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ORIGINAL

Decision No. 89022 JUN 27 1978

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Investigation on the Commission's own motion to adopt rules and regulations relating to safety appliances and procedures for rail transit services operated at grade and in vehicular traffic.	Case No. 10411 (Filed September 7, 1977)

Gregory Lee Thompson, for San Diego Metropolitan Transit Development Board; Daniel R. Paige and O. J. Solander, Attorney at Law, for California Department of Transportation; James P. Jones, for United Transportation Union; Gerald D. Fox and Peter Straus, for themselves; interested parties.
Richard D. Rosenberg, Attorney at Law, for the Commission staff.

ORDER ADOPTING GENERAL ORDER

California Public Utilities Code Section 778, enacted in 1976, requires the Public Utilities Commission to adopt rules and regulations relating to safety appliances and procedures for rail transit services operated at grade and in vehicular traffic.

In order to fulfill this responsibility, the Commission's Transportation Division staff established a Technical Advisory Committee consisting of representatives of transit agencies and others with knowledge and experience in the rail transit field. Several meetings were held during which the committee members made many valuable suggestions and recommendations. Using that information, the staff prepared a report titled "Proposed Rules and Regulations for the Design, Construction and Operation of Light Rail Transit Systems Including

Streetcar Operations". This report was offered and received as Exhibit 1 during a hearing in this matter held on November 3, 1977.

Due to certain objections which were raised at the hearing and not resolved during a recess, the matter was set over for further hearing on a later date. Subsequently, the staff revised its report which was offered and received as Exhibit 2 when the hearing was reconvened on February 10, 1978.

A representative of the United Transportation Union objected to the revised Section V.C in Exhibit 2 on the grounds that the minimum clearances required were too close for safety. He recommended that the Commission substitute in Section V.C, Subsections 3.a, 3.b, and 3.c on Page 4 a minimum of 24-inch clearance in each of those sections where either 12 inches or 6 inches now exist.

The clearance requirements in Exhibit 2, Section V.C were changed by the staff from those contained in Exhibit 1 in response to requests by Technical Advisory Committee members during a recess in the November 3, 1977 hearing. They were extracted from the German Association of Public Transport Operations standards by a member of the Technical Advisory Committee who testified that the German clearance requirements have been in effect for many years and that he has no knowledge of any accidents occurring as a result of those clearances. Further, he stated that had there been any problem because of those clearances, he believes the clearances would have been changed rather than retained for so many years.

The representative of the United Transportation Union did not have statistics or other evidence to substantiate his position that the clearances in Exhibit 2 could cause personal injuries or property damage.

The head of the Electric Safety Unit of the Utilities Division stated that the proposed General Order makes necessary a slight modification of the clearance provisions for trolley contact conductors in subways, tunnels, or bridges set forth in Rule 74.4E of this Commission's General Order No. 95, "Rules for Overhead Electric Line Construction." A reference to the proposed General Order was recommended.

Several further modifications of Exhibit 2 suggested during the hearing by interested parties were accepted by the staff. This matter was submitted on March 15, 1978 upon the receipt of a draft decision from the staff to implement modifying Exhibit 2 to include the suggestions made at the hearing with the exception of increasing minimum clearances.

Finding

We find that the rules and regulations contained in Exhibit 2, with modification as agreed upon during the hearing on February 10, 1978, are reasonable and necessary to fulfill the Commission's responsibility under Public Utilities Code Section 778.

Conclusion

The Commission concludes that the attached General Order should be adopted and that General Order No. 95 should be modified as hereafter ordered. The individual sections and subsections of Exhibit 2 have been renumbered to conform with the practice used in other Commission General Orders. The sequence of each part has not been altered.

IT IS ORDERED that:

1. General Order No. 143, attached hereto as Appendix A, is adopted to become effective on the effective date of this order.

2. Rule 74.4E of General Order No. 95, "Rules for Overhead Electric Line Construction" which reads:

"E. UNDER BRIDGES, ETC.

"A reduction of the clearances given in Table 1 to a minimum of 14 feet for trolley contact conductors is permitted for subways, tunnels or bridges, provided the railway does not operate freight cars where the vertical distance from the top of car or load to trolley contact conductor is less than 6 feet. This will require the grading of the trolley contact conductor from the prescribed construction down to the reduced elevation (see App. G, Fig. 64).

