TRAVIS COUNTY EMERGENCY SERVICES DISTRICT NO. 6

LAKE TRAVIS FIRE RESCUE

FIRE PROTECTION CRITERIA MANUAL

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FIRE PROTECTION CRITERIA MANUAL

PREFACE

This document is intended to be a dynamic manual, developed and maintained in accordance with all Travis County Emergency Services District No. 6 (sometimes referred to herein as "TCESD No. 6", "Lake Travis Fire Rescue", "LTFR", Fire Department, or "District") policies. This manual will be amended as needed on a quarterly basis to accommodate new technologies and methodologies. Additionally, revisions will be made to further clarify the application of code provisions pertinent to special circumstances encountered. The revisions will occur on or about the first days of January, April, July and October.

Public comments and recommendations are crucial in maintaining this manual in an updated form. If a Fire Code[1] provision requiring clarification is encountered, the District encourages recommendations be submitted. Such recommendations should be placed on the Form in Appendix A of this manual, titled "Travis County Emergency Services District No. 6 Fire Protection Rules Request" and submitted to Travis County Emergency Services District No. 6 for consideration.

TCESD No. 6 has developed this Fire Protection Criteria Manual to assist in the administration, implementation and use of the Fire Code. This manual provides clarification and specific guidance for the prevention and control of fires and fire hazards as are necessary to carry out the intent of the Fire Code. Contained within are certain rules and policies to be used in the interpretation of the Fire Code. It does not address all areas of code enforcement. Check the Fire Code to determine all applicable code requirements.

Contained within are administrative procedures for TCESD No. 6 plan review and inspection processes and references to the applicable ordinances and recognized standards. Also contained in this manual are the rules pertaining to the application of the technical aspects of the Fire Code and its associated standards.

[1] ~~"Fire Code" as used in this manual~~ shall be the 2015 International Fire Code published by the International Code Council (ICC) as adopted and amended by Travis County Emergency Services District No. 6 in Order #2015-01.

RECORD OF REVISIONS

Rule / Page #	Description	Date Adopted
Entire Document	Correction of Ordinance Nos. within document to coincide with Ordinance No. 2015-1	09/01/2015
Pages 9 & 10	Update to current Outdoor Burning Rules	09/01/2015
Entire Document	Changed 2009 to 2015 throughout document	09/01/2015
All Rules	Added & underlined 2015 IFC Referenced Section Titles	09/01/2015
Rule 06-10-001	Changed Chapter 45 to Chapter 47	11/01/2010
Rule 06-10-004	Changed 105.4.1 to 105.4.1.2 & Added Title "Electronic Submittals"	11/01/2010
Rule 06-10-004	Add electronic submittals	09/01/2015
Rule 06-10-016	Changed from 505.3 to 506.1	09/01/2015
Rule 06-10-015	Corrected Table B-105.1 to accurately reflect same table in the IFC	09/10/2015
Page 7	Amended "Record of Revisions" table	09/01/2015
Page 8	Correction of Ordinance Nos. within document to coincide with Ordinance No. 2015-01	09/01/2015
Page 4	Added interpretation of Section 6.6.5 of NFPA 13R	08/01/2017
Page 25-26	Added Fire Protection Rule 01-18-01 Signage Requirements	02/01/2018

SECTION 1 – ADMINISTRATIVE PROVISIONS

1.1.0 AUTHORITY

1.1.1 2015 International Fire Code (IFC): Reference Section 104 – General Authority and Responsibilities

1.1.2 TCESD No. 6: Reference Order No. 2015-01, Section 1 – Amendment of Code

1.1.3 TCESD No. 6: Reference Order No. 2015-01, Section 2 – Fire Protection Criteria Manual

SECTION 2 - FIRE PROTECTION RULES

2.2.0 GENERAL

2.2.1 Rules promulgated by TCESD No. 6 for implementation of the Fire Code are set forth in this Criteria Manual. The purpose of this manual is to set out the rules pertaining to specific codes, standards and amendments.

2.2.2 These Rules reference appropriate sections of the 2015 International Fire Code (IFC) and appendices thereto or other adopted standards. The order of the Rules follows the same order as the referenced sections appear in the 2015 International Fire Code.

2.3.1 RULES

TCESD No. 6 FIRE PROTECTION RULE #09-19-001

2015 IFC: Section 105.4.2.2 is amended to include the following:

All shell building permit plan submittals shall include a Code Footprint sheet for each floor level. The Code Footprint sheets shall be free of any information not detailed below.

All Code Footprint sheets shall include:

(1) Graphic bar scale;
(2) North directional indicator;
(3) Building construction type along with any required structural fire ratings;
(4) Square footage of the floor and the entire building;
(5) Listing of each occupancy type;
(6) Complete floor plan;
(7) Identification of all permanent partitions taller than six feet;
(8) Label for each room and space in plain text;
(9) Occupant load of assembly rooms and total occupant load for each floor level;
(10) Stair and shaft enclosures: openings and ratings;
(11) Corridors: openings and ratings;
(12) Location and ratings of all fire separation assemblies and smoke control assemblies;
(13) Occupancy and area separations identified;

(14) Horizontal exit arrangements, exit passageways, and smoke compartments identified;
(15) Exterior exits and exit capacity identified;
(16) Location of the fire alarm control panel and any remote annunciator panels;
(17) Location of the fire sprinkler riser;
(18) Location of each fire department connection (FDC) for fire sprinkler and standpipe systems;
(19) Location of the main electrical shut-off;
(20) Location of any Knox key boxes;
(21) Location of any occupant emergency call boxes;
(22) Note if any areas are covered by special fire systems (e.g. smoke control systems, clean agent extinguishing systems);
(23) Note if an emergency generator powers any systems; and
(24) Special hazards or conditions (e.g. battery storage systems, solar systems, hazardous processes, hazardous materials, high-piled storage, etc);

TCESD No. 6 FIRE PROTECTION RULE #08-17-01

2015 IFC: Section 903.3.1.2 NFPA 13R Sprinkler Systems is an addition to provide as follows:

Section 6.6.5 of NFPA 13R is interpreted by TCESD No. 6 to require that not less than 50% of the perimeter of porches, balconies, corridors, carports, porte cocheres and stairs enclosures must be unenclosed to qualify as "open" and permit omission of fire sprinklers in these areas.

TCESD No. 6 FIRE PROTECTION RULE #06-15-001

2015 IFC: Section 102.7 Referenced Codes and Standards is amended to provide as follows:

The codes and standards referenced in this code shall be those that are listed in Chapter 80 and such codes and standards shall be considered part of the requirements of this code to the prescribed extent of each such reference. Where differences occur between the provisions of this code and the referenced standards, the more restrictive shall apply.

TCESD No. 6 FIRE PROTECTION RULE #06-15-002

2015 IFC: Section 105.1.2 Types of Permits is amended to provide as follows:

The types of permits shall be as follows:

1. Operational Permit. An operational permit allows the applicant to conduct an operation or a business for which a permit is required by Section 105.6 for either:

   1.1 A prescribed period.
   1.2 Until renewed or revoked.

2. Construction Permit. A construction permit allows the applicant to install or modify systems and equipment for which a permit is required by Section 105.7.

3. Site Construction Permit. A site construction permit will allow the physical modification of an approved construction site to begin.

4. Subdivision Permit. A subdivision permit will allow physical modifications to begin on land approved for the development of a subdivision.

5. Shell Building Construction Permit. A shell building construction permit will allow physical work to begin on the construction of an approved shell building.

6. New Building/Tenant Finish Out Permit. A new building/tenant finish out permit will allow physical work to begin on the construction of a new approved building or the finish out of an approved vacant tenant space in an existing shell building.

7. Remodel Permit. A remodel permit will allow physical work to begin on the approved remodeling of an existing building/tenant space.

8. Mass Gathering Permit. A mass gathering permit is required for an approved event where the number of assembled persons will be 4,000 or greater.

2015 IFC: Section 105.1.2.1 Site Plan/Subdivision Plan Notes is added to provide as follows:

The following notes, (Site Plan and Subdivision), as applicable to the particular proposed development or construction project, shall be provided on all civil engineered plans submitted to Lake Travis Fire Rescue:

TRAVIS COUNTY EMERGENCY SERVICES DISTRICT NO. 6 FIRE DEPARTMENT – SITE PLAN NOTES

1. Designs for Site improvements shall meet the current Design Criteria as required by TCESD No. 6.
2. All plans (Site, Building, Fire Alarm, Fire Sprinkler) shall be submitted to LTFR for review. Two full-size sets are required. A review letter will be generated. Reviews will not be performed until the applicable review fees are paid.
3. Upon plan approval, a Permit will be issued. The Permit must be conspicuously posted.
4. An all-weather driving surface (Fire Apparatus Access) must be installed in locations shown on the Site Plan, prior to any building construction beyond the foundation.
5. All pervious/decorative paving shall be engineered and installed for 80,000 pounds live-vehicle loads. Any pervious/decorative paving within 100 feet of any building must be approved by the Fire Department.
6. Vertical clearance required for fire apparatus is 13 feet, six inches for the full 25 feet width of access drives and routes for internal circulation. Dead-end fire apparatus access roads in excess of 150 feet in length shall be provided with approved provisions for the turning around of fire apparatus, per Figure B-4 of this Manual.
7. The maximum allowable driveway, drive aisle or Fire Lane grade is 15 percent.
8. The markings of Fire Lanes must be red with white stenciling or white with red stenciling reading “FIRE LANE – TOW AWAY ZONE” in lettering no less than three inches in height. The stenciling shall be at intervals of 35 feet or less. Alternative marking of Fire Lanes may be approved by the Fire Chief, or his/her designated agent, provided Fire Lanes are clearly

identified at both ends and at intervals not to exceed 35 feet. Existing Fire Lane markings shall be grandfathered provided that they meet the wording and interval requirements that were accepted on approved site plans and other type Fire Lane submittals approved by the fire department. Existing Fire Lanes that are in need of re-painting shall meet the requirements of this section.

