

PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Consumer Protection & Safety Division
Rail Transit and Crossing Branch
Rail Transit Safety Section

RESOLUTION ST- 85
January 11, 2007

RESOLUTION

RESOLUTION ST-85 GRANTING SAN FRANCISCO MUNICIPAL TRANSPORTATION AGENCY'S REQUEST TO DEVIATE FROM GENERAL ORDER 95 REQUIREMENTS FOR THE MINIMUM OVERHEAD CLEARANCE OF SPAN AND FEEDER WIRES OVER HIGH LEVEL PASSENGER PLATFORMS ON ITS SAN FRANCISCO MUNICIPAL RAILWAY THIRD STREET EXTENSION PROJECT.

SUMMARY

This resolution grants San Francisco Municipal Transportation Agency's (SFMTA) request for authority to deviate from the overhead clearance requirements of General Order 95 (GO 95), Rule 37, Table 1, Case 5, Column C for span and feeder wires over high level passenger platforms on its San Francisco Municipal Railway (MUNI) Third Street Extension Phase I project. It allows the reduced clearances without adversely affecting safety by requiring the implementation of specific hazard mitigations.

BACKGROUND

The Consumer Protection and Safety Division staff (Staff) carried out inspections for compliance with requirements of GO 95 along SFMTA's new MUNI Third Street Extension, Phase I project (Third Street project), also known as the Initial Operating Segment, on June 1 and 2, 2006 and on September 25, 2006. The Third Street project is a 5.4-mile long light rail line with 18 high level platform passenger stations. It extends from an existing line at Fourth and King Streets, south along Third Street and onto Bayshore Boulevard where it terminates just

beyond Sunnydale Avenue. SFMTA plans to begin weekend passenger service operation of the new light rail line on January 13, 2007.

The Third Street project's overhead contact system is a fixed design with contact wire supported by span wires and feeder wires attached to overhead support poles approximately every 80 feet to 100 feet. Approximately every 400 feet, a feeder wire, which also acts as a span wire, feeds electric power to the contact wire. Most of the overhead support poles are located away from MUNI tracks and outside the roadway on adjacent sidewalks. The MUNI light rail vehicle pantographs with collector bars designed to slide along the contact wire have a maximum reach of 19 feet above the top of rail. The high level passenger platforms are 34 inches (2 feet 10 inches) above top of rail. The system operates on a nominal voltage of 600 VDC.

By letter dated November 8, 2006, SFMTA requested authority to deviate from the clearance requirements of GO 95, Overhead Electric Line Construction, Rule 37, Table 1, Case 5 for the 600 VDC span and feeder wires extending over the high level passenger platforms located along the Third Street project.

GO 95, Rule 37 states in part that, "the clearances between conductors, guys, messengers or trolley span wires and buildings, poles, structures, or other objects, shall not be less than those set forth in Table 1, at a temperature of 60°F and no wind." Table 1, Case 5, Column C, Trolley Contact, Feeder and Span Wires, 0-5000 Volts, states that, "Above ground in areas accessible to pedestrians only" wire height shall not be less than 19 feet. References to Rules Modifying Minimum Clearances in Table 1, Case 5, Column C (eee) states that wire height, "May be reduced to 18 feet if the voltage does not exceed 1000 volts and the clearance is not reduced to more than 5% below the reduced value of 18 feet because of temperature and loading as specified in Rules 37 and 43."

SFMTA reports that they designed the span and feeder wires over the high level passenger platforms to meet the requirements of GO 95, Rule 37, Table 1, Case 6, Column C. Case 6 establishes "Vertical clearance above walkable surfaces on buildings, (except generating plants or substations) bridges or other structures, which do not ordinarily support conductors, whether attached or unattached." Column C applies to "Trolley Contact, Feeder and Span Wires, 0-5000 Volts" and provides for a minimum of 8 feet of vertical clearance.

SFMTA states that the span and feeder wires serving the Third Street project are currently 16 feet or more above the passenger platforms. It also states that it cannot comply with Case 5 clearance requirements at the platforms due to the constraints of its system. As noted previously, span wires are necessarily located every 80 feet to 100 feet for support of the contact wire and the high level passenger platforms are 150 feet long and 2 feet 10 inches above top of rail. In order to maintain span wires and feeder wires 18 feet above the top of the platforms, the contact wire would be at least 20 feet 10 inches above top of rail which would be beyond the reach of light rail vehicle (LRV) pantographs.

To support its contention that the wire height is safe, SFMTA noted that the National Electrical Code Safety Rules provide guidance for the safe height of wire over platforms. Table 232-1 of Section 232 Vertical Clearances of Wires, Conductors, Cables, and Equipment Above Ground, Roadway, Rail, or Water Surfaces specifies a vertical clearance of 16 feet for spaces and ways subject to pedestrians or restricted traffic only.

SFMTA further notes that in the event that a person would contact the feeder or span wires, those wires are insulated to protect from electrical shock.

SFMTA also states that the substations supplying the lines have been designed and equipped with trip units to instantaneously open the breakers in case of a ground fault. The trip units would remove power from that section of line in the event of making contact with the wire and a simultaneous failure of the wire insulation.

