



2015

STREETCAR REGULATIONS MANUAL



Department of Public Works
City of Kansas City, Missouri

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Preface

This Streetcar Regulations Manual (“Manual”) for the City of Kansas City, Missouri (“City”) is intended to promulgate the technical criteria and details necessary for implementing the streetcar provisions. This Manual is enacted in accordance with the provisions of Article XIV, Streetcars, Chapter 64 of the Code of Ordinances and it is intended to enact conditions to protect the public safety.

This Manual is not intended to ensure safety, security, health, or environmental protection. Anyone working within the street car right of way is responsible for determining appropriate safety, security, environmental, and health practices or regulatory requirements.

It is the intent of the Public Works Department (PWD) to keep this Manual current as to the latest materials, methods, and techniques that are acceptable for streetcar operations and track access permitting, and for any other changes or additions that may be made. The latest update will be noted on the face of the document. However, a permittee shall be ultimately responsible for ensuring that the current standards are being followed.

The Streetcar Authority or Streetcar Operator will maintain a copy of the latest edition of the Streetcar Regulations Manual and the Streetcar Operator’s standard operating procedures manual on its website and will send email notices of revisions or updates to public service providers having facilities in the corridor.

I. RECITALS, DEFINITIONS, AND DECLARATIONS

A. DEFINITIONS

1. *Backbone* means a span guy or along track span-wire between structural supports used primarily to align contact/streetcar wires around a curve using a series of pull-offs attached along its length.¹
2. *Catenary* means the combination of two or more Overhead Contact System conductors, hangers and in-span hardware, but not including supports and cantilevers. The Webster's Dictionary (literal) meaning for catenary is the curve assumed by a perfectly flexible cord of uniform weight and cross-section hanging freely between two fixed points.¹
3. *Controller* means any person in current responsible charge of the streetcar service line safety, scheduling, and associated vehicular operations of the Streetcar Operator.
4. *Contact Wire (CW)* means the wire with which the pantograph makes contact for current collection. Normally made of copper or bronze, the wire is a single wire conductor usually with two grooves to which hangers and clamps may be fitted.¹
5. *Director* means the director of public works of the city unless otherwise defined herein.
6. *Direct Suspension System* means an Overhead Contact System with direct support of a contact wire from a cross-span wire, bracket arm, resilient arm or resilient hanger.¹
7. *Duty superintendent* means any person assigned to manage and supervise field operations, maintenance, track safety, permit work, and report to the controller.
8. *Emergency activity* means circumstances requiring immediate construction or operations by a public service provider to prevent imminent damage or injury to the health or life safety of any person or to the public right-of-way. In the event of an equipment failure affecting service, such as a cable failure outage of a redundant feed that brings a utility customer to one feed is not considered an emergency.
9. *Feeders* means conductors that supply power to or augment the power-carrying capacity of the conductors in an Overhead Contact System.¹
10. *Hanger* for a catenary means a light wire, light metal rope, light strap or light rod assembly for suspending the contact wire from the messenger wire at regular intervals in the range of every 4,572 mm (15 ft.) to 9,144 mm (30 ft.).¹
11. *Horns* means the curved or angled downward ends of the pantograph head, which lift 'out-of-running' wires onto the contact strip, as they converge.¹

¹ P1791/D9.0, Oct 2011 - IEEE Draft, *Recommended Practice for Terminology Used for Direct Current Electric Transit Overhead Contact Systems*

12. *Non-revenue service hours* shall mean all hours except for revenue service hours and the one hour prior to the first revenue service hour of the day, and is the period of time when the streetcar line transport passenger service is scheduled to be inactive and revenue is not generated by fare.
13. *Overhead Contact System (OCS)* means the part of the traction electrical system comprising the overhead conductors (or single contact wire), aerial feeders, direct suspension system, supports, foundations, balance weights and other equipment and assemblies, that delivers electrical power to electric vehicles.¹
14. *Motorman or driver* means a person who propels, drives, operates or who is in charge of a streetcar vehicle.
15. *Pantograph* means a multi-link hinged apparatus that collects current from one or more overhead contact wires for use by the vehicle propulsion and auxiliary electrical systems. The collector head of the pantograph moves vertically to conform to changes in height of the overhead contact wire.¹
16. *Permittee* means the person, ROW-user, or entity applying for or receiving a permit to perform construction within the City's right-of-way under the terms and conditions of this article. The term includes:
 - (a) any officer, director, partner, manager, superintendent, or other authorized person exercising control over or on behalf of the *permittee*; and
 - (b) any contractor or subcontractor of the *permittee*, for purposes of compliance with this Manual, and the traffic control, construction, and maintenance requirements of this article.
17. *Pole (OCS)* means an independent slender vertical structure with or without guy, used to support some part of the Overhead Contact System.¹
18. *Public service provider* means any wholesale or retail electric utility, gas utility, telecommunications company, cable company, water utility, storm water utility, or wastewater utility, regardless of whether the firm or agency is publicly or privately owned or required to operate within the City pursuant to a franchise.
19. *Pull off* means a bracket or hanger or wire on a curve that serves, indirectly, to suspend the overhead contact wire.
20. *Quality Control / Quality Assurance Manager (QAM)* means the excavation permittee's representative who is responsible for assuring that the permitted work is constructed in conformance with City's design and construction criteria and as described in the City's Code of Ordinances, Sec. 64-134, Private QA/QC Manager.
21. *Registration* means lateral stabilizing (with or without support) of conductors to maintain a fixed horizontal location relative to the center line of the track.¹