9. The Fire Department Connection (FDC) connection shall be installed where shown on the site Plan.
10. Hydrants must be installed with the center of the four and one-half inch steamer opening at least 18 inches above finished grade. The four and one-half inch steamer opening must face the driveway or street with three- to six-foot setbacks from the curb line(s). No obstruction is allowed within three feet of any hydrant, and the four and one-half inch opening must be totally unobstructed from the street/driveway.
11. Contractor shall install Blue Reflective Markers in the pavement per TCESD No. 6 specifications. No improvements may be occupied until the markers are installed.
12. Fire hydrants shall have National Hose Threads.
13. Static water tank hard suction connector shall have six-inch National Hose Threads.
14. A certified or witnessed pressure test is required for all water models, required hydrant flow tests or sprinkler system designs.
15. Hydrants shall be painted silver and the bonnet and caps shall be painted the designated color per the gallons per minute (GPM) as follows:

Class AA	Light Blue	1500 or higher GPM
Class A	Green	1000-1499 GPM
Class B	Orange	500-1499 GPM
Class C	Red	Less than 500 GPM
Class D	Black	Out of Service

16. Commercial dumpsters and containers with an individual capacity of one- and one-half cubic yards or greater shall not be stored or placed within 10 feet of openings, combustible walls or combustible eave lines.
17. "Key Boxes"/"Key Switches" (Knox-Box® Rapid Entry System) shall be installed in the location(s) shown on the Site/Building plans as approved by TCESD No. 6. Contact LTFR for ordering information. No improvements may be occupied until the Key Box/Key Switch is installed.

TRAVIS COUNTY EMERGENCY SERVICES DISTRICT NO. 6
SUBDIVISION WATER SYSTEM PLAN NOTES

1. An all-weather driving surface (Fire Apparatus Access) must be installed in locations shown on the Site Plan, prior to any building construction beyond the foundation.
2. Vertical clearance required for fire apparatus is 13 feet, six inches for full 25 feet width of access drives and routes for internal circulation.
3. The maximum allowable driveway, drive aisle or fire lane grade is 15 percent.
4. A certified or witnessed pressure test is required for all water models, required fire hydrant flow tests or sprinkler system designs.
5. An approved water supply for fire protection, either temporary or permanent, shall be made available as soon as combustible material arrives on the site.
6. Fire Hydrants must be installed with the four and one-half inch steamer opening at least 18 inches

above finished grade. The four and one-half inch steamer opening must face the street with a three to six foot setback (clearance) from the curb line or shoulder of the street.

7. No obstruction within a three-foot radius of any fire hydrant, and the four and one-half inch steamer opening must be totally unobstructed from the street.
8. Fire Hydrant locations shall be identified by the installation of Blue Reflective Markers, per Fire Department specifications.
9. Fire Hydrants shall be painted silver. The bonnet and caps shall be painted the designated color per the gallons per minute (GPM) as follows:

Class AA	Light Blue	1500 or higher GPM
Class A	Green	1000-1499 GPM
Class B	Orange	500-999 GPM
Class C	Red	Less than 500 GPM
Class D	Black	Out of Service

TCESD No. 6 FIRE PROTECTION RULE #06-15-003

2015 IFC: Section 105.3.3 Occupancy prohibited before approval

For any new structure or change in an existing occupancy, the building or structure shall not be occupied prior to LTFR issuing a permit and conducting associated inspections indicating the applicable provisions of this code and local regulations have been met.

TCESD No. 6 FIRE PROTECTION RULE #06-15-004

2015 IFC: Section 105.4.1.2 Electronic Submittals is added to provide as follows;

All plans submitted for permit approval shall be submitted in PDF format at www.ltfrpermits.com. A copy of the plan approval letter shall remain on site.

TCESD No. 6 FIRE PROTECTION RULE #06-15-005

2015 IFC: Section 307.1 General

A person shall not kindle or maintain or authorize to be kindled or maintained any open burning unless conducted and approved in accordance with **Section 307** of the 2015 International Fire Code **OPEN BURNING, RECREATIONAL FIRES AND PORTABLE OUTDOOR FIREPLACES** and the **Travis County ESD No. 6 – Lake Travis Fire Rescue Outdoor Burning Regulations.** Where differences occur between Section 307 and the Outdoor Burning Regulations, the more restrictive shall apply.

TRAVIS COUNTY ESD No. 6 – LAKE TRAVIS FIRE RESCUE
OUTDOOR BURNING REGULATIONS

(Reference: 2015 International Fire Code and Revised Outdoor Burning Rule 30 TAC Sect. 111)

1. A Permit is required from LTFR to legally conduct Outdoor Burning within the boundaries of TCESD No. 6.
2. Outdoor burning is prohibited inside the City of Lakeway and Village of The Hills. The City of Bee Cave requires prior approval from TCESD No. 6.
3. **Prior to any burning**, review these burn regulations and then call **(512) 402-3473**. You will be asked for your Permit Number.
4. Open burning will not be permitted when wind speed is or predicted to be less than six miles per hour (mph) or greater than 15 mph during the burn period.
5. Open burning is not permitted earlier than one hour after sunrise and the fire must be extinguished no later than one hour prior to sunset.
6. Open burning must be constantly attended.

7. A means of extinguishment such as a garden hose, dirt, sand or water barrel shall be immediately available.
8. If the fire spreads beyond the limits of the open burn, immediately call 9-1-1 to report a fire.
9. Open burning larger than recreational fires as noted in item 11 below is required to be not less than **50** feet from any structure or combustible material (this includes grass, trees and brush).
10. In addition, the open burning must also be **300** feet downwind from any **neighboring** structure such as a residence, business, barn or greenhouse. This requirement may be waived only with the prior written approval of whomever owns or rents the adjacent property and either resides or conducts business there.
11. Open burning that will be offensive or objectionable due to smoke or odor emissions or when atmospheric conditions or local circumstances make such fires hazardous shall be prohibited. If the open burning creates or adds to a hazardous or objectionable situation the code official (Fire Chief or Fire Marshal) is authorized to order the extinguishment by the person in charge or by fire department personnel.
12. Burning (**recreational fires**) when used solely for pleasure, religious, ceremonial, cooking, warmth or similar purposes are permitted provided the following guidelines are followed:
    A. No rubbish permitted
    B. A clear space of **25** feet from structures and combustible materials
    C. Maximum diameter of three feet and height of two feet
13. Authorized is on-site burning of trees, brush, grass, leaves, branch trimmings or other plant growth, by the owner of the property or any other person authorized by the owner, **and when the material is generated only from that property.**
14. Burning of domestic waste – in other words, household trash or rubbish – may be permitted when local trash collection service is not available. To qualify for this provision, the property must be a private residence for no more than three families. The waste must also be burned on the property where it was produced. If burned in an approved container (such as a 55-gallon drum) a minimum distance of **25** feet from any structure shall be maintained.
15. The following items are ***not permitted*** to be burned: electrical insulation, treated lumber, plastics, construction or demolition materials not made of wood, heavy oils, asphaltic materials such as shingles and roofing felts, potentially explosive materials, chemical wastes, wire or items containing natural or synthetic rubber.
16. **Burn piles on residential lots are limited in size to no larger than 5' x 5' in width and 4' in height. A minimum separation distance of 50' is required if there is more than one pile. Burn piles on open land of at least 5 acres are limited to 10' x 10' in width and 5' in height. No more than one pile is to be burned at one time.**
17. Commercial land clearing operations that involve open burning operations must be performed on the site where the materials are obtained. In most cases a trench burner will be required. This in turn will require approval from TCEQ. Call the fire department office at 266-2533 prior to commencing operations.

TCESD No. 6 FIRE PROTECTION RULE #06-15-006

2015 IFC: Reference Section 311.2.2 – Fire Protection

Fire alarm, fire sprinkler, standpipe and other fire protection systems shall be maintained in an operable condition at all times. Any impairment to a fire alarm, fire sprinkler, standpipe or other fire protection system shall be reported to LTFR immediately.
Exceptions number (1) and (2) under this section shall remain in effect. Where a required fire protection system is out of service, the requirements of Section 901.7 shall apply.

TCESD No. 6 FIRE PROTECTION RULE #06-15-007

2015 IFC: Section 503.2.3 Surface

TCESD No. 6 requires that "all weather pavement" be defined as pavement consisting of either concrete or asphalt construction.

Access roadways shall be finished by application of an all-weather driving surface of hot mix asphalt or concrete pavement over a flexible base capable of supporting an axle load of 32,000 pounds (HS-20 loading) in order to support a gross vehicle weight of 80,000 pounds. Any pervious/decorative paving within 100 feet of any building must meet the same vehicle loading requirements.

Where conditions exist not meeting this code's definition of "all weather pavement" and the condition existed prior to the effective date of this code, the Fire Chief or his/her designee shall have the authority to consider and approve alternately proposed surfaces.

TCESD No. 6 FIRE PROTECTION RULE #06-15-008

2015 IFC: Section 503.2.4 Turning Radius

Access roadways shall be designed with an appropriate 25-foot inside turning radius and a 50-foot outside turning radius at turns to accommodate any operational Fire Department apparatus. Turning radii for entrance and exit access roadways must also conform to current local jurisdiction driveway requirements; therefore, entrances and exits may have to be widened to satisfy both requirements.

As used in this rule, "access roadway" requirements refer to access roads on private property subject to use by the Fire Department (business drives, apartment drives, etc.). For public street design refer to local jurisdiction driveway requirements.

TCESD No. 6 FIRE PROTECTION RULE #06-15-009

2015 IFC: Section 503.2.7 Grade

Asphalt hot mix access roadways shall be engineered not to exceed 15 percent in grade. Concrete roadways shall be designed not to exceed 15 percent in grade. As an alternative where maximum road grades of 15 percent cannot be provided, a professionally designed sprinkler system may be installed as an alternative provided the building being considered is fully protected and the system is approved by TCESD No. 6. Maximum immediate grade change or grade change within 20 feet shall not exceed 10 percent. Road grades must also be approved by other regulating jurisdictions in addition to Fire

Department approval.

TCESD No. 6 FIRE PROTECTION RULE #06-15-010

2015 IFC: Section 503.3.1 Fire Lanes

Where required by the Fire Chief, or his/her designated agent, fire apparatus access roads shall be marked as follows: Where curb and guttering exists, all curbs of fire apparatus access roads shall be painted red and be conspicuously and legibly marked with the warning "FIRE LANE – TOW AWAY ZONE" in white letters at least three inches tall, at intervals not exceeding 35 feet. Markings may be painted on only one side of the fire apparatus road when the roadway width exceeds 32 feet in width, except that both sides shall be marked where Aerial Fire Apparatus Access Roads are required per Appendix D, Section D105.

Where no curb and guttering exists, fire apparatus access roads shall be marked with permanent FIRE LANE – TOW AWAY ZONE signs at intervals not exceeding 50 feet. Signs shall have a minimum dimension of 12 inches (305 mm) wide by 18 inches (457 mm) high and have red letters on a white reflective background. Signs may be posted on one side of the fire apparatus road when the roadway width exceeds 32 feet in width, except that both sides shall be marked where Aerial Fire Apparatus Access Roads are required per Appendix D, Section D105.