NOTICE

SFMTA states that a copy of the variance application letter was mailed and distributed to the potentially affected parties.

PROTESTS

No protest of the variance application has been filed with the Commission.

DISCUSSION

Staff reviewed the request and believes it should be granted based on hazard mitigations implemented by SFMTA.

Staff inspected the Third Street project for compliance with GO 95 in June and September 2006 and reported deficiencies to the SFMTA. SFMTA agreed to correct all of the deficiencies with the exception of the span and feeder wires over the high level passenger platforms. SFMTA explained that raising the span and feeder wire height to 18 feet above the passenger platforms would result in the contact wire being at least 20 feet 10 inches above top of rail. The pantographs on the MUNI's light rail vehicles only reach 19 feet above the top of the rail, and would therefore, be unable to maintain contact if the span and feeder wire is raised to 18 feet.

By letter dated November 8, 2006, SFMTA requested authority to deviate from the feeder and span wire clearance requirements of GO 95, Rule 37, Table 1, Case 5, Column C at the high level passenger platform stations on the Third Street project.

Staff evaluated the request and the risk mitigating factors cited and implemented by SFMTA and found the minimum 16 feet wire height above the high level passenger platforms, in its current design with those mitigations, to be acceptable. Factors influencing the Staff's conclusion included:

- National Electrical Code Safety Rules provide guidance for the safe height of wire over platforms. Table 232-1 of Section 232 Vertical Clearances of Wires, Conductors, Cables, and Equipment Above Ground, Roadway, Rail, or Water Surfaces specifies a vertical clearance of 16 feet for spaces and ways subject to pedestrians or restricted traffic only.
- In the event that a person would contact the feeder or span wires, 16 feet above the platform, those wires are insulated to protect from electrical shock.
- Substations supplying electricity to the lines have been designed and equipped with trip units to instantaneously open the breakers in case of a ground fault. That action would remove power from that section of line in the event of a person making contact with the wire and a simultaneous failure of the wire insulation.

COMMENTS

This is an uncontested matter in which the resolution grants the relief requested. Accordingly, pursuant to Section 311 (g)(2) of the Public Utilities Code and Rule 14.6(c) (2) of the Commission's Rules of Practice and Procedure, the otherwise applicable 30-day period for public review and comment is waived.

FINDINGS

1. General Order 95, Rule 37, Table 1, Case 5, Column C (eee) allows a minimum vertical clearance of 18 feet if the "voltage does not exceed 1000 volts and the clearance is not reduced to more than 5% below the reduced value of 18 feet because of temperature and loading as specified in Rules 37 and 43 between conductor and structures, upon which men may work."
2. By letter dated November 8, 2006, SFMTA requested authority to deviate from the requirements of GO 95, Rule 37, Table 1, Case 5, Column C, Trolley Contact, Feeder and Span Wires, 0-5000 Volts, above ground in areas accessible to pedestrians only.
3. SFMTA specified 18 passenger stations on the Third Street project for the requested authority to reduce vertical clearance of span and feeder wires.
4. Passenger platforms are 150 feet long and with a walkable surface 2 feet 10 inches above top of rail.
5. The overhead contact system is a fixed system with contact wire supported at approximately every 80 feet to 100 feet by span wire or feeder wire.
6. MUNI light rail vehicle pantographs have a maximum extension of 19 feet above the top of rail to reach the contact wire.
7. Span wires and feeder wires located at 18 feet clearance above the top of the platform would place the contact wire at 20 feet, 10 inches above top of rail and beyond the reach of MUNI light rail vehicle pantographs.
8. National Electrical Code Safety Rules specify in Table 232-1 of Section 232a a vertical clearance of 16 feet for spaces and ways subject to pedestrians or restricted traffic only.

9. SFMTA span wires and feeder wires, located 16 feet above the passenger platforms, are insulated to prevent electrical shock to any person who would inadvertently come into contact with them.
10. SFMTA substations supplying electricity to the span wires and feeder wires have been designed and equipped with trip units to instantaneously open the breakers in case of a ground fault.
11. SFMTA and Staff are in agreement that the requested authority to reduce vertical clearance of span and feeder wire clearances to a minimum of 16 feet above high level passenger platforms, with the specified hazard mitigations, at the 18 passenger stations on the Third Street project will not adversely affect public safety.

THEREFORE IT IS ORDERED THAT:

1. San Francisco Municipal Transportation Agency's request for authority to deviate from the requirements of General Order 95, Rule 37, Table 1, Case 5, Column C (eee), Trolley Contact, Feeder and Span Wires, 0-5000 Volts over the 18 high level passenger platforms on the Third Street project is granted subject to San Francisco Municipal Transportation Agency's maintaining:
 - a. Span wires and feeder wires a minimum of 16 feet above the high level passenger platforms;
 - b. Insulation on span wires and feeder wires above the high level passenger platforms; and
 - c. Trip units to instantaneously open the breakers in case of a ground fault in substations supplying electricity to the span wires and feeder wires.

2. This resolution is effective today.

I certify that the foregoing resolution was duly introduced, passed, and adopted by the Commission at its regularly scheduled meeting on January 11, 2007. The following Commissioners voted favorably thereon:

STEVE LARSON
Executive Director