22. *Registration arm or steady arm* means the lateral restrainer on the contact wire at a structure or other point of registration, such as at a wire pull-off.¹
 23. *Revenue service hours* means the period of time when the streetcar line is scheduled to be actively conveying passengers regardless of whether or not there is a fare for the transport service.
 24. *Standard Operating Procedures Manual (“SOP”)* means a written document of fixed instructions to handle specific situations that promote operational efficiency and effectiveness, safeguard assets and records, overcome safety issues, provide quality control, declare or encourage adherence to policies, and assure total compliance with law and regulation.
 25. *Streetcar or streetcar vehicle* means an electrically driven rail transit vehicle designed for local public transportation that runs on rails let into the surface of the road and that is usually powered by electricity received from an overhead wire.
 26. *Streetcar Authority* means any person or entity appointed by the City to oversee and administer the management and operations of any streetcar system.
 27. *Streetcar Operator* means the professional transportation company hired by the City or Streetcar Authority pursuant to a contract to manage and operate any streetcar system.
 28. *Streetcar service line or streetcar system* means any rail, track, appurtenance, or facility located within a public right-of-way that is authorized by the City to be used for streetcars.
 29. *Streetcar stop or station* means a designated stop or shelter or any facility operated for a streetcar service line or served by a Streetcar Operator, including a reasonable area immediately adjacent to any designated stop along the route traveled by any streetcar operated by a Streetcar Operator, and parking areas provided by a Streetcar Operator adjacent to a station.
 30. *Traction Power Substation (TPSS)* means the substation for the electrical power supply to the Overhead Contact System and other current collection systems. A substation is a part of an electrical generation, transmission, and distribution system. Among other important functions, substations for the Overhead Contact System transform voltage from high to low.
 31. *Wire pull-off* means a pull-off using a registration arm, single or double curve hanger attached to the end of a guy wire that does not directly support the contact wire, although it can be lifted by the vertical component of the registration load.¹
- B. One streetcar system is currently authorized by the City and allowed to operate within the public right-of-way.
1. A modern streetcar system under the operation of the Kansas City Streetcar Authority.
 2. Unless provided otherwise in this Manual, all terms used herein shall have the same meaning as set out in the provisions of Chapter 64, Article XIV, Streetcars.
 3. All streetcar systems operating within the City shall operate under the provisions of this Manual.

4. The Streetcar Operator shall prepare standard operating procedures (SOP) and a systems safety plan that incorporates the policies and procedures in this Manual by which agencies that are not a part of the City or the Authority may gain access to, and do work in areas adjacent to or in the right of way of the streetcar line. The SOP manual shall cover how the system will operate, train inspections, streetcar movements in traffic, the additional precautions and practices that are needed, and the training and certification of the permittees and the first responders to an emergency. If there are times when the system must be shut down for any activities, the operating procedures manual (SOP) will cover how this is done, including the process by which the affected portion of the system is inspected, how its safety is verified prior to restart, and the procedure for such restart.
 5. The Streetcar Operator shall provide the training and certification of training for all of its employees, emergency personnel or first responders, public service providers or permittees, and any others who will be working in the vicinity of any part of the traction power system. Emergency personnel or first responders will require additional training pertaining to field operations.
- C. All public service providers or other permittees under City Code, Chapter 64, Article XIV, Streetcars, operating within the City shall operate in accordance with the provisions of this Manual as enacted and amended by the Director.
 - D. Right of way user companies whose operations are not covered by this Manual and need to barricade a public right-of-way outside of the operations envelope shown in Figure One, but who are not engaging in construction or repair in the right of way, must obtain a traffic control permit and should refer to the regulations contained in the Engineering Standards and Specifications of the City of Kansas City and APWA-KCMO Section 2305, Maintenance of Traffic.
 - E. The City retains the right to approve routes of the streetcars throughout the incorporated limits of the City and to approve, and if it determines necessary, modify the schedule of services for the streetcars, including the time interval between streetcars, expressed in minutes (headways). Notification of such modifications will be made known to public service providers in so much as it may impact their service hours and maintenance activities by the public service providers.
 - F. The streetcars operate within automobile traffic lanes, on those streets designated by the City. Traffic lanes with streetcar tracks shall bear the additional requirements of the Track Access Permit system (TAPS) described in this Manual.
 1. TAPS permits apply to permittees requiring temporary use of the track and traffic lane while conducting authorized and lawful business within the City.
 2. Any entities, other than permittee's, such as construction companies not doing construction or repair in the public right-of-way or delivery service providers requiring temporary use of the track and traffic lane while not interfering with streetcar schedule or operations and while conducting authorized and lawful businesses within the City, should refer to the Engineering Standards and Specifications of the City of Kansas City and APWA-KCMO Section 2305, Maintenance of Traffic, for relevant regulations and procedures.
 - G. Underground utility facilities that exist within the track envelope (as described in Section II.D.) are subject to the spatial and temporal access limitations defined in this Manual.

