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Government of India (Bharat Sarkar)
Ministry of Railways (Rail Mantralaya)
Railway Board

No. 2012/Proj/Jaipur/30/7 Vol II

New Delhi, 20.12.13

Director (Projects)

Jaipur Metro Rail Corporation Ltd.
 Khanij Bhawan, Tilak Marg, C-Scheme
 Jaipur

Sub: Approval of Annexure C-I for Ph I of Jaipur Metro

1. The Competent authority has approved track structure (annexure C-I of certification manual) for Ph- I of JMRCL subject to the following:

| | Description of the deviation | Rly Board remarks |
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| Para 5 (ii) of C-1 (in connection with Rails) | | |
| i | <p>Use of 18 m rails against stipulated length as per IRS T-12</p> <p>For manufacturing rails, REDA system was permitted vide A & C slip no. 3 to IRS T-12 dated 27.05.2012 and was kept in abeyance vide Board letter dated 03.09.2012. RHEDA system has again been permitted vide Railway Board letter dated 03.01.2013 used. At the time of procurement of rails, this system was not permitted</p> | <p>IRS T-12 permits use of 13/26 m rails. Use of 18 m rails by JMRCL; being more than the minimum specified i.e. 13 m is accepted.</p> <p>It is brought to the notice that the system was not an approved system when JMRCL procured rails. However, in view of the fact that this system has subsequently been approved by Railways, use of rails procured by JMRCL is permitted.</p> |
| Para 5 (iii) of C-1 (in connection with Welds) | | |
| ii | <p>Approval of QAP and standardization of weld parameters has not been done for the mobile flash butt welding plant used by JMRCL. This has been stipulated in Indian Railway Flash Butt Welding Manual (IRFBWM). The QAP followed by JMRCL is strictly not in accordance with provision of the manual. USFD is stated to be done as per project specifications and not as per USFD manual of IR.</p> | <p>It is noted that welds have already been done Accordingly same are acceptable as a special case. However, JMRCL is required to take additional safety measures for this lapse which have been stipulated in para 2 below.</p> <p>This will however not be quoted as precedence and in future, JMRCL will have to take prior approval.</p> |

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| iii | <p>As per IRFBWM para 10.2.2.1, transverse load and hardness tests are to be done 1 per 100 joints for initial 1000 joints and 1 per 500 joints subsequently (for mobile plants). The tests have not been done as per this frequency. Even after asking to carry out requisite tests, RDSO was given impression that JMRCL is carrying out the same from cutting welds from laid track. However, JMRCL has done tests on panels yet to be laid on track. Hence welds already laid on track are still doubtful.</p> | <p>There is a shortfall in the hardness test as three joints have not been tested as per procedure. In addition to this, the sampling is not evenly distributed as per manual. It is however noted that the results submitted are in conformity to the specifications. Accordingly, JMRCL should carry out these three tests and submit test results to CMRS alongwith application for opening. Regarding uneven sampling, additional safety precautions should be adopted by JMRCL as stipulated in para 2 below.</p> |
| iv | <p>JMRCL have not done macro examination test for joints from J-1000 to J-2000.</p> | <p>JMRCL has carried out requisite number of tests for macro examination although the samples are not evenly distributed in the entire welding. It is however noted that the results submitted are in conformity to the specifications. In view of this, JMRCL needs to take additional safety precautions as stipulated in para 2 below.</p> |
| v | <p>Only 1 micro examination has been done and no such test for J-1000 to J-2200 has been done. Hence quality of these welds remains suspicious and even if results are satisfactory, quality consistency cannot be ensured.</p> | <p>JMRCL has not carried out requisite number of tests for micro examination by citing wrong interpretation of FB weld manual. It is however noted that the results submitted are in conformity to the specifications. Accordingly, JMRCL needs to take additional safety precautions as stipulated in para 2 below.</p> |
| vi | <p>Despite claiming that test results for dimensional check and visual inspection have been submitted to RDSO, some results have not been submitted. This includes rail end geometry for joint no. J 0790 to J 2200, Record of surface defects from J 0001 to J 0344 and J 0435 to J 2200 and dimensional check for joint J 0345 to J 0373 and J 0501 to J 2200.</p> | <p>Approved subject to removal of any defective joints and submission of a certificate of same to CMRS that visual inspection and dimensional check has been done as per para 10.1.1 and 10.1.2 of IRFBWM, at the time of application for opening.</p> |

2. JMRCL will adopt these additional safety measures for items mentioned in deviations at Para 5 (iii) of C1 at No. (ii), (iii), (iv) and (v) above:

- i. All welds which are found defective in USFD testing and welds on outer rails of curves sharper than 350 m radius shall be protected with Joggled fish plates

before opening of the section. The joggles fish plates will only be clamped and no holes should be drilled in rail for fixing such fish plates.

- ii. Balance welds shall be provided with joggled fish plates within 6 months.
- iii. JMRCL to ensure more frequent profile grinding (to reduce vibrations and possible cupping of joints) of rails and also ensure wheel turning to tighter tolerances i.e. the laid down maintenance tolerances to be made 20% tighter. The grinding frequency shall be advised by RDSO separately.
- iv. Testing for welds every year for next three years shall be arranged.
- v. The welded joints not meeting the dimensional tolerances shall be rectified/ replaced before opening of section.

3. This approval is being given as a special case as the work has already been executed. For future phases of JMRCL, above condonations of these deviations will not be valid. It should not be quoted as precedence and JMRCL should submit required details in advance for approval.

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(Mohit Lila)

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Copy to the following for information and necessary action:

1. ED/UTHS, RDSO, Manak Nagar, Lucknow
2. ED/Tk-I and ED/Tk-II with a request to give information regarding grinding frequency to JMRCL as desired vide 2 (iii). A copy of such information may also be sent to Rly Board. The competent authority has also approved for use of rails of any length by Metro Railways subject to minimum length prescribed in IRS/T-12.

PS. Lila