Signs shall be as illustrated in Appendix B, Figures B-1 through B-3, of this Criteria Manual.

In addition, the Fire Chief, or his/her designated agent, may require signs to be posted at entrances on both sides of the Fire Department access road(s) as shown in Appendix B of this Criteria Manual.

Alternate markings may be approved by the Fire Chief, or his/her designated agent, provided such markings clearly identify the lane at both ends and at intervals not exceeding 35 feet.

Any markings on fire lanes approved by LTFR and existing on the effective date of the most recently adopted Ordinance shall be deemed to be in compliance, provided that any re-painting of the curbs of such fire lanes shall be painted to comply with the marking prescribed in this rule.

TCESD No. 6 FIRE PROTECTION RULE #06-15-011

2015 IFC: Section 503.6 Security Gates

The installation of security gates across a fire apparatus access road shall be approved by the Fire Chief, or his/her designated agent, prior to installation. When security gates are installed, they shall have a minimum of two means of emergency operation. The security gates and means of emergency operation shall be maintained as operational at all times. Electric gate operators, where provided, shall be listed in accordance with UL 325. Gates intended for automatic operation shall be designed, constructed and installed to comply with the requirements of ASTME F2200.

TCESD No. 6 FIRE PROTECTION RULE #06-15-012

2015 IFC: Section 505.1 Address Identification

The minimum size for exterior premises identification numbers (master street address numbers) for complexes such as strip centers, malls, apartment complexes, etc. shall be six (6) inches in height. Exterior business suite and office numbers shall not be less than four (4) inches in height. These numbers shall be clearly distinguishable from the point of Fire Department access.

Whenever a building is set back from a servicing street or roadway at a distance preventing reasonably sized numerals or letters from being distinguished, the address shall be posted at the street entrance on a substantial sign approved by Lake Travis Fire Rescue. However, when more than one building is located at the same numerical street address, each building must display a complete address including particular alphabetical or numerical building listings and individual occupancy numbers which must be clearly distinguishable from the access road servicing the building. The complete address must contrast with the background to which it is attached.

Multi-occupant buildings shall have all rear entrance(s) to each tenant space individually identified with proper suite/address numbers.

The street address of all projects under construction shall be posted in a conspicuous location prior to the beginning of construction at a particular building site. Temporary numbers may be painted over contrasting background on plywood or other suitable wood boards and clearly displayed on the public street frontage on which the project is addressed. Permanent numbers are required on buildings at completion and must be approved by Lake Travis Fire Rescue during the fire final inspection

TCESD No. 6 FIRE PROTECTION RULE #06-15-013

2015 IFC: Section 506.1 Installation Standard

TCESD No. 6 utilizes KNOX-BOX® brand key boxes throughout the District. KNOX-BOXES® must be ordered utilizing the KNOX Rapid Entry System Authorization Order Form available at the District's Headquarters, 15304 Pheasant Lane, Suite 103, Austin, Texas 78734.

The location of the key box shall be installed no higher than six feet above ground level and not lower than three feet above ground level, and be located at or near the primary Fire Department access into a building or project and on the building side of any gate requiring a key or code for entry, and as many otherwise required by LTFR.

TCESD No. 6 FIRE PROTECTION RULE #06-15-014

2015 IFC: Section 507.6 <u>Hydraulic Design</u>

A. For the purposes of this rule, a hydraulically designed system is one in which pipe sizes are selected on a pressure loss basis to provide a prescribed fire flow (gallons per minute at 20 psi residual system pressure). All hydraulic design submittals must meet the design criteria of the particular Water Utility District the project is located within.

B. All water construction documents shall have hydraulic calculations supporting the specified pipe sizes.

C. Flow Test:

1. Flow test data shall take into account minimum pressure conditions due to heavy water demands on the system, (i.e., heavy summer usage).

2. Flow test information that is provided by Lake Travis Fire Rescue or other local water supply utility provider is done so upon request. Such information represents the water supply characteristics in the immediate area on the noted date and time. Local authorities do not guarantee that this data will be representative of the water supply characteristics at any time in the future. The engineer or designer of record will be fully responsible for the use and application of such data to ensure proper design and compliance with appropriate codes.

TCESD No. 6 FIRE PROTECTION RULE #06-15-016

2015 IFC: Section 1010.1.9.6 <u>TCESD No. 6 Local Requirements</u> is added to provide as follows;

All Access-Controlled Egress Doors in a means of egress shall conform to Section 1008.1.4.4, and are permitted to utilize UL listed crash bars (panic hardware) or UL listed touch sensor bars to interrupt power to a magnetic lock, subject to the requirements detailed below.

The use of a mag-lock that has the capability of interrupting power to the magnet by physically breaking the circuit with a listed crash bar or touch sensor bar, will be acceptable.

New installations of an egress system using a mag-lock that has the power to the magnet interrupted only through the use of a motion detector are not permitted. The installation of electrical locks which require the function of any electrical devices or components to permit exiting will require plans approved by the LTFR, prior to installation. All such installations must be installed under an active building permit, if applicable.

Installation of electric strike type egress devices must be UL listed for its use. If installed in a fire-rated assembly, it must be UL Listed for that use. The installation of electrical locks which require the function of any electrical devices or components to permit exiting will require plans approved by

LTFR, prior to installation. All such installations must be installed under an active building permit, if applicable.

TCESD No. 6 FIRE PROTECTION RULE #06-15-017

Traffic Signal Preemption

Traffic Signal Preemption is a type of system that allows the normal operation of traffic lights to be preempted, to assist emergency vehicles. These systems are used to manipulate traffic signals in the path of an emergency vehicle, stopping conflicting traffic and allowing the emergency vehicle right-of- way, to help reduce response times and enhance traffic safety.

Travis County Emergency Services District No. 6 employs the use of a **Radio-activated, GPS-based Traffic Signal Preemption and Priority Control System.** All new traffic signal-controlled intersections within the jurisdiction of TCESD No. 6 are required to conform to the system specifications as prescribed in the document: **TCESD No. 6 Traffic Signal Preemption System Specifications**, found in APPENDIX C of this Criteria Manual.

TCESD No. 6 FIRE PROTECTION RULE #06-15-018

Standard on False and Nuisance Fire Alarms

SECTION 1. Purpose

(A) The purpose of this Standard is to encourage Owners and Fire Alarm Businesses to properly use and maintain the operational effectiveness of Fire Alarm Systems in order to improve the reliability of Fire Alarm Systems and reduce or eliminate False Fire Alarms and Nuisance Fire Alarms.

(B) This Standard governs Fire Alarm Systems intended to summon LTFR personnel, and requires registration, assessment of fees for excessive False Fire Alarms and Nuisance Fire Alarms, and provides procedures for repeat offenders.

SECTION 2. Definitions

As used in this Standard, the following words and terms shall have the following meanings:

(A) **Adopted Code(s)** means codes adopted by the District.

(B) **Alarm Initiating Device** means a device that is designed to respond either manually or automatically to smoke, fire or activation of a fire suppression system.

(C) **Enforcement Official** means the Fire Chief or his/her designated representative.

(D) **District** means Travis County Emergency Services District No. 6 – Lake Travis Fire Rescue.

(E) **False Fire Alarm** means the activation of any Fire Alarm System which results in a response by LTFR and which is caused by the negligence or intentional misuse of the Fire Alarm System by the Owner, its employees, agents or any other activation of a Fire Alarm System not caused by heat, smoke or fire, exclusive of a Nuisance Fire Alarm.

(F) **Fee** means the assessment of a monetary charge payable to the District authorized pursuant to this Standard, to defray the expenses of responding to a False Alarm, or Nuisance Fire Alarm.

(G) **Fire Alarm Activation Report** means a document issued by the Enforcement Official indicating that the activation was deemed to be the result of a fire alarm activation due to fire, a Nuisance Fire Alarm or a False Fire Alarm.

(H) **Fire Alarm Business** means any individual, partnership, corporation or other entity that is appropriately licensed in the state of Texas and installs, causes to be installed, permits to be installed, alters, maintains, repairs, replaces or services (including Runner Services) any Fire Alarm System.

(I) **Fire Alarm System** means a system or portion of a combination system consisting of components and circuits arranged to monitor and/or exterior annunciate the status of a fire alarm or supervisory signal-initiating devices and to initiate the appropriate response to those signals.

(J) **Fire Watch** means an Enforcement Official approved person or persons assigned to the Premises for the purpose of protecting the occupants from fire or similar emergencies. A Fire Watch may involve at least some special action beyond normal staffing, such as assigning an additional security guard(s) to walk the Premises, who has been specially trained in fire prevention and in the use of fire extinguishers, in notifying Emergency Services, in sounding the Fire Alarm System located on the Premises, and in understanding the particular fire safety situation.

(K) **LTFR** means Lake Travis Fire Rescue.

(L) **Monitored System** means the process by which a Fire Alarm Business receives signals from a Fire Alarm System and notifies emergency forces.

(M) **Nuisance Fire Alarm** means the activation of any Fire Alarm System, which results in a response by LTFR, caused by mechanical failure, malfunction, improper installation, lack of proper maintenance or any other response for which LTFR personnel are unable to determine the apparent cause of the alarm activation.

(N) **Owner** means any person who owns the Premises in which a Fire Alarm System is installed or the person or persons, who lease, operate, occupy or manage the Premises.

(O) **Premises** means any building, structure or combination of buildings and structures including dwelling units such as single-family, multi-family or any other area within a building, structure or combination thereof which is used for any purpose, wherein a Fire Alarm System is installed.

(P) **Qualified Fire Alarm Technician** means any person who inspects, installs, repairs or performs maintenance on Fire Alarm Systems. This person shall be licensed by the state of Texas.

(Q) **Record of Completion** means the completion of a form equivalent to the record of completion form included in the National Fire Protection Association's National Fire Alarm Code (NFPA 72).

(R) **Registration** means the notification by an Owner to the District that a Fire Alarm System has been installed and is in use.

(S) **Report of Service/Repair** means appropriate documentation in a format acceptable to the Enforcement Official that verifies proper repairs or maintenance has been performed by both the Fire Alarm Business and the Owner.

(T) **Runner Services** means the service provided by a runner at the protected premises, including resetting and silencing of all equipment transmitting fire alarm or supervisory signals to an off-premises location.