- H. As of the effective date of this Manual, no utility facility (e.g. manhole, handhole, or appurtenance) will be permitted to be constructed with the near edge of excavation within six feet horizontally of the centerline of the streetcar track, nor within 24” vertically of the surface of the track rail and pavement slab. The angle of any facility crossing underground shall be as near to perpendicular as practicable. The public service provider will be responsible for cathodic protection of their facility. A copy of the streetcar track alignment will be made available in electronic form from the City Engineer.

During construction of the streetcar track, these limits will be forgone for public service providers, provided the structural integrity of the track system and other City infrastructure are not compromised. (Upon request and where feasible, track construction will be reinforced in such areas to enable excavations accordingly.) With the same provision, exclusion from the zone encroachment rule may apply when connecting or repairing existing facilities within the bounds allowed by the initial track construction exclusion.

II. OPERATIONS AND TRACK ACCESS

A. Revenue Service Hours Schedule

The Kansas City Streetcar Authority (KCSA) Board of Directors approves the operating schedule for the KC Streetcar system and provides detailed route schedules on the website, www.kcstreetcar.org.

- B. Service hours or the buffer time may be adjusted by the controller based upon conditions such as a declared emergency. Changes to the normal schedule will be reported by the controller to the City.
- C. Streetcar headways are anticipated to maintain 10 minute intervals between arrivals at stations during peak periods while varying during off-peak periods to as much as 18 minute intervals.
- D. A Track Access Permit (TAPS) issued by the City of Kansas City, Public Works Department, Traffic Permits, is required for permission of any permittee or public service provider, as defined in Section I.A. above, wanting to occupy space or perform work within the traction power substations, operations yard or building, or within the envelope of the Streetcar Vehicle and Power Envelope, as defined in Figure One below, regardless of permits issued under the purview of existing City traffic regulations. The TAPS permit process informs the Streetcar Operator of planned activity in the right of way, complies with the operations of the streetcar, and provides some assurance that the activity itself is conducted in a manner which is safe and will not adversely impact the streetcar system or other pedestrian or vehicular traffic.
- E. A track access permit shall also be required for any of the following situations.
 - 1. If there is any work to be performed outside the envelope described in Figure 1 but within a five foot envelope of the Overhead Contact System (OCS) assemblies and support structures.
 - 2. If there is any earth work within a ten foot radius of an OCS foundation.
- F. All clearances are minimum clearances. Any work to be undertaken within these envelopes must be performed under the cautionary procedures described in this document and in the Streetcar Operator’s standard operating procedures manual to assure that the system is operated in a safe manner when contractors or other permittees are within its right of way envelope.