"No clearance is specified between the trolley contact conductor and the structure. Where the structure is of material which will ground the trolley current in the event the collector leaves the contact conductor, a properly insulated trolley trough or equivalent protection shall be installed to prevent contact between the collector and the structure. Where pantograph collectors are used, this protection is not required. See Rule 54.4-1 for provisions applicable to conductors other than trolley contact conductors."

is hereby modified to read as follows:

E. UNDER BRIDGES, ETC.

A reduction of the clearances given in Table 1 to a minimum of 14 feet for trolley contact conductors is permitted for subways, tunnels or bridges, provided the railway does not operate freight cars where the vertical distance from the top of car or load to trolley contact conductor is less than 6 feet, except that for light rail transit systems, the minimum height shall be that set forth in General Order No. 143, "Rules for the Design, Construction and Operation of Light Rail Transit Systems Including Streetcar Operations." This will require the grading of the trolley contact conductor from the prescribed construction down to the reduced elevation (see App. G. Fig. 64).

No clearance is specified between the trolley contact conductor and the structure. Where the structure is of material which will ground the trolley current in the event the collector leaves the contact conductor, a properly insulated trolley trough or equivalent protection shall be installed to prevent contact between the collector and the structure. Where pantograph collectors are used, this protection is not required. See Rule 54.4-1 for provisions applicable to conductors other than trolley contact conductors.

3. The Executive Director of the Commission shall cause a copy of this decision to be served upon the interested parties listed in Appendix B hereto.

The effective date of this order shall be thirty days after the date hereof.

Dated at San Francisco, California, this 27th day of JUNE, 1978.

President

Commissioners

Commissioner Robert Batinovich, being necessarily absent, did not participate in the disposition of this proceeding.

APPENDIX A

General Order No. 143

PUBLIC UTILITIES COMMISSION OF THE
STATE OF CALIFORNIA

RULES FOR THE DESIGN, CONSTRUCTION AND OPERATION OF LIGHT RAIL TRANSIT SYSTEMS INCLUDING STREETCAR OPERATIONS

Adopted JUN 27 1978. Effective JUL 27 1978.

Decision No. 89022 in Case No. 10411.

IT IS ORDERED by the Public Utilities Commission of the State of California that each public and private transit agency or authority operating in the State of California shall observe this general order in designing, constructing and operating light rail transit systems. The table of contents and rules are set forth below:

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1. Purpose:

To establish rules and regulations governing the design, construction and operation of light rail transit systems at grade and in vehicular traffic. It is intended that they be sufficiently flexible to enable transit agencies to apply them uniformly in meeting the varying conditions that exist on their respective properties. However, the safety of patrons, employees and the public is of primary importance in every consideration. It is recognized that advancement in technology and new experience may justify modification of the rules and regulations in the future and due consideration will be given at appropriate times toward updating them to meet the need.

2. Applicability:

These rules and regulations are applicable to all private light rail transit operators subject to the Commission's jurisdiction and to those public light rail transit operators designated by statutes to be subject to the Commission's regulations for safety. (Southern California Rapid Transit District, Section 30646, Public Utilities Code and Santa Clara County Transit District, Section 100168, Public Utilities Code.) Light rail transit operators not subject to the Commission's jurisdiction are encouraged to follow these rules and regulations.

3. Definitions:

3.1 *Light Rail Transit (LRT) - "A mode of urban transportation utilizing predominantly reserved but not necessarily grade-separated rights-of-way. Electrically propelled rail vehicles operate singly or in trains."

3.2 Light Rail Vehicles (LRV) - An electrically propelled passenger carrying rail vehicle capable of operating on each alignment classification described in Section 4. Passengers on light rail transit lines may be carried only in light rail vehicles (LRV).

3.3 Automatic Train Protection (ATP) - A system of train control devices including cab or wayside signals that automatically indicate the state of the track ahead and at junctions (interlocking).

*Definition adopted in 1976 by the Transportation Research Board Committee on LRT.

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3.4 Automatic Train Stop (ATS) - A device that will automatically bring the train to a stop should the LRV operator disregard a stop indication or command of the Automatic Train Protection system.

3.5 Interlocking - An arrangement of signals and control apparatus so interconnected that functions must succeed each other in a predetermined sequence, thus permitting train movements over routes only if non-conflicting conditions exist.

