CLAIMS

What is claimed is:

1. A synchronous construction system for a cross passage, comprising a synchronous construction platform and at least four lines of main tracks arranged in a main tunnel and distributed at intervals in a transverse direction, wherein two lines of main tracks allow a main tunnel material transport vehicle to pass through, the other two lines of main tracks allow a cross passage material transport vehicle to pass through, the synchronous construction platform is provided with traveling wheels capable of traveling along at least two lines of main tracks, two docking tracks allowing the main tunnel material transport vehicle to pass through and an arrangement area for arranging cross passage tunneling equipment are arranged on the synchronous construction platform, the two docking tracks are positioned at a transverse side of the arrangement area, and docking sections configured to dock with the two lines of main tracks allowing the main tunnel material transport vehicle to pass through are respectively arranged at front ends and rear ends of the two docking tracks; the synchronous construction platform comprises a large-span section and a small-span section connected to a rear side of the large-span section, a transverse span of the large-span section is greater than a span between the two lines of main tracks at an outermost side, the arrangement area is arranged in the large-span section, a transverse span of the small-span section is greater than a transverse span of the two lines of main tracks allowing the main tunnel material transport vehicle to pass through, traveling wheels configured for the small-span section are configured to travel along the two lines of main tracks allowing the main tunnel material transport vehicle to pass through, a connecting position of the small-span section and the large-span section is positioned at a transverse end of the large-span section, and a space between the other transverse ends of the small-span section and the large-span section meets a passing of the cross passage material transport vehicle.

2. The synchronous construction system for a cross passage according to claim 1, characterized in that each of the two docking tracks respectively comprises an external expansion section deviating to a side far away from the arrangement area relative to the respective docking section.

3. The synchronous construction system for a cross passage according to claim 1, characterized in that traveling wheels configured for the large-span section are configured to travel along the two lines of main tracks at the outermost side.

4. The synchronous construction system for a cross passage according to claim 1 or 2,

characterized in that the cross passage tunneling equipment is arranged in the arrangement area, and the cross passage tunneling equipment comprises a material transfer device configured to receive materials on the cross passage material transport vehicle and forwards transfer the materials.

5. The synchronous construction system for a cross passage according to claim 4, characterized in that the material transfer device comprises upright posts arranged on the synchronous construction platform and a track beam supported by the upright posts, a material crane travels on the track beam, the track beam sequentially comprises a material conveying section, a transition section and a material receiving section from a front side to a rear side, the material conveying section is positioned in a middle position of the synchronous construction platform, and the material receiving section deviates to a side far away from the docking track relative to the material conveying section.

6. The synchronous construction system for a cross passage according to claim 1 or 2, characterized in that the cross passage tunneling equipment is arranged in the arrangement area, and the cross passage tunneling equipment comprises a tunneling main machine and a muck discharging device configured to receive muck discharged from the tunneling main machine and convey the muck into a muck hopper of the cross passage material transport vehicle.

7. The synchronous construction system for a cross passage according to claim 6, characterized in that the muck discharging device is composed of a muck discharging pipe connected to a tail of a screw conveyor of the tunneling main machine.

8. A synchronous construction platform for a cross passage, provided with traveling wheels capable of traveling along at least two lines of main tracks in a main tunnel, wherein two docking tracks allowing a main tunnel material transport vehicle to pass through and an arrangement area for arranging cross passage tunneling equipment are arranged on the synchronous construction platform, the two docking tracks are positioned at a transverse side of the arrangement area, and docking sections configured to dock with two lines of main tracks allowing the main tunnel material transport vehicle to pass through are respectively arranged at front ends and rear ends of the two docking tracks; the synchronous construction platform for a cross passage comprises a large-span section and a small-span section connected to a rear side of the large-span section, a transverse span of the large-span section is greater than a span between the two lines of main tracks at an outermost side in the main tunnel, the arrangement area is arranged in the large-span section, a transverse span of the small-span section is greater than a transverse span of the two lines of main tracks allowing the main tunnel material transport vehicle to pass through in the main tunnel, traveling wheels configured for the small-

span section are configured to travel along the two lines of main tracks allowing the main tunnel material transport vehicle to pass through, a connecting position of the small-span section and the large-span section is positioned at a transverse end of the large-span section, and a space between the other transverse ends of the small-span section and the large-span section meets a passing of a cross passage material transport vehicle.

9. The synchronous construction platform for a cross passage according to claim 8, characterized in that each of the two docking tracks respectively comprises an external expansion section deviating to a side far away from the arrangement area relative to the respective docking section.

10. The synchronous construction platform for a cross passage according to claim 8, characterized in that traveling wheels configured for the large-span section are configured to travel along the two lines of main tracks at the outermost side in the main tunnel.

11. The synchronous construction platform for a cross passage according to claim 8 or 9, characterized in that the cross passage tunneling equipment is arranged in the arrangement area, and the cross passage tunneling equipment comprises a material transfer device configured to receive materials on the cross passage material transport vehicle and forwards transfer the materials.

12. The synchronous construction platform for a cross passage according to claim 11, characterized in that the material transfer device comprises upright posts arranged on the synchronous construction platform and a track beam supported by the upright posts, a material crane travels on the track beam, the track beam sequentially comprises a material conveying section, a transition section and a material receiving section from a front side to a rear side, the material conveying section is positioned in a middle position of the synchronous construction platform, and the material receiving section deviates to a side far away from the docking track relative to the material conveying section.

13. The synchronous construction platform for a cross passage according to claim 8 or 9, characterized in that the cross passage tunneling equipment is arranged in the arrangement area, and the cross passage tunneling equipment comprises a tunneling main machine and a muck discharging device configured to receive muck discharged from the tunneling main machine and convey the muck into a muck hopper of the cross passage material transport vehicle.

14. The synchronous construction platform for a cross passage according to claim 13, characterized in that the muck discharging device is composed of a muck discharging pipe connected to a tail of a screw conveyor of the tunneling main machine.