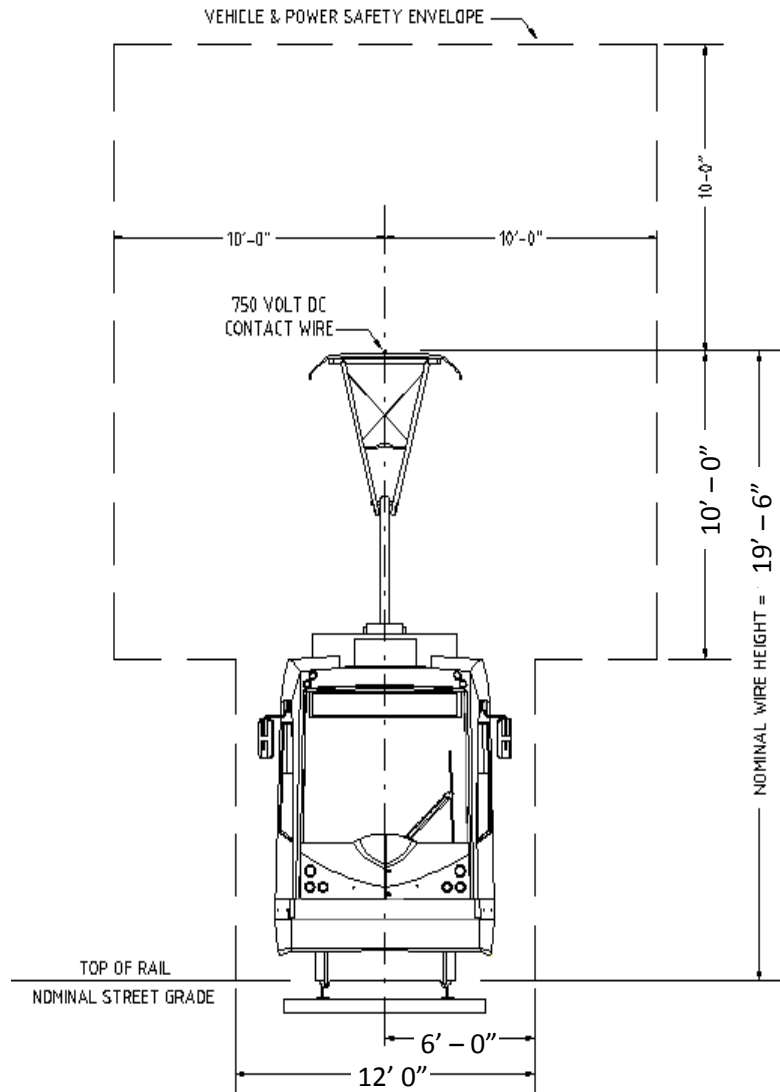


FIGURE ONE – STREETCAR VEHICLE and POWER ENVELOPE

G. Work Performed During Streetcar Non-Revenue Service Hours

When routine servicing and inspection activities, by authorized permittees, are required, said company will be granted free and clear access during non-revenue service hours. Advance, 12 hour, notice must be made to the controller of any operation to take place during these hours, with the exception of emergency activities.

1. Routine servicing and inspection is defined to be those activities requiring approximately two hours and no more than four hours.
2. Streetcar Track Access Permits are required. Access fees will be waived during the construction of the tracks and until the streetcar service line is first put into public service. For further information on permitting fees, go to the Public Works Department, Streets & Traffic Division website.

3. All permittees must be aware that although normal passenger service is not taking place during these hours, streetcars may still be operating (i.e.: testing and/or inspection of the streetcars, track and overhead power).
4. Safety procedures used during these hours shall be those as described under the TAPS permit; and all procedures normally employed by the permittee in compliance with all applicable City ordinances for in-street work.
5. If a streetcar power down is required for work during this period, it will be granted under the proviso that it must be restored at least 30 minutes prior to the beginning of Revenue Service. Hours may be extended and the buffer time reduced by the controller based upon conditions such as a declared emergency. Changes to the normal schedule will be reported by the controller.

H. Work Performed During Revenue Service Hours

By exception, routine servicing and inspection work will be permitted during streetcar revenue service hours, between the hours of 10:00 AM and 2:00 PM. The following provisions apply:

1. Advance 48 hour notice must be given for all work, except where regulatory deadlines imposed on permittees make this impractical. Permittees shall note on their applications when regulatory deadlines require an expedited review of less than 48 hours, including the deadlines they are subject to, as well as the regulation setting out the deadline. The proposed activity to be undertaken by the permittee need not constitute an emergency activity as defined in this Manual to qualify for an expedited review due to regulatory deadlines. Regardless of regulatory deadlines, permittee shall submit applications at least 48 hours prior to the work beginning, when practical.
2. A TAPS permit is required. Access fees will be waived during the construction of the tracks and until the streetcar service line is first put into public service.
3. Unless there is a declared emergency by the controller or other authorized safety personnel, power must remain on and streetcars remain in operation.
4. Exceptions are granted to perform routine work in daylight hours when routine work can be performed without unduly disrupting streetcars service or when it can be shown that night time work may hinder personnel safety or have other detrimental effect.
5. Special precautions are required for in-street work during revenue service hours. Refer, *infra*, to Article III Track Access Permitting System: Section H - *Conditions of Work While Streetcars are in Operation*.

I. Work Performed On the Maintenance Facility (Offline) Track During Revenue Service Hours

By exception, routine servicing and inspection work of the offline track during revenue service hours will be permissible under the following conditions.

1. Advance 48 hour notice must be given for all work, except where regulatory deadlines imposed on permittees make this impractical. Permittees shall note on their applications when regulatory deadlines require an expedited review of less than 48 hours, including the deadlines they are subject to, as well as the regulation setting out the deadline. The proposed activity to be

undertaken by the permittee need not constitute an Emergency Activity as defined in this Manual to qualify for an expedited review due to regulatory deadlines. Regardless of regulatory deadlines, permittee shall submit applications at least 48 hours prior to the work beginning, when practical.