(U) **Serve** shall mean hand-delivery of written notification by a representative of the District to the Owner or authorized representative who responded to the Premises. In the event the Owner or authorized representative fails to respond to the Premises within one (1) hour, Serve shall mean placing the form or other matter in the United States mail, postage prepaid, addressed to the Owner or authorized representative.

SECTION 3. Registration of Fire Alarm System

(A) A one-time Registration shall be required for Fire Alarm Systems and whenever a Fire Alarm Installation Certificate is prepared, in accordance with Adopted Codes.

(B) The Owner shall be required to re-register whenever there is a change in the Fire Alarm Business responsible for maintaining, servicing and/or monitoring the Fire Alarm System.

(C) Registrations shall not be transferable from one Premise to another or from one Owner to another.

(D) Every Fire Alarm Business shall notify the District of the existence of a Fire Alarm System prior to the Fire Alarm System being put into operation. It shall be the responsibility of the installing Fire Alarm Business to provide the Owner with notice of the existence of this Standard, a Registration form and a copy of the Fire Alarm System operation instructions in accordance with Adopted Codes, and the manufacturer's instructions.

(E) The Registration form shall include the following information:

(1) The name(s), address of the Premises, mailing address (if different from the address of the Premises), business and home telephone number of the Owner, lessee, operator, manager or person in possession of the Premises wherein the Fire Alarm System is installed;

(2) The name, address and telephone number of a minimum of two (2) persons who can be notified by the Enforcement Official, in the vent of the activation of the Fire Alarm System, who shall be capable of responding to the Premises within one (1) hour, and who are authorized to enter the Premises to ascertain the status thereof;

(3) The name, address and telephone number of the Fire Alarm Business which has

contracted to service the Fire Alarm System and proof of proper state licensing. Proof of proper state licensing may be a valid state licensing number.

(4) The date the Registration is signed or the Fire Alarm System is placed in operation For any reason; and

(5) Any other documentation that is required by Adopted Codes.

(F) When any of the information required in Section 3(E)(1), or 3(E)(2), or 3(E)(3) has changed, shall be reported to the Enforcement Official by the Owner within fifteen (15) days of the Owner becoming aware of such change.

(G) The Owner shall complete and deliver the Fire Alarm System Registration in the required format to the Enforcement Official before the Fire Alarm System is activated or placed into service. The Fire Alarm Business, when authorized by the Owner, may assist the Owner in accompanying this submission of the Fire Alarm Registration to the Enforcement Official.

SECTION 4. System Certification

(A) All newly installed or re-certified commercial Fire Alarm Systems shall be approved by the Enforcement Official. The certification shall indicate that the Fire Alarm System is in compliance with Adopted Codes. The certification shall be signed by a qualified Fire Alarm Technician.

(B) Form SF035 FIRE ALARM INSTALLATION CERTIFICATE from the Texas Department of Insurance/State Fire Marshal's Office shall be the recognized official record of Fire Alarm System Certification.

SECTION 5. Inspection, Testing and Maintenance

(A) The Owner shall ensure that all Fire Alarm Systems are inspected and tested at least once per year in accordance with Adopted Codes.

(B) The Owner shall ensure that all Fire Alarm Systems are periodically maintained per manufacturer specifications and Adopted Codes.

SECTION 6. Fire Alarm Activation; Response

(A) The Owner shall be responsible for the activation of a Fire Alarm System.

(B) A response to the activation of a Fire Alarm System shall result when any officer or member of the Fire Department is dispatched to the Premises where the Fire Alarm System has been activated.

(1) At the time of response, the Enforcement Official may notify any person identified in the Registration required pursuant to Section 3(E)(1-3) of the activation of the Fire Alarm System and may require such person to respond to the Premises.

(2) In the event the Fire Alarm System is a Monitored System, it is the responsibility of the

company monitoring the Fire Alarm System to notify any person identified in the Registration at the request of the Enforcement Official.

(3) In the event the household Fire Alarm System is a Monitored System, it is the responsibility of the Fire Alarm Business to offer the Owner the option to verify the Fire Alarm signal before dispatch, as allowed by Adopted Code.

(4) In the event the household Fire Alarm System is a Monitored System, it is the responsibility of the Fire Alarm Business to forward cancellation of a Fire Alarm signal to the Austin Fire Department Dispatch Center.

(C) The officer or member of the District who responded to said Premises shall Serve the Owner or authorized representative with a Fire Alarm Activation Report.

SECTION 7. Nuisance Fire Alarms

(A) In the event the activation of a Fire Alarm System is deemed by the Enforcement Official to be a Nuisance Fire Alarm, the Owner shall be served with a Fire Alarm Activation Report by an officer or member of the District, indicating that the activation was deemed to be the result of a Nuisance Fire Alarm.

(1) This shall require the Owner to return a completed Report of Service/Repair within fifteen (15) days of receipt of the Fire Alarm Activation Report to verify, to the Responsible satisfaction of the Enforcement Official that:

(a) the Fire Alarm System has actually been examined by a Qualified Fire Alarm Technician; and

(b) a bona fide attempt has been made to identify and correct any defect of design, installation or operation of the Fire Alarm System which was identifiable as the cause of the Nuisance Fire Alarm.

(2) Failure to return a Report of Service Repair within said fifteen (15) day period, which is reasonably satisfactory to the Enforcement Official, shall result in assessment against the Owner of a Fee of (**See Appendix D-Service Fees)** for the Nuisance Fire Alarm.

SECTION 8. Service Fees

(A) The provisions of this Section shall not apply to any newly installed Fire Alarm Systems for a period of forty-five (45) days from the date of installation, but shall apply from and after the expiration of the initial forty-five (45) day period following installation.

(B) Should any Fee assessed pursuant to this Ordinance remain unpaid in excess of ninety (90) days from the date Fee is billed, a late Fee in the amount of (**See Appendix D-Service Fees)** shall be assessed and shall be payable by the Owner of the Premises in addition to the original Fee.

(C) False Fire Alarm

(1) No Fee shall be assessed for the first three (3) False Fire Alarms at the same Premises

responded to by LTFR during each calendar year. Thereafter, the Owner shall pay the following Fees for False Fire Alarms responded to by LTFR at the same Premises during each calendar year, except when the Fire Alarm Business is responsible for the False Fire Alarm per Section 8(C)(2).

(2) The Fire Alarm Business shall be assessed a Fee of (**See Appendix D-Service Fees)** if an Enforcement Official determines that a False Fire Alarm was directly caused by an onsite employee or representative of the Fire Alarm Business. In this event, no False Fire Alarm shall be counted against the Owner.

(3) False Fire Alarms activated by any components connected to the Fire Alarm System shall be included in computing the total number of False Fire Alarms for purposes of this subsection.

(4) The activation of a Fire Alarm System will not be considered a False Fire Alarm if the alarm is activated due to malicious causes beyond the control of the Owner.

(5) The following fees shall be assessed for False Fire Alarms:

Number of False Fire Alarms	Service Fee Per False Fire Alarm
First to Third	**(See Appendix D-Service Fees)**
Fourth	**(See Appendix D-Service Fees)**
Fifth	**(See Appendix D-Service Fees)**
Sixth and above	**(See Appendix D-Service Fees)**

(D) Nuisance Fire Alarms

(1) The following fees shall be assessed when a Report of Service/Repair has been Returned to the Enforcement Official, but the Nuisance Fire Alarms continue:

Number of Nuisance Fire Alarms	Service Fees
First to Third	**(See Appendix D-Service Fees)**
Fourth	**(See Appendix D-Service Fees)**
Fifth	**(See Appendix D-Service Fees)**
Sixth and above	**(See Appendix D-Service Fees)**

(2) In the event the Premises are equipped with a Fire Alarm System with over one hundred (100) Alarm Initiating Devices, the Enforcement Official may waive one Nuisance Fire Alarm per calendar year.

SECTION 9. Remedies and Penalties

(A) The Enforcement Official has the authority to order a Fire Watch in accordance with Adopted Codes, due to repetitive Nuisance Fire Alarms and/or False Fire Alarms, until corrective action is taken, or to revoke the occupancy certificate for the premises by written notice to the Owner of the Premises, for any of the following reasons:

(1) Failure to meet all requirements or pay the Fees provided for in this Ordinance within fifteen (15) days after the notice is mailed to the Owner;

(2) Failure of the Owner to provide a written Report of Service Repair required by this Ordinance;

(3) A fourth False Fire Alarm or Nuisance Fire Alarm at a Premises for which a Fee is charged pursuant to this Ordinance as a result of the failure of the Owner to take corrective action to eliminate the cause of the False Fire Alarm or Nuisance Fire Alarm; or

(4) The failure of a person notified pursuant to Section 3(E)(2) and Section 6(B)(1) of this Ordinance to appear within one (1) hour after being notified to respond, if such failure to timely response occurs four or more times within a calendar year.

(B) The written notice to disconnect or deactivate shall be mailed by certified mail, return receipt requested to the Owner and shall specify the date on which the Owner shall be required to disconnect or deactivate the Fire Alarm System. This date shall be at least fifteen (15) days after the notice is mailed to the Owner. The Owner may appeal the order of the Enforcement Official pursuant to Section 10.

(C) Each building affected because the signal from the Fire Alarm System has been disconnected or deactivated shall be required to establish a Fire Watch until the Fire Alarm System has been returned to service. Duties of the Fire Watch may include notifying emergency services and building occupants of an emergency, preventing a fire from occurring or extinguishing small fires.

(D) The Owner is responsible for paying all costs associated with establishing a Fire Watch.

(E) The Enforcement Official has the authority to temporarily suspend the occupancy certificate of the Premises until all outstanding repairs are made on the Fire Alarm System or if the Fire Watch is not maintained to the satisfaction of the Enforcement Official.

(F) The Enforcement Official shall have the authority to direct the Owner of the Premises to silence an activated Fire Alarm System, have corrective action taken and thereafter reset it.

(G) Anyone convicted of falsifying reports as required under this Standard is subject to maximum penalty as established by law.

SECTION 10. Appeals

(A) An Owner or Fire Alarm Business may appeal the assessment of fees to the Enforcement Official. An appeal fee of **(See Appendix D-Service Fees)** will accompany the appeal. Appeal fees will be returned to the Owner or Fire Alarm Business if the appeal is upheld. The filing of an appeal with the Enforcement Official stays the assessment of the Fee until the Enforcement Official makes a final decision. The Owner or Fire Alarm Business shall file a written appeal to the Enforcement Official by setting forth the reasons for the appeal within fifteen (15) days after notice is mailed.