3.6 Cab Signal System - A signal system whereby block conditions and speed commands are transmitted and displayed directly within the train cab. The cab signal system may be operated in conjunction with a system of fixed wayside signals or separately.

3.7 Deadman Control - A safety device that requires the operator's continuous pressure or activity to remain activated and used to detect the inattention or disability of a train operator.

The abbreviations LRT, LRV, ATP and ATS are used throughout these rules and regulations in conformance with the definitions described in this section and LRV is to be considered singular or plural as appropriate.

4. Alignment Classification:

4.1 Exclusive:

A fully exclusive right-of-way without at-grade crossings, also referred to as grade-separated or protected by a fence or substantial barrier, as appropriate to the location. (Includes subways and aerial structures.)

4.2 Semi-Exclusive:

4.2.1 Fully exclusive right-of-way with at-grade crossings, protected between crossings by a fence or substantial barriers, if appropriate to the location.

4.2.2 Within street right-of-way, but protected by six-inch high curbs and safety fences between crossings. The safety fences should be located outside the tracks.

4.2.3 Within street right-of-way, but protected by six-inch high curbs between crossings. A safety fence may be located between tracks.

4.2.4 Within street right-of-way, but protected by mountable curbs, striping or lane designation.

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4.3 Non-Exclusive:

4.3.1 Mixed traffic operation - surface streets.

4.3.2 LRT/Pedestrian Mall.

5. Construction Requirements:

5.1 Track Construction:

Light rail track shall be constructed to standards appropriate for the type and weight of LRV, speeds, grade, curvature, drainage, etc. and shall conform generally to practice in the LRT industry. Track materials shall meet the applicable American Railway Engineering Association (AREA) standards. Track shall be maintained in proper gauge, alignments, surface level and cross level.

5.2 Structures:

5.2.1 Buildings/Stations - Shall be designed and constructed to meet all California Occupational Safety and Health Act (OSHA), State and local engineering and construction standards and codes.

5.2.2 Civil Engineering Features - All bridges, viaducts, retaining walls and similar structures shall be designed in accordance with California Department of Transportation (CALTRANS) "Bridge Planning and Design Manual", adapted to light rail dimensions and loading where appropriate.

5.3 Clearances:

The provisions of General Order 26-D, Sections 9, 10 and 11, shall not apply to tracks used exclusively for rail passenger operations defined in Section 3.1 hereof as Light Rail Transit (LRT). The following clearance requirements shall govern LRT:

5.3.1 All clearances shall be measured from the surface of the largest vehicle stationary on tangent track. The spacing of tracks and structures shall be increased proportionately for curved track to provide the minimum clearances specified in Section 5.3.3 hereof at all locations. Minimum clearances shall be such that no contact can take place due to any condition of design wear, loading or anticipated failure such as air spring deflation or normal lateral vehicle motion.

5.3.2 The requirements of the applicable sections of General Order 26-D shall govern where LRT is operated: a) on or adjacent to tracks used for transporting freight cars; b) where LRT is operated with light rail vehicles not having all windows and other openings sealed or effectively barred.

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*5.3.3 The minimum clearances for LRV that have all windows and other openings sealed or effectively barred and operated on tracks used exclusively for transit purposes shall be:

5.3.3.1 Between LRV's on parallel tracks - 12 inches.

5.3.3.2 Between LRV's and fixed wayside structures - 12 inches except center poles and pedestrian fences not having rigid horizontal members such as railings - 6 inches.

5.3.3.3 Between LRV's on medians and face of curb - 12 inches.

5.3.3.4 Between LRV's and high level platforms - 3 inches.

5.3.3.5 Between LRV's and low level platforms, horizontally from the widest equipment operated - 3 inches and sufficient vertically to avoid contact at all times. See 5.3.1 above. Subject to these conditions, low level platforms may extend beneath a Light Rail Vehicle.

Alignment Classifications 4.1 and 4.2.1 segments having minimum clearances may be subject to speed profile reduction.

5.3.4 Track installation and clearances shall provide sufficient room that in an emergency, passengers can leave a stalled train and reach a station or other exit point safely.