2. A TAPS permit is required.
3. The first eighty (80) feet (minimum) of the offline track will be clear and available for streetcars to exit the main track and park beyond the switch track at all times.
4. Power to the main line track must remain on.
5. Power to the offline track must remain on, unless special provisions are in place to power down the offline track without adversely affecting the main line track.
6. Proper track barricades capable of stopping streetcar vehicles by their wheels are in-place to protect the work area whenever the tracks are fouled.
7. Special provisions are requested for in-street work during revenue service hours. Refer, *infra*, to Article III, Track Access Permitting System, Section H – *Conditions of Work While Streetcars are in Operation*.
8. Except blackout periods of one day prior to and one day after a national holiday or Grand Avenue parade event.
9. Except within the first hour of revenue service hours to allow vehicles to enter the mainline track.
10. Except within the last hour of revenue service to allow vehicles to enter the maintenance facility.
11. Except whenever an offline section of streetcar is under repair.

J. Permittee Urgent Un-Scheduled Maintenance

The permittee shall work with the City to assure that streetcar disruption is minimized; and, should curtailment of the streetcar service be necessary, it is performed in an orderly fashion. Track Access procedures shall include:

1. In the event of an imminent threat and need for emergency activity, the permittee will make immediate notification to the controller or duty superintendent if streetcar service must be curtailed. The controller's phone number will be published and available 24 hours per day, 365 days a year. The duty superintendent's phone number is on the TAPS permit.
 - (a) Upon declaring a non-life threatening emergency, the controller shall immediately dispatch all streetcars to hold at the next station. A Streetcar Operator supervisor will either power down the affected substation, or authorize the electric utility to take such steps for a pre-determined or mutually approved payment.
 - (b) Upon knowing of a life threatening emergency, first responders shall immediately power down the streetcar system and notify the controller in that order.

- (c) The controller will then also notify the ATA Bus Dispatcher of the emergency activity.
2. If equipment is not in immediate danger of failure, but unscheduled critical maintenance or repairs are necessary, notification to the controller, with a minimum one hour notice, and three hours preferred, shall be made. In any event, notification shall not be less than the time taken by the permittee to route personnel and equipment to the affected area, once the condition is reported to the permittee. Under this circumstance, the following steps are taken:
- (a) A Streetcar Operator supervisor will be immediately assigned to work with the permittee; and to determine if streetcar system operation can continue under slow order, or if a system halt must be implemented. A system halt and power down will be ordered when work is being done on facilities located within the streetcar vehicle or power envelope. Additional permit fees for oversight personnel may apply if a power down is required.
 - (b) If a system halt is necessary, a Streetcar Operator supervisor shall coordinate location of all streetcars prior to a power down. Streetcars power down cannot strand streetcars and passengers between stations. All streetcars must be safely evacuated and secured.
 - (c) If outage duration warrants, a bus bridge will be built to maintain route service in the affected area. Hourly fees for a bus bridge may apply after the first hour of a system halt.
 - (d) The permittee's superintendent will keep the controller informed of the progress of the work. After permittee has assessed the situation, their superintendent will inform the controller of the situation and provide an estimated time frame for completion. The permittee's superintendent will follow up with the controller as soon as the completion time is known, and again when the work is completed.

K. Major Maintenance Outages

It is recognized that periodically a permittee may need to perform a maintenance activity of several hours / days duration. Such events shall be planned in advance between the permittee and the City. In such events a partial curtailment of the streetcar operation may be required. A determination of the operating schedule of the streetcar, in any given line segment affected by a curtailment, will be made on a case by case basis.

L. Normal Streetcar Power Down Procedures

1. Except in the case of a Life Threatening Emergency (see below), power shall only be removed from the streetcar service line by the Streetcar Operator or certified first responder. Critical streetcar and passenger safety procedures developed and incorporated by the Streetcar Operator in their SOP manual and Systems Safety Plan must be implemented prior to power down.
2. Should a permittee require power down to perform work within the power envelope; a TAPS permit shall be required. Note that power is not normally shutoff at the end of the revenue day. Therefore, power down during both revenue service and non-revenue service hours must be requested and permitted.
3. Normal power down of the streetcars overhead contact wire is made by opening DC power switches located along the track alignment at the Traction Power Substation sites.