(B) An Owner to whom a notice to disconnect or deactivate a Fire Alarm System was mailed, pursuant to Section 9(B), shall be entitled to appeal the order to the Enforcement Official. An appeal must be in writing, stating the reasons why the order to disconnect or deactivate should be withdrawn. The appeals shall be made within fifteen (15) days after notice to disconnect is mailed to the Owner. The Enforcement Official or his designee shall review the facts and circumstances and shall determine whether the Owner has shown good cause why the order should be withdrawn. If the Enforcement Official affirms the order to disconnect or deactivate a Fire Alarm System, the Owner shall have fifteen (15) days after the written decision is mailed to the Owner to comply with the order. The appeal of an order to disconnect or deactivate shall suspend the effective date of the order until the appeal has been acted upon by the Enforcement Official.

(C) In the event the appeal is not upheld, the Owner or Fire Alarm Business shall also be responsible for any Fee assessed to reimburse the Enforcement Official for any legal fees or costs incurred by the Enforcement Official in enforcement of this Standard.

SECTION 11. Reconnection of Fire Alarm System

(A) A Fire Alarm System may be reactivated upon a finding by the Enforcement Official that the Owner of the Premises has taken corrective action to remedy the cause of the False Fire Alarms or Nuisance Fire Alarms at the Premises.

(B) In making a request for such a reactivation, the Owner shall have the burden of showing what corrective action has been taken.

(C) The Enforcement Official shall have the right to inspect the Fire Alarm System and test it prior to approving a new order to reconnect or reactivate the Fire Alarm System.

(D) A reconnection fee of **(See Appendix D-Service Fees)** shall be assessed to the Owner before any reconnection of a Fire Alarm System may be made.

(E) The Enforcement Official shall not approve a new order to reconnect or reactivate if the Owner has failed to pay any Fee pursuant to this Standard.

SECTION 12. Confidentiality

Any information supplied to the District shall be held in confidence by all employees or representatives of the District and by any third-party administrator or employees of a third-party administrator with access to such information.

SECTION 13. Government Immunity

Registration of a Fire Alarm System is not intended to, nor will it, create a contract, duty or obligation, either expressed or implied, of response. Any and all liability and consequential damage resulting from the failure to respond to a notification is hereby disclaimed and governmental immunity as provided by law is retained. When registering a Fire Alarm System, the Owner acknowledges that LTFR's response may be based on factors such as: availability of fire apparatus, priority of calls, weather conditions, traffic conditions, emergency conditions and staffing levels. The District, its officers, employees and agents shall not assume any duty or responsibility for the installation, maintenance, operation, repair or effectiveness of any privately-owned Fire Alarm System, those duties or responsibilities being solely those of the Owner of the Premises.

TCESD No. 6 FIRE PROTECTION RULE #01-18-01

2006/2015 IFC Signage References (please note City of Bee Cave is under the 2006 IFC, all other areas of TCESD No. 6 follows the 2015 IFC)

Signage Requirements

- 2006 Section 510.1 Fire Department Access to Equipment
- 2015 Section 509.1 Fire Protection and Utility Equipment Identification and Access
- 2015 Section 509.1.1 Utility Identification
- 2006 Section 605.3.1 Labeling
- 2015 Section 605.3.1 Labeling
- 2006 Section 1007.6.5 Accessible Means of Egress Identification
- 2015 Section 1009.9 Accessible Means of Egress Signage
- 2006 Section 2203.2 Emergency Disconnect Switches
- 2015 Section 2303.2 Emergency Disconnect Switches
- 2006 Section 912.4 Fire Department Connections
- 2015 Section 912.5 Fire Department Connections
- NFPA 704 Signage must be used in accordance to the 2006 and 2015 IFC

All Fire Protection equipment, rooms and/or connections shall be identified in an approved manner. Minimum Size of signage is 8x11 inch w/1 inch brush stroke. TCESD No. 6 Fire Prevention Division may allow variances to this rule when it comes to placement and size.

- Signage must be of an all-weather construction and permanently mounted.
- Signage must be in a combination of "Red with White Lettering" or "White with Red Lettering" only.
- If multiple buildings exist at given address signage shall provide building number on the signage.
- All signage must be seen from point of entry and/or corridors.

See appendix B, Figure B-5 for illustrations of types of signage
Note: These are only examples of signage. Final determination will be decided upon by the Fire Prevention Division of TCESD No. 6.

APPENDIX A: FIRE PROTECTION RULES REQUEST

Travis County Emergency Services District No. 6 (TCESD No. 6) Fire Protection Rules Request
_____New Rule_____Revision to Existing Rule

Code Reference:
_____ International Fire Code
_____ National Fire Protection Association Standard No._____
_____ Other

References_____

Section _____

Purpose of New Rules or Revision:

_____
_____
_____
_____

Recommendations:

_____
_____
_____
_____

Submitted By:
Name_____
Title _____
Firm_____
Address _____
Telephone_____Date _____

Reviewed By:
Name_____
Title_____
Department_____Date_____
Recommended Action _____

APPENDIX B: Figures

Figure B-1. Fire Lane Signs:

2015 IFC Reference Section 503.3 – <u>Marking</u>

12”w X 18”h

Signs shall be red and white

Figure B-2. Fire Lane Signs:

2015 IFC Reference Section 503.3 - <u>Marking</u>

Signs shall be red and white

12”w X 18”h

Figure B-3. Fire Lane Signs:

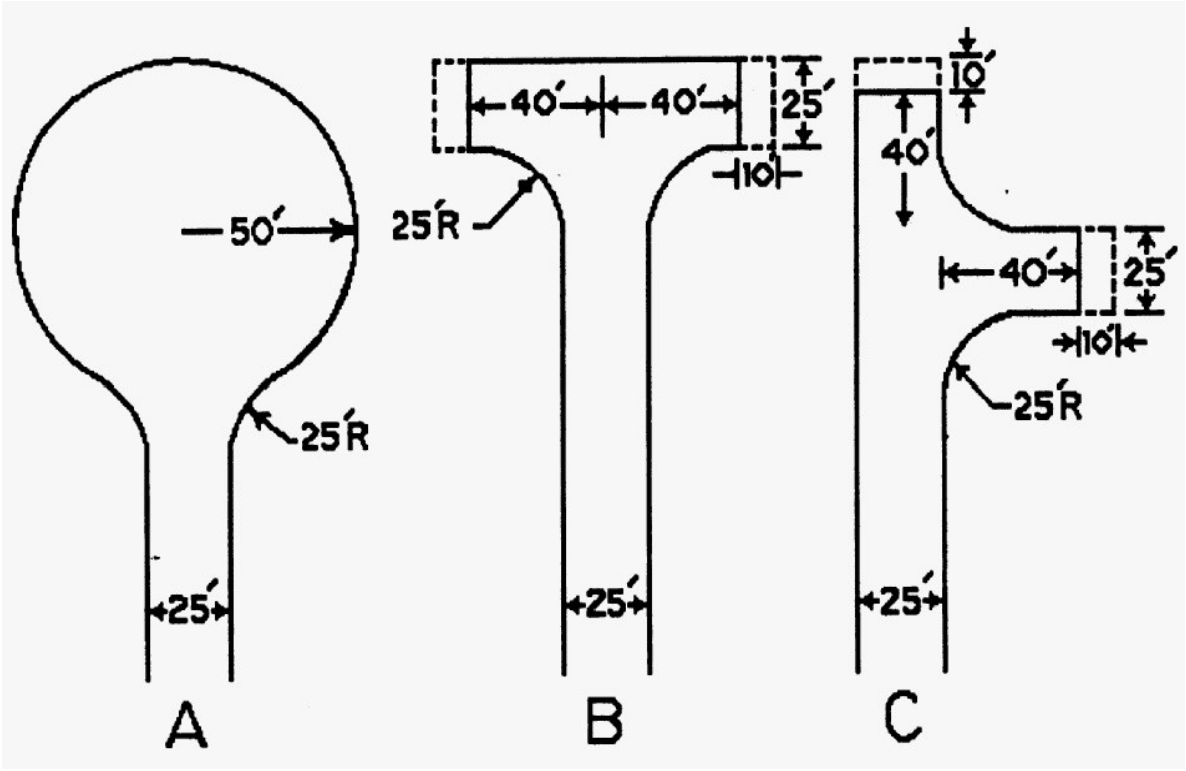
2015 IFC Reference Section 503.3 - <u>Marking</u>

Signs shall be red and white

12”w X 18”h

Figure B-4. Approved Fire Department Vehicle Turnarounds

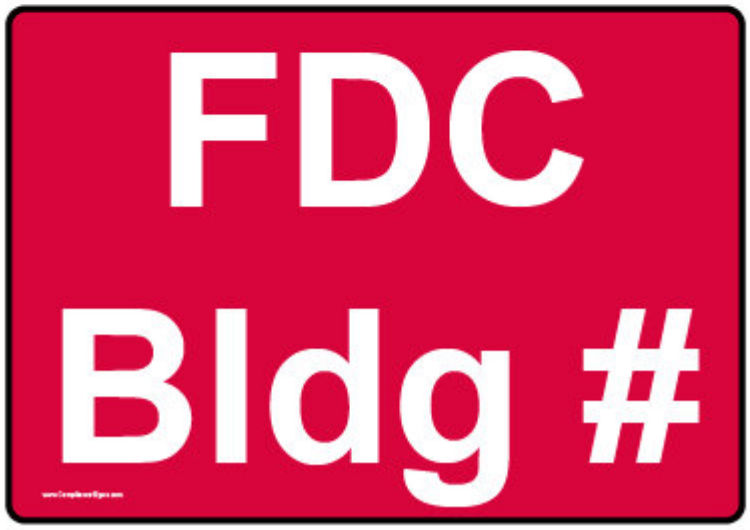
The turnarounds illustrated in A, B and C below meet fire department requirements for apparatus access roads. The additional ten feet right-of-way (denoted by the dotted line in illustrations B and C) shall not have any obstructions over one foot in height to allow for truck overhang.