5.3.5 Overhead clearance shall conform to General Order 95 except that on Alignment Classifications 4.1 and 4.2.1, between crossings, and used exclusively for transit purposes the minimum contact wire clearance shall be 9 inches above the height of the LRV pantograph in the retracted position. Where LRT is operated on or across railroad tracks at grade, overhead clearances less than those specified in General Order 95 may be authorized at specific locations, provided warning signs, telltales and other safety devices appropriate to the location, are installed.

5.4 Electrical and Communication Facilities:

5.4.1 Above Ground construction of electrical and communication lines, including trolley contact and third rail conductors, shall comply with the provisions of General Order 95, except as provided in Subsection 5.3.5. Exemptions from trolley contact wire clearances for specific locations will be considered when requested in accordance with Section 12 herein.

5.4.2 Underground construction of electrical and communication lines shall comply with the provisions of General Order 128.

*See figures 1 and 2.

In addition, the provisions of California OSHA, National Electrical Code, Electrical Safety Orders of California, Title 8 and local electrical safety codes shall apply.

In the event of conflict, the most stringent code shall apply.

5.5 At-Grade Roadway Crossings:

5.5.1 Roadway crossings of transit rails shall be designed and constructed in accordance with General Order 72-B.

5.5.2 All LRT crossings and intersections shall be equipped with a traffic control device and/or railroad-type warning device to clearly assign the right-of-way among the conflicting movements.

5.5.2.1 Railroad-type warning devices, where used, shall be installed in accordance with General Order 75-C. Where the same right-of-way is shared with other rail lines, such warning devices shall operate for both LRT and train movements on those lines.

5.5.2.2 Standard #10 (GO 75-C) pedestrian crossing warning devices shall be installed at pedestrian grade crossings in Alignment Classifications 4.2.1 and 4.2.2 which are not a part of vehicular crossings. Traffic signals or other approved devices may be used in Alignment Classifications 4.2.3 and 4.2.4.

5.5.2.3 Highway-type traffic control devices (traffic signals, stop signs) shall be installed in accordance with the Traffic Manual - State of California, Department of Transportation, current edition.

5.6 At-Grade Railroad Crossings:

At-grade crossings of railroad tracks shall be protected by interlocking, ATP, and ATS, except where the light rail track is in a street right-of-way, the Commission may authorize other protective measures.

6. Operating Requirements:

6.1 Basic Speed Rule:

The other provisions of this section notwithstanding, the operator of an LRV shall at all times operate at a safe speed that is consistent with weather, visibility, track conditions, traffic, traffic signal indications and the indications of ATP systems where used.

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6.2 Speed Profile:

LRV shall be operated at all times within the maximum speed profiles established for the system. System speed profiles shall be contained in the Transit Authority's Operating Rules and Procedures (Section 8). Speed limit signs which are visible from the operator's cab shall be posted in advance of critical locations.

6.3 Maximum Speeds:

The maximum speeds permitted on an LRT system shall be established in accordance with Table 1. Refer also to Section 7.

6.4 Hand Signaling Devices:

Colored flags and lights, fusees (flares) shall be used where appropriate to control LRV movements.

6.5 Audible Warning:

The LRV operator shall sound an audible warning at public crossings and in traffic as required by local regulations.

6.6 Headways:

Minimum headways shall be governed by:

6.6.1 ATP where used.

6.6.2 Operating Rules.

7. Public Utilities Commission Review:

All orders, rules and speeds as proposed by the transit authority for LRT operations, regardless of alignment classification, shall be subject to PUC review.

8. Operating Rules and Procedures:

Each transit authority shall adopt and enforce operating rules and procedures governing its employees whose duties affect the safety of LRT operations. Copies of such rules and procedures shall be filed with the Commission not less than twenty working days before the rules and procedures are implemented. Any subsequent amendments thereto shall be submitted to the Commission not less than twenty working days prior to implementation. Such employees shall:

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8.1 Receive training in the proper application of the operating rules and procedures in performing their duties.

8.2 Be required to pass an examination to determine their knowledge and understanding of the rules and procedures. Employees transferred to positions of different responsibility shall be required to pass an examination appropriate for the new position. Employees shall be certified by the transit authority as to their qualifications for their respective positions as they relate to the employee's knowledge and understanding of the operating rules and procedures, hereto.

8.3 Be required to pass an examination to determine their knowledge and understanding of all applicable Federal, State, and local regulations and ordinances which shall be included in the operating rules and procedures.

