work was completed as following duration and sequence–

a) Lowering of OHE	10 hrs.
Dismantling of bridge	88 hrs.
OHE Put back	<u>16 hrs.</u>
Total block	114 hrs.

2 Nos. 150 Ton crane were deployed. 2 Nos. 150 T Road crane were on stand by. 2 No. 140 T Railway crane were on standby. The bridge comprised of 5 No. trusses connected through TLB. The bridge weighed approximately 250 T. There were 14 No. utilities on south of the bridge and 4 No. on north end of bridge including pathway . The utilities were supported on bottom chord of the first and last truss through bracket connections .

viii) Sealdah station caters to approximately 300 pair of trains per day. Availing this block an usual day would have been difficult but lockdown presented an opportunity to execute this technically challenging work.

ix) Many difficulties were faced during execution of work. The block was from 28.5.20 (10:00hrs) to 02.06.20 (04:00hrs) . This was post Amphan period, when there was heavy storm rains and gusty winds. The work of crane operation has to be stopped during bad weather. Rain made movement of labour on truss difficult. Approx. 12 hrs. were lost due to bad weather. One crane during dismantling of third truss broke down. The crane boom had to be gas cut. Crane had to be secured and spare new crane had to be placed . 12 hrs. time was lost. Thus out of 114 hrs, 24 hrs. was lost. Effectively the work was done in 90 hrs.

x) Undeterred by weather & challenges, team comprising of engineering, electrical and mechanical dept, completed the work in mega block of 114 hrs.



PLACING OF ROAD CRANE NEAR BR 1 FOR DISMANTLING.



DISMANTLING OF FIRST TRUSS BY 2 NO.S 150 T ROAD CRANE



BRIDGE 1 PRIOR TO DISMANTLING



BRIDGE 1 AFTER DISMANTLING OF OLD REDUNDANT TRUSS