APPENDIX B-4. Signage

Signs shall be red/white or white/red
Minimum Size of 8x11 inch w/1 inch brush stroke
Final determination of size will be decided upon by the Fire Prevention Division of TCESD No. 6

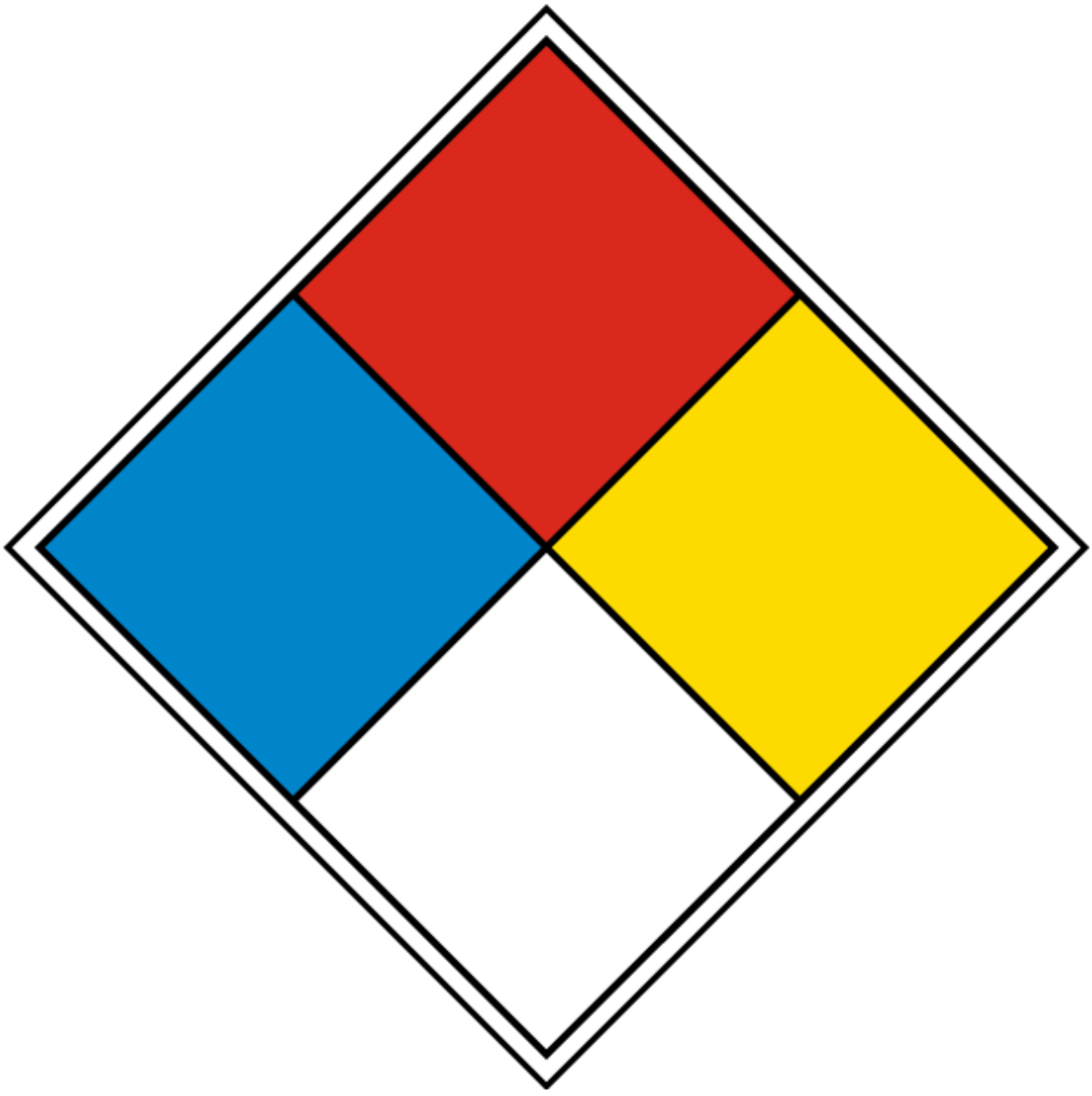

RISER
ROOM


FDC
Bldg #


FACP
Bldg #


STANDPIPE
CONNECTION


STANDPIPE
CONNECTION



APPENDIX C

Specification

Travis County Emergency Services District No. 6 – Lake Travis Fire Rescue

Radio-activated, GPS-based Traffic Signal Preemption and Priority Control System

System Description

The required priority control system will employ data-encoded radio communication to identify the presence of designated priority vehicles. A record of system users by agency identification number, vehicle classification and vehicle identification number will be created. In priority vehicle mode, the data-encoded communication will request the traffic signal controller to advance to and/or hold a desired traffic signal display selected from phases normally available.

The priority control system will consist of a matched system of vehicle equipment and intersection equipment. The vehicle equipment includes a radio, processor board and GPS receiver contained in one unit, a GPS antenna and a radio antenna contained in one module, cable, system software and a vehicle control unit in a separate module. The intersection equipment includes a radio, radio antenna, GPS receiver and GPS antenna contained in one module, cable, phase selectors and system software.

The GPS receiver on the vehicle will obtain vehicle location, heading and speed from the U.S. Department of Defense (DoD) operated satellites. The vehicle equipment will also monitor the vehicle's turn signal status. A 2.4 GHz spread spectrum/frequency hopping radio in the vehicle equipment will transmit this data to nearby intersections, only when it is within radio communication range of an intersection, which is received by a similar radio located at the intersection. The vehicle radio will communicate to intersection radios at distances up to at least 2,500 feet (762 m) with no obstructions. The intersection radios will communicate to vehicles and other intersection radios at distances of up to at least 2,500 feet (762m) with no obstructions. The phase selector will process the vehicle information to ensure that the vehicle is (1) in a pre-defined approach corridor, (2) heading toward the intersection, (3) requesting priority, and (4) within user- settable range. If these conditions are met, the phase selector will generate a priority control request to the traffic controller for the approaching priority vehicle. If the approaching vehicle has an active turn signal, the approach intersection will relay the priority request to the next nearest in- range intersection in the direction of the approaching vehicle's turn signal. The output of the phase selector may also be varied depending on the state of the approaching vehicle's turn signal.

The system will require no action from the vehicle operator other than to turn on the vehicle equipment. A remote activation line will be provided so that activation may happen at the same time as the driver activates other equipment such as a lightbar. The system will operate on a first- come, first-serve basis. High priority requests will override Low priority requests. The system will interface with most traffic signal controllers and will not compromise normal operation or existing safety provisions.

Matched System Components

The required priority control system will be comprised of seven basic matched components: vehicle/intersection radio/GPS module, vehicle control module, vehicle/intersection radio/GPS antenna, intersection only radio/GPS module, radio/GPS cable, phase selector and system software. In addition, a card rack, an interface panel with additional outputs and an auxiliary harness will be available if required. To ensure system integrity, operation and compatibility, all components will be from the same manufacturer. The system will offer compatibility with most signal controllers, e.g. NEMA (National Electrical Manufacturers Association), 170. The system can be interfaced with most globally available controllers using the controller's preemption inputs. An RS-232 interface shall also be available.

A. **Vehicle/Intersection radio/GPS module, Radio/GPS Antenna with factory terminated SMA connectors, and vehicle control unit.** The radio/GPS module will obtain the vehicle position, speed and heading information and transmit this information only when within range of a GPS intersection. The vehicle control unit will communicate with the radio/GPS module and provide the interface to the vehicle in order to monitor the vehicle's turn signal status, provide activation and disable inputs as well as regulate the vehicle power provided to the radio/GPS module.

B. **Intersection Radio/GPS Module.** The intersection radio/GPS module will transmit a beacon every second and receive the data transmitted by the vehicle equipment and relay this information to the phase selector as well as other system-equipped intersections. It will also obtain position information from the GPS satellites.

C. **Radio/GPS Cable.** The radio/GPS cable will carry the data received from the intersection radio/GPS unit to the phase selector. It will also carry the power for the radio and GPS components provided by the phase selector. The same cable will be used to carry the data between the vehicle radio/GPS unit and the vehicle control unit. The cable used to connect the radio/GPS unit to the phase selector shall be a shielded 10-conductor data cable; the use of coax cable is not permitted.

D. **Phase Selector.** The phase selector will process the data in order to validate that all parameters required for granting a priority request are met. It will be located within the controller cabinet at the intersection. It will request the controller to provide priority to a valid priority vehicle by connecting its outputs to the traffic controller's preemption inputs.

E. **System Software.** The system software will operate Windows™ 2000 or XP and Internet Explorer V5.5 or later compliant program. It supports system configuration and gathering of operational information.

F. **Card Rack.** The card rack will provide simplified installation of a phase selector into controller cabinets that do not already have a suitable card rack. The card rack will provide the +24 VDC required to operate the phase selector.

G. **Auxiliary Interface Panel/Harness.** The auxiliary panel will provide additional preemption outputs if needed. It will also provide a connection point for the phase selector to monitor the status of the intersection's green lights (green sense). Additional communication ports may also be accessed via this panel. If additional outputs are not required, an auxiliary harness will be used to monitor the status of the intersection's green lights.

System Component Specifications

A. Vehicle/Intersection Radio/GPS Module Radio/GPS Antenna and Vehicle Control Unit

1. A GPS receiver and antenna will obtain the vehicle position, speed and heading from the GPS satellite system operated by the DoD. The time information from the GPS satellites will also be used to synchronize the frequency hopping of the 2.4 GHz radio.

2. Operating in the reserved ISM communications band, and requiring no license, a 2.4 GHz spread spectrum/frequency hopping radio will provide the communications from the vehicle to the intersection when within range of a GPS intersection. The radio shall have a transmit power of not more than 1 watt. The radio shall have an unobstructed range of at least 2,500 feet (762 m). The radio will meet FCC Part 15 rules. Radio link association and coordination among intersections and vehicles shall be automatic.

3. The Vehicle Control Unit will provide the interface between the vehicle and the priority control system. The vehicle control unit will also interface with the radio/GPS module. The vehicle control unit will monitor the status of the vehicle turn signal via an interface cable that will connect between the vehicle control unit and the left and right turn signal lines in the vehicle. The vehicle control unit will also monitor the disable input line as well as the remote activation input. Power to the vehicle equipment will be provided through the vehicle control unit.

4. The Vehicle Control Unit will have dimensions of no greater than 5.5 inches (14.0cm) wide by 1.75 inches (4.4 cm) high by 5.75 inches (14.6 cm) deep.

5. The radio/GPS module will have dimensions of no greater than 4.5 inches (11.4 cm) wide by 2.75 inches (7.0 cm) high by 8.0 inches (20.3cm) long. This module may also be used in the intersection.

