TRACKWAYS

Paved Track

Paved track is required where the track will be shared with other road traffic or in city streets where a paved surface is required for safety, aesthetics or drainage. Railroads and the original streetcar systems usually built paved track by paving over regular tie and ballast track. Today, electric rail systems must provide electrical isolation to prevent the return current in the rails from leaking into utilities and accelerating corrosion. Modern street standards also require a high-quality trackway finish to minimize obstacles to other road users.

As part of TriMet's commitment to sustainability, Interstate MAX used 6,000 recycled plastic ties, while approximately 1,700 recycled plastic ties were used on the Portland Mall alignment. The Portland-Milwaukie project used approximately 2,000 recycle plastic ties.

The MAX system uses three types of track: paved track, direct fixation track and open (tie and ballast) track.

Eastside track

The Eastside MAX line adopted a European paved track design that uses Ri 59 girder rail "glued" into a slot in the pavement with a rubberized elastomer. This system is expensive to construct and difficult to repair, but very dependable. The track from Lloyd Center to SW 11th Avenue is an example.

Westside track

Westside MAX provided an opportunity to explore alternative paved track designs. The MAX track from SW 11th Avenue to the Robertson Tunnel was constructed in an insulated trench, where a track slab was installed. Ri 59 girder rails were fastened to this slab and rubber spacer strips were used to separate the rails from the adjoining pavement. This system was designed to facilitate rail replacement, and its construction was less dependent on dry weather.

Hillsboro track

Downtown Hillsboro introduced a new design, with track that runs for about a mile on a paved median. Specifically, the base and sides of Ri 59 girder rail were encased in an insulating plastic "boot" exposing only the running head and flangeway. The track was assembled over a layer of steel reinforcement, and concrete was poured under and around the rails. A top lift was poured, providing a colored and textured finish. This design significantly reduced both cost and construction time for paved track.

Interstate track

This project required miles of median track for rail use only, eliminating the need for a level finish. The design uses 115# Tee rail, encased in a boot. The track is assembled using recycled plastic ties at about 10-foot centers, with threaded holes for leveling. A single rebar mat was placed in the slab's base, and the trackway was completed in a single pour. The space between the rails is depressed to the flangeway base, with drain inlets at intervals to collect track slab runoff. The center of the track is also sloped for drainage. The trackway can be used by emergency vehicles but is not intended for normal traffic.

Portland Mall track

This paved track design used Ri 52 girder rail that is shorter in height than the rail in previous designs. The overall depth of excavation and track slab was

reduced by almost 2" by using this rail section. The track was constructed using recycled plastic ties at 10-foot spacing to set track line and grade. The rail was encased in a boot and concrete was placed in a single pour. The surface was a concrete roadway finish designed for mixed-use light rail and bus traffic.

Portland-Milwaukie track

The Portland-Milwaukie project's paved track was built using 115# Tee rail, encased in a boot with a rubber flangeway or girder. Like the Portland Mall track, this project's track was constructed using recycled plastic ties at 10-foot spacing to set track line and grade; the rail was encased in a boot and concrete was placed in a single pour, with a concrete roadway finish designed for mixed-use LRT and bus traffic.

Direct fixation and open track

Direct fixation track is used on bridges and tunnels, and follows general transit practice. It uses 115# Tee rail, with pads under the rail and elastic rail fasteners.

115# Tee rail and tie and ballast track is used for all exclusive track throughout the entire MAX system. On the Eastside MAX line, traditional wooden ties and cut spikes were used, but on subsequent lines, concrete ties with elastic clips were adopted.

Open tie and ballast track is used for most of the MAX Blue Line and Red Line, parts of the Yellow Line, the I-205 alignment of the Green Line and in the yards. On much of the Portland-Milwaukie project, open tie and ballast track in exclusive right-of-way provides increased system performance.

TriMet has approximately 12 miles of paved track, seven miles of direct fixation track, and more than 100 miles of tie and ballast track.

Reserved lane trackways

Reserved lane trackways are paved flush with the street. This design allows for decorative treatment of the track, such as the use of pavers, and allows some protection from traffic congestion. Reserved lanes can be found in Downtown Portland on 1st Avenue, Morrison and Yamhill streets, 5th and 6th avenues, and 18th Avenue.

Side running trackways

Side running trackways are used when light rail is installed on the side of the street where the street is one way, or most of the activity is on one side. For example, side running is used on NE Holladay Street in Portland's Lloyd District.

Street medians

Street medians provide a common and effective light rail configuration. Train operation is far from the sidewalks, and property access is retained. Intersections are controlled by traffic signals. The primary conflicting movement is with left turns, which are safer because they are normally illegal on red. The MAX system runs in medians on Burnside Street, Interstate Avenue and Washington Street in Hillsboro.

Flexibility keeps costs down

The ability to use a variety of light rail track configurations helps keep costs under control. Mixed traffic operation is also the least obtrusive within the city streets of an urban environment. The Portland Streetcar track runs entirely in mixed traffic operations.

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