CLAIMS

1. A construction method for rapid recovery of existing tunnel lining, comprising the steps of:

step 1, dividing a main hole operation section, comprising four sections: a secondary lining construction region, a first trestle region, a second trestle region and an expanded excavation region in sequence along a length direction of the main hole operation section, with an interval between adjacent sections of 20-50 m; synchronously performing tunnel inverted arches construction process on the first trestle region and the second trestle region;

step 2, paving and hanging a tunnel full-section waterproof board on the main hole operation section;

step 3, performing secondary lining steel bar construction after the waterproof board is paved and hanged; constructing a positioning steel bar, mounting circumferential steel bars and longitudinal distribution steel bars according to the positioning steel bar, and finally mounting a connecting bar between two layers of steel bars;

step 4, performing the construction of a longitudinal circumferential waterstop, comprising the overlapping of the longitudinal circumferential waterstop;

step 5, secondary lining pouring and maintenance; adopting a hydraulic steel formwork integral lining trolley by the lining, adopting a large arc steel formwork lining bench by the secondary lining, and forming an arch wall by one-step molding; and

step 6, repeating steps 1-5 to complete the recovery of all tunnel linings.

2. The construction method for rapid recovery of existing tunnel lining according to claim 1, wherein in step 1, a front end of the main hole operation section is arranged with a first transverse channel, and a rear end of the main hole operation section is arranged with a second transverse channel; and the logistics transportation of the first trestle region is performed through the first transverse channel, and the logistics transportation of the second trestle region is performed through the second transverse channel.

3. The construction method for rapid recovery of existing tunnel lining according to claim 2, wherein inverted arch construction procedures of the first trestle region and the second trestle region are performed synchronously, logistics directions are opposite, and a logistics transportation direction in the inverted arch construction process of the expanded excavation region is the same as that of the first trestle region.

4. The construction method for rapid recovery of existing tunnel lining according to claim 1, comprising mounting an inverted arch formwork, and pouring and maintenance inverted arch concrete after the mounting of the waterproof board is completed; and dismantling the trestle bridges after the inverted arch construction is completed.

5. The construction method for rapid recovery of existing tunnel lining according to claim 1, wherein in step 4, construction procedures of the overlapping of the longitudinal circumferential waterstop comprise the steps of:

S1, cutting off the rubber of an overlapping convex part of a steel-edged rubber waterstop;

S2, leaning a steel plate waterstop and the steel-edged rubber waterstop together, anchored with at least two rivets on two sides; and

S3, tightly bonding, after the rivets are anchored, a gap between the steel-edged rubber waterstop and the steel plate waterstop with an adhesive material.

6. The construction method for rapid recovery of existing tunnel lining according to claim 1, wherein in step 5, lining pouring construction procedures comprise: chiseling a concrete surface, constructing a cushion layer, and finally performing segmented lining pouring by windows.

7. The construction method for rapid recovery of existing tunnel lining according to claim 6, wherein before the construction of the cushion layer, a midline of a bottom edge line of the cushion layer, a midline of a hoop hose and a midline of a drainage board strip are marked on a preliminary bracing surface, the bottom edge line of the cushion layer paved is a rail top elevation, the hoop hose and the circumferential drainage board strip are staggered, the cushion layer is paved between adjacent hoop hoses, and a plurality of dovetail clips are arranged between two adjacent cushion layers in the longitudinal circumferential direction.

8. The construction method for rapid recovery of existing tunnel lining according to claim 7, wherein the cushion layer is made of polyethylene.

9. The construction method for rapid recovery of existing tunnel lining according to claim 6, wherein the lining pouring adopts layer-by-layer concrete pouring via chute in segmented windows, the lining pouring uses a lining trolley, and the lining trolley is arranged with a graded diversion device, the graded diversion device comprising multi-stage diversion components from top to bottom, each multi-stage diversion component comprising a main hopper, a main flow tank, three-way diverter grooves, diverter string cylinders and window drainage channels.

10. The construction method for rapid recovery of existing tunnel lining according to claim

9, wherein the secondary lining pouring is bottom-up layered symmetrical pouring with layered vibration, and a low-frequency vibrator and a high-frequency vibrator are combined in the concrete tamping process.