6. The radio/GPS antenna will be a hemispherical dome with a height of 1.43" (3.6 cm) a diameter of 2.85" (7.2 cm) with a pair of 15' (4.6m) coax cables with factory terminated SMA connectors. One of these connectors will have a pin and the other will have a socket. This antenna will include one element for receiving the GPS signal and one element for transmitting and receiving the radio signal. This antenna (along with the radio/GPS module described in paragraph 5 above) may also be used in the intersection.

7. The radio/GPS module will be housed in an extruded aluminum housing.

8. The vehicle equipment will be supplied complete with a 20-foot (6.1m) (or longer) installation cable as well as a 15-foot (4.5m) (or longer) vehicle interface cable.

9. The vehicle will transmit the following information when within range of an equipped intersection:

    a. The priority level of the vehicle equipment. This will be either high priority or low priority. The priority level will be factory set. The High priority model will have the option to be wired to operate as low priority either permanently or temporarily.

    b. The agency ID, vehicle classification ID and vehicle ID of the vehicle. Setting these ID numbers will be accomplished through programming software. Each vehicle control unit will be capable of setting 254 different agency IDs and 15 different vehicle type classifications with 9,999 different identification numbers per class for a total of 38,096,190 codes per priority level.

    c. The location, speed and heading of the vehicle.

    d. The status of the vehicle's turn signal.

    e. The radio channel as assigned by the intersection and the serial number of the vehicle control unit.

10. The vehicle control unit includes multi-purpose communication ports compliant with the RS-232 communication standard. These ports enable unit configuration to be set into the vehicle control unit and read from vehicle control unit. It also allows real-time communication between the vehicle control unit and the interface computer as well as interfacing with other devices. One of the ports may be configured to output GPS data at a user selectable baud rate in the NEMA format while the vehicle control unit is turned on. It will output the following messages (depending on the baud rate):
    a. GGA Global Positioning System Fix Data (2400 baud and higher)
    b. GSA GPS DOP and active satellites (2400 baud and higher)
    c. GSV Satellites in view (4800 baud and higher)
    d. RMC Recommended Minimum Navigation Information (1200 baud and higher)

    The vehicle shall be capable of being wired so that the GPS data is available either while the equipment is requesting priority or when not requesting priority.

11. The vehicle control unit will be equipped with an ON/OFF switch to activate the system and request priority. The switch will be depressed to activate the system. In addition, a remote activation line is provided to interface with other vehicle equipment. This line must have a +12 VDC applied to request priority.

    a. The equipment may also be configured to be activated with the light bar/remote activation line or the ON/OFF switch rather than both.

12. The vehicle control unit will also have a series of indicator lights that will operate as follows:

    a. A power indicator as well as an indicator light in the switch will indicate that the equipment is powered on.

    b. A GPS indicator will indicate the status of GPS reception. An amber indication means that GPS has not been acquired and that the radio is not "on the air." A green indication means that GPS has been acquired.

    c. A radio indicator will indicate the status of the communication between the vehicle control unit and the radio/GPS unit. An amber indication means that there is no communication and a green indication means that there is communication between the vehicle control unit and the radio/GPS unit.

    d. A disable indicator will indicate if the vehicle equipment is in a disable mode. The disable indicator and the indicator in the power switch will flash green at a rate of 2 Hz.

13. The vehicle control unit will be equipped with a disable input that, when activated, will cause the radio to transmit that the vehicle is in disable mode, thereby eliminating the possibility of the priority request continuing after the priority vehicle has arrived at its destination. The disable input will be programmable to operate in either a latching or non-latching mode. The disable input will be programmed so that the input may be activated by applying ground or by applying +12 VDC. Operation of the disable input will be programmable using software.

14. The vehicle equipment will operate over a temperature range of -30º F (-34º C) to 165º F (+74º C).

15. The vehicle equipment will operate over a relative humidity range of 5% to 95%.

16. Windows™ based software will be available for programming the vehicle control unit through its RS-232 compatible multi-purpose port.

17. The communication protocol will be made available upon request for creating software to implement real-time communication via J-1708 to other onboard devices such as Automatic Vehicle Location (AVL) equipment. This interface may used to initiate preemption and transit signal priority requests. In addition, the AVL equipment will be able to perform the following actions on the vehicle equipment:
    a. Temporarily change priority level
    b. Change Agency, Class and Vehicle ID
    c. Activate and deactivate disable mode
    d. Set turn signal status
    e. Set transit route ID

    The Vehicle unit will be able to provide the following to the AVL equipment:
    a. GPS RMC message data
    b. Door status

c. Date and time
d. Make and Model
e. Discrete input status

B. Intersection Radio/GPS Module

A GPS receiver and antenna will obtain the intersection position from the GPS satellite system operated by the DoD. The time information from the GPS satellites will be used to synchronize the frequency hopping of the 2.4 GHz radio and to time stamp the activity log. The GPS receiver and the GPS antenna will reside inside of the radio/GPS module.

A 2.4 GHz spread spectrum/frequency hopping radio will provide the communications from the intersection to the vehicle as well as from intersection to intersection. The radio shall have a maximum transmit power of not more than 1 watt. The radio shall have an unobstructed range of at least 2,500 feet (762 m). The radio will meet FCC Part 15 rules. The radio and the radio antenna will reside inside of the radio/GPS module.

The radio/GPS module will be housed in a white, impact resistant polycarbonate housing that will include a water resistant wire entry point. It will contain a water resistant access cover to facilitate cable termination. (See Section 6 below)

The radio/GPS module will be designed for mounting at or near an intersection on mast arms and span wire poles. Additional hardware may be needed.

The radio/GPS module will communicate to the phase selector via a radio/GPS cable up to 250 feet (76 m) in length.

As an alternate the radio/GPS unit and radio GPS antenna described in Section lll Subsection A, paragraphs five through eight, may be used in the intersection.

C. Radio/GPS Cable

1. The radio/GPS cable will deliver sufficient power from the phase selector to the radio/GPS module and will deliver the necessary quality signal from the radio/GPS module to the phase selector over a non-spliced distance of 250 feet (76 m). Use of coaxial cable is not permitted for this cable.

2. The radio/GPS cable will deliver sufficient power from the vehicle control unit to the radio/GPS module and will deliver the necessary quality signal from the radio/GPS module to the vehicle control unit over a non-spliced distance of 50 feet (15 m).

3. The cable will be of durable construction to satisfy the following installations:

    a. Direct burial.
    b. Conduit and mast arm.
    c. Exposed overhead (supported by messenger wire).

4. The outside diameter of the detector cable will not exceed 0.4 inches (10.16 mm).

5. The insulation rating of the detector cable will be 300 volts minimum.

6. The temperature rating of the detector cable will be +194ºF (+90ºC) minimum.

7. The conductors will be AWG #20 (7x28) stranded and individually tinned. The cable will be shielded and have a drain wire to provide signal integrity and transient protection.

8. The radio/GPS cable wires shall be color coded as follows:

    a. Yellow/Yellow-Black dot for Radio transmit.

    b. Blue/Blue-White dot for Radio receive.

    c. Orange/Orange-Green dot for Radio clock.

    d. Brown/Brown-White dot for GPS power and common.

    e. Violet/Violet-White dot for Radio power and common.

    f. Bare for shield drain.

9. When the aluminum enclosure version of the radio/GPS module is used, a radio/GPS cable assembly using the above cable with a 15-pin connector that will mate with the connector on the radio/GPS module will be used.

D. Phase Selector

1. The phase selector is designed to be installed in the traffic controller cabinet and is intended for use directly with numerous controllers. These include California/New York Type 170 controllers with compatible software, NEMA controllers, or other controllers along with the system card rack and suitable interface equipment and controller software.

2. The phase selector will be a plug-in, four channel, multiple-priority device intended to be installed directly into a card rack located within the controller cabinet.

3. The phase selector will be powered from +24 VDC.

4. Programming the phase selector and retrieving the data stored in it will be accomplished using an IBM™ PC-compatible computer and the system interface software. The connection can be direct via the computer's communication (COM) port. The communication ports on the phase selector will be RS-232 ports located on the front and back of the unit. Additional communication ports are available using the Auxiliary Interface Panel. The communication protocol will be made available upon request for creating software to implement other communication applications.

5. The phase selector will include the ability to directly sense the green traffic controller signal indications through the use of dedicated sensing circuits and wires connected directly to field wire termination points in the traffic controller cabinet. This connection will be made using either the auxiliary interface panel or the auxiliary harness.

6. The phase selector will have the capability of storing up to 10,000 of the most recent priority control calls. When the log is full, the phase selector will drop the oldest entry to accommodate the new entry. The phase selector will store the record in non-volatile memory and will retain the record if power terminates. Each record entry will include the following points of information about the priority call:

    a. Agency: Indicates the operating agency of the vehicle.

    b. Classification: Indicates the class type of vehicle.

    c. Identification number: Indicates the unique ID number of the vehicle.

    d. Priority level: Indicates the vehicle's priority level (High or Low priority).

    e. Direction: Channel A, B, C or D; indicates the vehicle's direction of travel.

    f. Call duration: Indicates the total time in seconds the priority status is active.

    g. Final greens at end of call: Indicates which phases are green at the end of the call.

    h. Duration of the final greens: Indicates the total time final greens were active at the end of call.

    i. Time and date call started and ended: Indicates the time a priority call started and ended, provided in seconds, minutes, hours, day, month, year.

    j. Turn signal status: Indicates the status of the turn signal at the beginning of the hold time.

    k. Priority output active: Indicates if the phase selector requested priority from the controller for the call.

    l. Historical no preempt cause: Indicates a history of conditions, which may have prevented a call.

7. The phase selector will include several control timers that will limit or modify the duration of a priority control condition, by channel, and can be programmed from an IBM™ PC-compatible computer. The control timers will be as follows:

a. MAX CALL TIME: Will set the maximum time a channel is allowed to be held active by a specific vehicle. It will be settable from 60 to 65,535 seconds in one-second increments. The factory default shall be 360 seconds.

b. OFF APPROACH CALL HOLD TIME: Will set the time a call is held on a channel after the vehicle has left the approach. It will be settable from four to 255 seconds in one-second increments. Its factory default shall be six seconds.

c. LOST SIGNAL CALL HOLD TIME: Will set the time a call is held on a channel after the intersection has lost contact with the vehicle. It will be settable from one to 255 seconds in one-second increments. Its factory default shall be six seconds.

8. The phase selector shall have the ability to enable or disable all calls of both priority levels. This shall be settable independently by channel.