8.4 Be given refresher training at appropriate intervals to assure their continued qualifications for their respective duties per Section 8.2 above.

8.5 Possess a valid Class 2 California Vehicle Driver's License.

9. Light Rail Vehicles:

New vehicles contracted and constructed after January 1, 1978, intended for passenger operation on LRT lines shall conform to the requirements of this section.

9.1 Construction:

9.1.1 Vehicles shall be designed and constructed according to the technology that will insure their crashworthiness in case of a collision. Anti-Climbers and other devices shall be installed to reduce the likelihood of one car overriding the frame of another car during collision and intruding into the body of the other car. Under-frame construction, collision posts and end frame construction shall be capable of passing the following test:

> Under a combined vertical load representative of a maximum design passenger load and a horizontal load of 2G (empty car) applied at the end sills, the stress (unrelieved by permanent strain) in the principal framing members shall not be greater than the yield of the material.

9.1.2 Windshields, window and partition glazing materials shall be of shatterproof construction capable of resisting shock and penetration by foreign objects that may strike the material during normal operation.

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9.1.3 Vehicles shall be provided with manual operating capability including, but not limited to, manual control of propulsion, braking and doors and visual/audio indications needed for manual monitoring of vehicle performance and vital functions. Additionally, vehicles shall be equipped with a speed indicator which shall be maintained to indicate actual speed within 3 mph and a Deadman Control as defined in Section 3.7. Vehicles operating on Alignment Classifications 4.1 and 4.2.1 where ATP plus ATS is required as depicted in Table 1 shall be equipped with ATS control. Cab Signal equipment as defined in Section 3.6 is optional.

9.2 Brakes:

LRV shall have, as a minimum, a service braking system consisting of dynamic/regenerative and friction brakes, an independent emergency magnetic track brake system and a parking brake system.

9.2.1 The service braking system shall provide braking capability for all vehicle weights up to a full passenger load utilizing both dynamic/regenerative and friction brakes continuously blended and jerk-limited to attain the desired braking rate over the entire operating speed range up to overspeed cutoff.

9.2.2 All LRV's shall be capable of the following dry-track braking rates under all loading conditions:

Maximum full braking rate	4.0 mphps
Nominal full braking rate	3.5 mphps
Minimum full braking rate	3.0 mphps
Emergency braking rate	
from max to 30 mph	4.0 mphps minimum
from 30 mph to 20 mph	6.0 mphps minimum
from 20 mph to 10 mph	5.0 mphps minimum
from 10 mph to zero	3.5 mphps minimum

9.2.3 In the event of dynamic brake failure, the friction brake system shall have the capability of providing an average braking rate of not less than the minimum rate established by the Transit Authority over the entire operating range.

9.2.4 The emergency braking system shall utilize the capabilities of the service brake plus the application of magnetic track brakes and sand as required. Emergency braking rates shall be available for

vehicle weights up to a maximum design passenger load. Emergency brake application shall not be jerk-limited. Slip/spin protection, where used, shall be designed for fail-safe operation such that the normal system failure mode will cause a by-pass of the slip/spin protection.

9.2.5 All braking systems shall be monitored continuously for any detectable failures by a fail-alarm checking system. Should an impending failure of either the dynamic or friction braking system or components thereof be detected, a visual and audible warning shall be annunciated followed by a manual application of the magnetic track braking system by the LRV operator and the train brought to a stop at the earliest possible moment. The train may then proceed at a reduced speed to the closest station stop where the passengers shall be off-loaded. The train shall then be moved out-of-service to the nearest dead track, yard or terminal for repairs.

9.2.6 A parking brake function, which may be an integral part of the service brake, shall be provided on each vehicle. The parking brake/hand brake shall have the capability to hold a fully loaded car on the maximum grade to be encountered without power available. Design shall be such that the parking/hand brake function can be utilized from each cab with no power source available. It shall also be semi-automatic in that it shall be applied when the vehicle is placed in the lay-up mode and the cab transfer key has been removed from the master controller. Parking brake shall be interlocked with propulsion control to prevent application of power when the parking brake is set on a single car or train.

9.3 Doors:

9.3.1 The side door operating function shall be interlocked with the propulsion and brake control to prevent a vehicle from moving whenever the operator has enabled the door interlock function and a door is open.