4. Normal power down should not be made by disconnecting the AC infeed power at the substation.

M. Emergency Shutdown For Life Threatening Situation

1. In the event of a life threatening emergency, Streetcar Operator certified first responders on the scene may initiate an immediate shutdown of the streetcar power. A life threatening situation may be due to any number of causes. Where, in the judgment of personnel responding to an emergency, the need to remove power from the streetcar system is apparent, emergency shutdown procedures may be initiated with no advance notice to the City. Life threatening situations are typically a human in contact with the streetcar power, a human trapped in a vehicle by a downed wire, and other situations of like circumstance. The decision to shut down power to the streetcars in such an emergency shall always rest with the judgment of the first responder.
2. First responder organizations include law enforcement, fire, rescue, and medical response units. All first responder organizations are encouraged to maintain supervisory level training, as described herein. The electric power utility company may be considered a first responder, and authorized to initiate emergency shutdown procedures, provided they maintain supervisory level training, as described herein. First responder training will be provided at no cost to first responder personnel.
3. The City must be informed while power down is in process, or immediately thereafter. First responders shall also be trained in follow-up assistance steps to assure streetcars, passengers, and auto traffic are not jeopardized.
4. It shall be recognized that unexpected halting of streetcars can result in undesirable consequences in matters of both passenger safety and traffic management. A life threatening emergency is not considered to be:
 - (a) Shutdown for convenience of a permittee or governmental agency other than law enforcement or for public safety (e.g. turning off power to maneuver a crane or other mobile equipment through the Streetcar Vehicle and Power Envelope).
 - (b) A means of preventing a streetcar from traversing through an area under inspection or maintenance work, when proper track access permits have not been obtained.
 - (c) A rush order to establish utility service to a new utility customer.
5. Nothing in this section entitled “Emergency Shutdown For Life Threatening Situation” is intended to dictate when a permittee may be permitted access to their facilities for emergency activity. Instead, see the section above entitled “Permittee Urgent Un-Scheduled Maintenance.”

N. Construction, Maintenance, or Emergency Repair Activities at Passenger Stop or Shelter Locations

Any station or stop shall not be encroached upon unless authorized by permit. Design plans that temporarily alter the configuration or location of a permanent station shall conform to the latest federally adopted ADA access requirements and the latest edition of the Manual of Uniform Traffic Control Devices (MUTCD) at the time of application. The permittee shall be responsible for incorporating all pedestrian and vehicular safety and access aspects into the temporary arrangement.

1. A TAPS permit is required before altering the pedestrian or streetcar access to a streetcar stop, station, or shelter facility.
2. For minor encroachments not directly affecting the boarding or disembarking of passengers at the point(s) of entry and exit, a plan that documents how pedestrians will be temporarily routed through a raised platform shall accompany the permit application. All work shall be performed by and at the cost of the permittee.
3. Whenever boarding or disembarking passengers would be unable to use the permanent platform or shelter during proposed construction or maintenance of the facility for a period longer than one round trip cycle of a streetcar or one hour, whichever is less, an alternate boarding/disembarking platform shall be constructed in as near a location as practicable. A plan that documents how pedestrians will be temporarily routed through a raised platform shall accompany the permit application. All work shall be performed by and at the cost of the permittee. The permittee's quality assurance and quality control manager (QAM) or their designee shall obtain the approval of the Streetcar Operator's Controller and the director of Public Works Department before the temporary stop structure can be placed into service and before the permanent stop structure can be altered.
4. In the case of an emergency shutdown of a station, the Streetcar Operator shall have a pre-developed contingency plan ready to implement for constructing temporary alternate stop platforms and shall also have the means to restore vehicular and pedestrian access within a reasonable amount of time. Other than for natural disasters or other unforeseeable causal reasons for which the responsible person or entity would be precluded from preventing such an incident, nothing in this document shall prohibit the Streetcar Operator from seeking to recover costs incurred for the temporary or permanent facility restoration work from the responsible entity. As an alternative, the entity responsible for making repairs may choose to immediately construct a temporary alternate platform, reconstruct the location as needed to assure vehicular and pedestrian access, and then reconstruct the permanent platform and location at their own expense. If the alternative is chosen, the work to restore access shall begin as soon as is practicable and shall proceed continuously until complete. Special inspection fees may apply under either circumstance.

O. Other Regulations

1. Neither posting of banners and signs, nor the running of ropes, wires, or cables shall be made through or within the power envelope.
2. Entry into all power and control manholes or power substations installed for the streetcar system shall be made only by streetcar authorized personnel.

III. **TRACK ACCESS PERMITTING SYSTEM (TAPS)**

The Streetcar Operator's standard operating procedures (SOP) manual will cover how work will be allowed within the Streetcar Vehicle and Power Envelope or the electrical distribution system clearances during streetcar operations. In the absence of the existence of a SOP manual covering various conditions, steps in this Manual shall be taken. Where the two manuals may differ in operations procedure, the SOP manual shall take precedence over the procedures in this Manual. However, no SOP shall take precedence over TAPS

permit requirements and procedures for work within the Streetcar Vehicle and Power Envelope or the electrical distribution system clearance areas.

A. City will issue all Track Access Permits for streetcar service lines located within the City's public right-of-way. Permit application forms are available at the City of Kansas City, Missouri, Public Works Department, Traffic Permits Section, the Streetcar Operator's operations office, or from the Streetcar Operator's website.