9.3.2 All side doors that are not directly within the operator's sight and under his supervision shall contain an obstruction protection device which shall operate only when the operator has enabled the door interlock function. When activated, by an obstruction, this device shall cause the door to release and remain released for an adjustable time period, then the door will attempt to close again.

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9.4 Lights - Exterior:

9.4.1 Headlights, taillights, clearance lights and turn signals shall comply with the provisions of Division 12, Chapter 2 of the California Vehicle Code. Other or brighter headlights may be installed, but may not be operated when the light would conflict with the Code concerning approaching motor vehicles.

9.4.2 Curb and platform illumination lamp(s) shall be located at each doorway and will provide not less than two-foot candles of illumination measured on the street and platform 24 inches (61 cm) away from the vehicle in a horizontal direction. This light shall be on when the door is opened and extinguished when the door is closed.

9.5 Lights - Interior:

9.5.1 The lighting intensity at each seat shall have an overall average of not less than 20-foot candles measured at a plane 36 inches (92 cm) above the floor.

*9.5.2 All stepwells and floor level exits shall be entirely illuminated without shadows. The lighting intensity on the surface of the step tread shall be not less than 5-foot candles.

9.6 Warning Devices:

The lead unit of every light rail train shall be equipped with an audible warning device such as a horn, whistle, or bell capable of emitting sound audible under normal conditions from a distance of not less than 500 feet.

10. Train Protection:

It is intended that an LRV operator will normally maintain visual/manual control of a vehicle or train. In addition, Automatic Train Protection as defined in Section 3.3 may be required at locations with restricted visibility or other special operating conditions. In accordance with Table 1, Automatic Train Protection shall be required wherever speeds in excess of 45 mph are permitted. Automatic Train Protection and Automatic Train Stop shall be required wherever speeds in excess of 55 mph are permitted and wherever interlocking is provided at railroad crossings in accordance with Section 5.6.

*Applies to vehicle equipped to serve curb level and floor level passenger platforms.

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11. Safety Implementation:

Any California transit authority subject to the jurisdiction of the Commission wishing to build a new LRT system or expand, renew or improve its existing LRT facilities shall file with the Commission its plans to implement the safety provisions of Sections 5, 6, 9 and 10 herein, not less than thirty working days prior to letting a contract for construction.

12. Exemptions:

Requests for exemptions from these rules shall contain a full statement of the reasons justifying the requested exemptions and demonstrating that safety is not reduced thereby. Any exemption so granted shall be limited to the particular case covered by the request.

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MINIMUM CLEARANCES DESCRIBED IN SECTIONS 5.3.3.1 TO 5.3.3.5 INCL.