B. Work Plan

1. Track access permits shall be submitted with a work plan that will be reviewed and approved by the Streetcar Operator prior to the City's review and approval. The work plan shall include:
 - (a) Narrative of the work being performed including safety, quality and any other pertinent information necessary for the Streetcar Operator and City's review;
 - (b) Drawings of the work area;
 - (c) Equipment being used;
 - (d) Work schedule;
 - (e) If shut down is required then an hour by hour schedule;
 - (f) Hold points or GO/NoGO points during time sensitive operations in order to avoid disruption to revenue service.
2. If applicable, the work plan will also need to include the following additional items:
 - (a) All underground and overhead cable installations for the purpose of power, telephone, cable television and streetlights shall meet the current standards set by the National Electrical Code (NEC), National Electrical Safety Code (NESC), Occupational and Safety and Health Administration (OSHA), and American Public Works Association (APWA) standard specifications and design criteria adopted by the City, and standards and specifications in current use by the City.
 - (b) No grounded and electrically conductive item or assembly of items shall be allowed to occupy space within ten feet (10') of the OCS contact wire or pantograph horns of the streetcar when the OCS is electrified.
 - (c) Non-OCS cable, such as telecommunications cable, that span adjacent to an OCS pole and that is within the lateral swing radius at design wind speeds will be allowed to attach to the OCS poles for only lateral support (to prevent slapping) provided the connection is double insulated for 750 kW (or higher) voltage, it is nondestructive to the OCS pole, and an Attachment Permit is issued to the public service provider by the City.
 - (d) Overhead facilities owned by a public service provider, as defined in Section I.A., shall meet the clearance requirements of the National Electric Safety Code (NESC) Rule 233. However, requests for overhead utility crossings meeting NESC clearance requirements but

that do not meet the power envelope limits will be addressed on a case by case basis with the Service Provider.

3. Completed permit application forms having the approval and signature of the Streetcar Authority or Streetcar Operator/Controller may be dropped off in person, E-mailed (PDF scan), or delivered by telefax.
- C. Once reviewed by City, forms will be signed and returned to the permittee either by telefax or email only. A verbal communication will not serve as a substitute for the written confirmation.
- D. Work cannot commence in absence of a signed and completed TAPS permit.
- E. Permits are processed on a daily basis.
1. For revenue service hour work - TAPS permit requests received by noon, the City will endeavor to process the application within 48 hours.
 2. For non-revenue service hour work – TAPS permit requests received by noon, the City will endeavor to process the permit by close of business, same day.
- F. Work in the streetcar vehicle and power envelope of an extended nature (e.g. major utility maintenance) will require advance long term planning with the City. Planning for major utility maintenance may need to be expedited when the potential exists to disrupt service to customers or when long term planning may not be an option (e.g. transmission line issues, feeder exits from substations, duct collapse).
- G. Contractors within the public right-of-way not engaged in construction or repair, or delivery agents delivering major equipment (e.g. setting equipment on roof tops with large cranes), must obtain a TAPS and a traffic control permit and should refer to the Engineering Standards and Specifications of the City of Kansas City and APWA-KCMO Section 2305, Maintenance of Traffic for relevant provisions regarding standards of traffic maintenance, warning devices, flashers, and other traffic control devices for portions of the public right of way that include streetcar tracks.
- H. Conditions of Work While Streetcars Are In Operation
The Streetcar Operator's standard operating procedures manual should be examined to determine if any of the following items have been superseded in lieu thereof by like subject matters.
1. The permittee must provide a trained watchman / flagger or use a watchman / flagger provided by the Streetcar Operator at permittee's cost, during all work performed through the duration of the TAPS permit. Training in advance by the Streetcar Operator will be at no cost to the permittee. Prior to starting field work, the Streetcar Operator shall provide the equipment or arrange for instantaneous electronic communication between the flagger, the Controller, and the motormen, as needed.
 2. Prior to commencement of the work the duty superintendent shall go over the flagging and safety rules with the permittee's supervisor. A designated safety area for personnel will be established for streetcar passage during the work period.
 3. Brief stoppage of the streetcar to clear personnel will be accepted, not to exceed 5 minutes.

4. The duty superintendent shall issue a “Train Order” (proceed at a maximum of 10 mph through affected area) to all streetcar vehicles on the alignment during the work of the permittee.
5. The watchman / flagger shall alert the permittee personnel of the approaching streetcar, and make visual contact with each motorman as they approach the work area. Once contact is assured between flagger and motorman the streetcar shall hold until the flagger has determined that all permittee personnel, tools and equipment are safely located. After confirming the all clear and readiness with the duty superintendent, the flagger then waves the streetcar through the work area. The duty superintendent immediately notifies the controller of the streetcar’s return to service.
6. When the work has been completed, the permittee will close-out the TAPS permit with signature of the duty superintendent. The permittee must vacate the work site and shall not return unannounced.
7. The Train Order shall not be released until the duty superintendent has determined that all permittee personnel, tools, and vehicles have completed the work and left the track alignment.

I. Other Matters

1. The Streetcar Operator shall provide the City a telephone call number for immediate communication with the controller and duty superintendent at the streetcar operations center.
2. The City (or its designate) shall furnish file copies of electrical diagrams and schematics when requested and appropriate to the needs of permittees and First Response Agencies.
3. The City (or its designate) shall provide track access training to all authorized permittees.

J. Permittee / Streetcar Operations

1. All personnel working within the Streetcar Vehicle and Power Envelope shall have had track access training.
2. At the beginning of each work shift involving track access, trained supervisors of the permittee shall have a safety briefing for all members of the work crew on the track access rules and safety procedures or any time conditions change.
3. In addition to the Streetcar Operator supervisor, all permittee crews working in the street and adjacent areas along the track (sidewalks or adjacent traffic lanes) shall be certified with track access training.
4. When adjacent work is being performed, employees of permittee shall not enter the vehicle envelope, nor cross the envelope to bring materials and supplies to their work area, without the use of a flagger / watchman.

- K. Bucket trucks used within the power envelope shall be double insulated, and may be used with the overhead streetcar power on. Cranes and other mobile equipment, not specifically insulated for

overhead electric line work, shall not be permitted to operate within the Streetcar Vehicle and Power Envelope with the power on.

- L. The permittee supervisor shall have the TAPS permit, in his/her possession, during all work requiring such permit.
- M. When the work has been completed, the permittee will close-out the TAPS permit with signature of the duty superintendent. The permittee must vacate the work site and shall not return unannounced.
- N. The Train Order shall not be released until the duty superintendent has determined that all permittee personnel, tools, and vehicles have completed the work and cleared away from the track alignment.
- O. The TAPS permit fee shall include all costs resulting from an impact to Streetcar Operator services including but not limited to costs to repair or reconstruct streetcar track or devices and any other costs related to maintaining or delaying service.
- P. A sample Track Access Permit System form is attached.

Permit Number: _____
Date Issued: _____

KANSAS CITY STREETCAR ALIGNMENT--TRACK ACCESS PERMIT (TAPS)

THIS SECTION COMPLETED BY REQUESTING PARTY

Dates of Access: From: _____ To: _____ From: _____ To: _____

Limits of Access: Streets/Intersection: _____ **Time:** From: _____ To: _____
From: _____ To: _____ From: _____ To: _____
Streets: _____ **Time:** _____
From: _____ To: _____ From: _____ To: _____

Permit Holder: _____ **Number of Workers:** _____
(PRINT COMPANY NAME)

Description of Work: _____

Attachment Enclosed: _____

Facility Owner/Public Service Provider For Which the Work is Being Performed: _____

Trained Permittee field worker(s) Certified by Streetcar Operator _____

Power Down/Removal During Non-Revenue Service Hours Requested: Yes _____ No _____

Power Down/Removal During Revenue Service Hours Requested: Yes _____ No _____

Equipment Required: _____

Quality Assurance/Quality Control (QAM) Manager: _____ **Signature:** _____

24-Hour Phone No.: _____ (PLEASE PRINT) **Date of Application:** _____

CAUTION: The overhead contact electrical system must be considered **LIVE and HOT** at all times. **Electrical power must be confirmed in the field with the designated power personnel.**

Special Operating Conditions:

1. Permits are good only for a maximum of 15 days.
2. Request for Right-of-Way access permit must be submitted by 12:00 p.m. (daily), 48 hours prior to the scheduled work.
3. All personnel must wear reflective safety garments conforming to 1988 Edition, MUTCD Sec. 6E-3, High-Visibility Clothing.
4. Advise Duty Superintendent when entering and leaving the alignment at # ____ - ____ - ____.

THIS SECTION COMPLETED BY STREETCAR OPERATOR/CONTROLLER

Special Instructions: Yes _____ No _____ # _____

Train Order: Yes _____ No _____ # _____

Flags: Yes _____ No _____ # _____

Flagger: Yes _____ No _____ # _____

Manual Block: Yes _____ No _____ # _____

Power Removal: Yes _____ No _____ # _____

OCS: Yes _____ No _____ # _____

Sub: Yes _____ No _____ # _____

General Alignment: Yes _____ No _____ # _____

Approval of Streetcar Authority/Operator: Name: _____ Signature: _____ Date: _____
(PLEASE PRINT)

Request Approved: Name: _____ Signature: _____ Date: _____
Manager or Designee, KCMO, PWD, Traffic Permits

Original: KCMO, Public Works Department, Traffic Permits (City)

Copies: Quality Assurance Manager / Permittee (Permittee)

General Manager / Controller (Streetcar Operator)



IV. STREETCAR CONSTRUCTION

- A. Streetcar construction is defined as major civil, track, and/or overhead electrical work. It can be either new track installation, or the major removal and replacement / rebuild of existing systems.
- B. New streetcar systems will be constructed with certain protections to isolate the negative rail from ground potential. These steps provide adequate protection against DC stray current and corrosion for most underground structures and utilities. However, the determination of whether critical structures and utilities may require added protection is up to the public service provider, who may decide to provide for the additional corrosion protection.