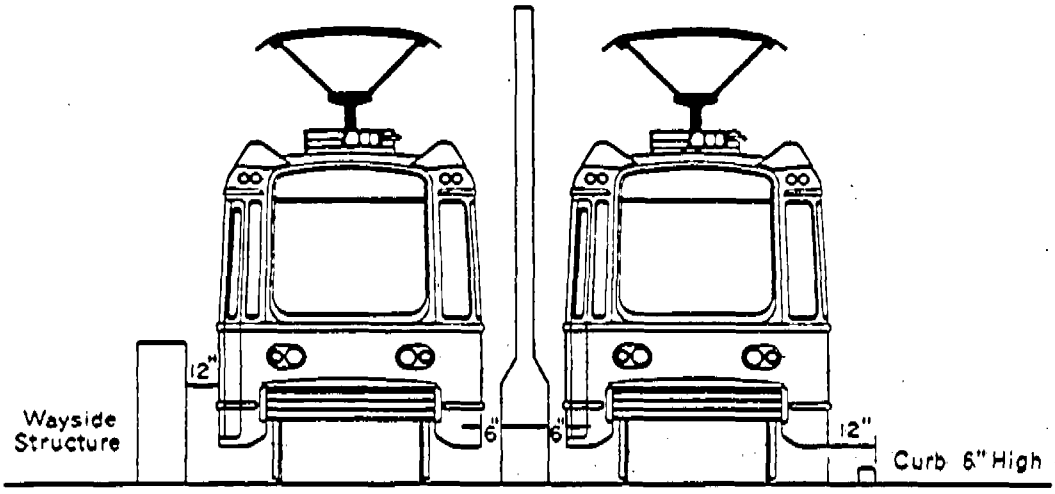

Figure 1

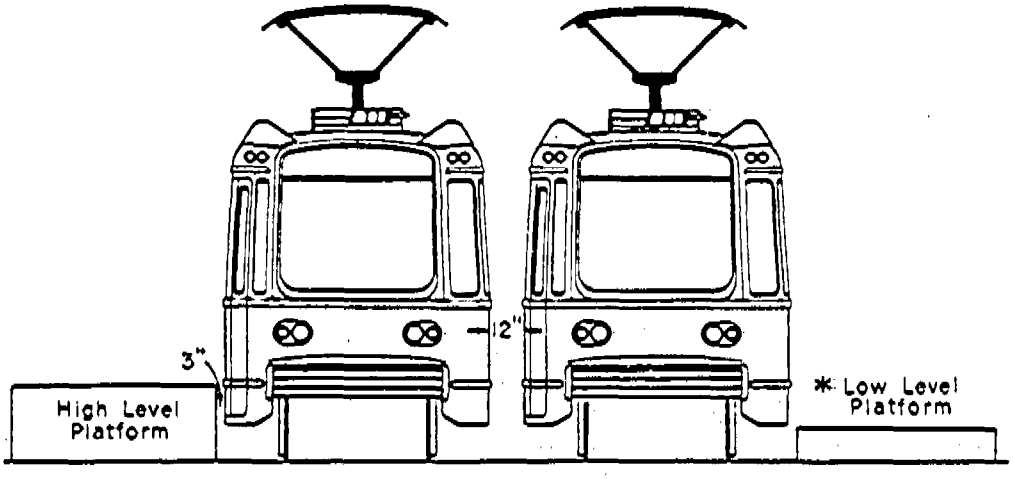

Figure 2

* Low level platforms may extend beneath a light rail vehicle, provided the minimum horizontal and vertical clearances specified in Section 5.3.3.5 are maintained.

Table 1
MAXIMUM PERMITTED SPEEDS ON LRT SYSTEMS

Alignment Classification	Crossing or Intersection Control	Train Protection	Maximum Permitted Speed	Notes
4.1 Exclusive	Not Applicable	ATP & ATS	No Limit	1
	Not Applicable	ATP Only	55 MPH	
	Not Applicable	None Required	45 MPH	2
4.2.1 Fenced Right-of-Way with At-Grade Crossings	1) Between Crossings	Train Protection and Maximum Permitted Speed as for Alignment Classification 4.1 above		
	2) At Crossings			
	Flashing Lights and Gates	ATP & ATS	No Limit	1
	Flashing Lights and Gates	ATP Only	55 MPH	
	Flashing Lights and Gates	None Required	45 MPH	2
	Traffic Signal or Other Approved Device	None Required	See Footnote 3	2,3
4.2.2 Street Median or Side Alignment with 6" Curb and Fence	1) Between Crossings	None Required	Legal Speed of Parallel Traffic + 10 MPH	2,5
	2) At Crossings			
	Flashing Lights and Gates (Side Alignment Only)	None Required	Legal Speed of Parallel Traffic + 10 MPH	2,5
	Traffic Signal or Other Approved Device	None Required	Legal Speed of Parallel Traffic But not to Exceed 35 MPH	2
4.2.3 Street Median or Side Alignment with 6" Curb	Traffic Signal or Other Approved Device	None Required	Legal Speed of Parallel Traffic But not to Exceed 35 MPH	2
4.2.4 Mountable Curb or Transit Lane	Traffic Signal or Other Approved Device	None Required	Legal Speed of Parallel Traffic But not to Exceed 35 MPH	2
4.3.1 Mixed Traffic	Traffic Signal or Other Approved Device	None Required	Legal Speed of Parallel Traffic But not to Exceed 35 MPH	2
4.3.2 Pedestrian Mall	Traffic Signal or Other Approved Device	None Required	20 MPH	4

Notes: 1) Speed is limited only by vehicle or alignment characteristics.
2) Provided adequate stopping sight distance is available.
3) Traffic signal or other approved device at crossings on 4.2.1 right-of-way may be authorized only in special locations, where speeds do not exceed 25 MPH (such as at stations).
4) Lower speed may be required for malls paved flush with the tracks.
5) Maximum speed 55 MPH unless ATP & ATS are provided. Maximum speed 45 MPH unless ATP is provided.

Appendix B

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APPENDIX B

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