9. A unique intersection name, which will be broadcasted, shall be settable for each phase selector.

10. Up to 25 different radio channels will be available to be assigned to the phase selector.

11. The phase selector will have the option of operating in a mode that will vary the output based on the status of the approaching vehicles turn signal. Additional outputs available on an Auxiliary Interface Panel may be needed. Settings will be available for this mode as follows:

    a. Output mappings for each channel.

    b. Separate setting for each of the four channels.

    c. Separate settings for each Left turn, right turn or straight signal status for each of the above four channels.

12. The phase selector's default values will be re-settable by the operator using an IBM™ PC-compatible computer.

13. The phase selector will be capable of two levels of signal discrimination, as follows:

    a. Verification of the presence of the signal of either High priority or Low priority.

    b. Verification that the vehicle is approaching the intersection.

    c. Determination of when the vehicle is within the prescribed range.

14. The phase selector will include one opto-isolated NPN output per channel that provides the following electrical signal to the appropriate pin on the card edge connector:

    a. 6.25Hz ± 0.1Hz 50% on/duty square wave in response to a Low priority call.

    b. A steady ON in response to a High priority call.

    c. The phase selector will also have the option of providing separate outputs for High and Low priority calls for controllers that do not recognize a 6.25 Hz pulsed Low priority request.

    d. Additional outputs will also be available on the auxiliary interface panel.

15. The phase selector will accommodate two methods for setting range thresholds for High and Low priority signals:

    a. Based on the approaching vehicle's Estimated Time of Arrival (ETA). This will be settable between 0 and 255 seconds. The factory default will be 30 seconds. The ETA threshold will be independently settable by each of the following parameters; vehicle class, channel and priority level.

    b. Based on the approaching vehicle's distance from the intersection. This will be settable between 0 and 5000 feet. The factory default will be 1000 feet. The Distance threshold will be independently settable by each of the following parameters; vehicle class, channel and priority level.

    c. Input of the range requirements will be done via the communication port and configuration software.

16. The phase selector will have a POWER ON LED indicator that illuminates steadily to indicate proper operation

17. A GPS indicator will indicate the status of GPS reception. An amber indication will mean that a GPS signal has not been acquired and that the radio is not "on the air." A green indication will mean that a GPS signal has been acquired.

18. A radio indicator will indicate the status of the communication between the vehicle control unit and the radio/GPS unit. An amber indication will mean that there is no communication and a green indication will mean that there is no communication between the vehicle control unit and the radio/GPS unit.

19. The phase selector will have a two-color LED indicator (green for High priority, amber for Low priority) for each channel to display active calls.

20. The phase selector will have a test switch for each channel to test proper operation of High or Low priority.

21. The phase selector will relay a priority request to the next adjacent intersection based on the intended direction as indicated by the vehicle's turn signal.

22. The phase selector will utilize the time obtained from the GPS satellites to time stamp the activity logs. The user will set the local time zone (offset from GPS time) via the interface software.

23. The interface software will have the capability to set the phase selector to automatically adjust the GPS time offset for changes in daylight savings time.

24. An auxiliary interface panel will be available to facilitate interconnections between the phase selector and traffic cabinet wiring as well as provide additional outputs.

25. The phase selector includes multi-purpose communication ports compliant with the RS-232 communication standard. These ports enable unit configuration to be set into the phase selector unit and read from phase selector. It also allows real-time communication between the phase selector and the interface computer as well as interfacing with other devices. One of the ports may be configured to output GPS data at a user selectable baud rate in the NEMA format. It will output the following messages (depending on the baud rate):

    a. GGA Global Positioning System Fix Data (2400 baud and higher)
    b. GSA GPS DOP and active satellites (2400 baud and higher)
    c. GSV Satellites in view (4800 baud and higher)
    d. RMC Recommended Minimum Navigation Information (1200 baud and higher)

    For traffic controllers that are capable of interpreting GPS data in the NMEA serial format, this GPS data may be used to synchronize the controller's clock using the GPS date and time.

    Additionally a discrete output from the phase selector may be used to reset the traffic controller using the clock reset function/input of the controller. This output shall be referenced to the GPS date and time.

    This output may be configured as follows:

    - Enabled or Disabled
    - Time of day reset is activated (12:00 A. M. to 6:00 A.M. in 30 minute increments)
    - Duration of reset pulse (100-2000 milliseconds)
    - Repeat every (days 1-30)

E. Card Rack

1. The required card rack will provide simplified installation of a phase selector into controller cabinets that do not already have a suitable card rack.

2. The card rack will be factory wired with one connector, located behind the card slot, a power supply inside the card rack and one connector on the front of the card rack.

3. The card rack connector on the front will provide for connections to the traffic controller.

4. The card rack will contain a 24 VDC power supply to power the phase selector. The power supply will be capable of being powered by 100-240 VAC 50-60 Hz.

5. Additionally there shall be an optional card rack with a built-in electromechanical relay for use in switching high current loads such as flashers and gate operators. The relay shall be capable of switching the following loads.

    a) Resistive
        i. 10A, 240VAC
        ii. 10A 30 VDC
    b) General Use
        i. 7.5A 120VAC
        ii. 7.5 A 240 VAC
        iii. 7A 30 VDC
        iv. 1/6hP 120VAC
        v. 1/3 hP 240 VAC

F. Interface Software

1. The priority control interface software will be provided on a single CD-ROM to interface with the phase selector. It must run on most IBM™ -compatible computers equipped with at least 64MB RAM, Windows™ 2000 or XP and Internet Explorer™ 5.5 or higher and color VGA display capability.

2. The priority control interface software must accommodate:

    a. Setting up and presenting user-determined system parameters.

    b. Configuring approach maps.

    c. Viewing vehicle activity screens.

    d. Displaying and/or downloading records of previous activity showing class, code, priority, direction, call duration, final greens at end of call, duration of final greens, time call ended in real time plus maximum signal intensity (vehicle location information). This information may be used to reconstruct the route taken by a priority vehicle to track the vehicle.

3. The priority control interface software must accommodate operation via a mouse or via the keyboard, or in combination.

4. The priority control interface software must provide menu displays to enable:

    a. Setting of valid vehicle ID and class codes.

    b. Establishing detection ranges, modem initialization, intersection name and timing parameters.

    c. Resetting and/or retrieving logged data and priority vehicle activity.

    d. Saving and retrieving vehicle and intersection configuration data, and printing, saving and viewing configuration data in html format.

    e. A mapping module to facilitate creation and saving of intersection approach maps using GIS map data.

    f. User driven context online help.

    g. Ability to upgrade vehicle, intersection and radio firmware.

5. The interface software shall provide a real-time activity screen that will display the following information about tracked vehicles.

    a. The approach channel.

    b. Vehicle class and ID and agency ID.

    c. Priority level.

    d. Historical no preempt cause.

    e. Turn signal status

    f. Signal strength serial number and radio channel.

    g. Priority output and preempt status.

    h. ETA, distance, heading and velocity of vehicles in approach corridor.

    i. Source of the call vehicle or intersection.

    j. Green phase monitoring with information on the current greens.

    k. Show location of all in-range vehicles and nearby intersections in real-time on a GIS map.

6. Additional screens that provide the following information about all intersections in range shall be provided.

a. Name

b. Radio channel

c. Signal strength

d. Number of vehicle tracked

e. Satellites heard

f. Fix type

g. Horizontal and position dilution

h. Serial number

7. The interface software shall be capable of creating preemption zones directly on a GIS map. Provided the map data is complete, it shall not be necessary to drive a vehicle to create the preemption zones. In areas where map data is incomplete or incorrect, it shall be possible to record points to be used as a reference to create the preemption zones.

G. Central Management Software

1. The priority control central management software will be provided with installation support services to interface with phase selectors via customer communication architecture. It must run on Windows™ 2003 Server or Windows™ XP.

2. The priority control central management software must accommodate:

   a. Setting up and presenting user-determined system parameters.

   b. Viewing and changing settings.

   c. Viewing activity screens.

   d. Ability to cross-reference operating records with database stored detailed vehicle and intersection attributes.

   e. Displaying and/or downloading records of previous activity showing agency ID, class, code, priority, direction, call duration, final greens at end of call, duration of final greens, time call ended, turn signal status and no-preempt reason. This information may be used to reconstruct the route taken by a priority (or probe) vehicle to track the vehicle.

   f. Provide ad-hoc analysis capability of previous activity showing class, code, priority direction, call duration, final greens at end of call, duration of final greens, time call ended, turn signal status and no-preempt reason.

g. Provide scheduled reporting of operational activity including total system usage, usage by vehicle and intersection, unauthorized vehicles, long green time and long call duration. Maintain security code assignments by jurisdiction and vehicle. Allow for central control over configuration of security in the phase selector.

3. The central management software must provide menu displays to enable the following in the phase selector:

    a. Setting of valid agency ID, vehicle ID and class codes.

    b. Create preemption zones on a GIS map.

    c. Retrieving logged data and priority vehicle activity.

    d. Addressing for each card in a multi-drop connected system.

    e. Set activation point parameters.

    f. Hold times and lost signal timeouts.

    g. Call bridging parameters.

    h. Local time zone.

    i. Intersection name, radio channel, low priority output mode and low priority active state.

    j. Device address and COM port protocol parameters.

    k. Download of firmware to all upgradable components of the system.

4. The central software shall provide a real-time activity screen, which will provide the following information.

    a. Turn Signal status

    b. Vehicle Agency ID, Class and vehicle ID.

    c. Vehicle priority level, indicated with a corresponding icon.

    d. Indication if call is being serviced or is pending.

    e. Indication if vehicle is in range.

    f. Preempt output status.

    g. Location of all in-range vehicles on a GIS map.

h. Green phase monitoring with information on the current greens.

i. GPS reception information.

j. Location of in range intersections on a GIS map and in tabular format.

k. Location of preemption zone on a GIS map.

l. Speed, heading distance and ETA of in range vehicles.

m. The ability to record and playback in-range vehicles on a GIS map.

n. Receive signal strength and radio channel of in-range intersection and vehicle radios.

H. System Architecture

1. Critical system parameters such a preemption zones, range settings, call hold times, shall reside in each phase selector. Changes to these parameters shall not require the need to download these parameters to each vehicle in the system.

RELIABILITY

All equipment supplied as part of the radio/GPS priority control system intended for use in the controller cabinet will meet the following electrical and environmental specifications spelled out in the NEMA Standards Publication TS2 2003, Part 2: v02.06

Line voltage variations per NEMA TS2 2003, Paragraph 2.1.2.

Power source frequency per NEMA TS2 2003, Paragraph 2.1.3.

Power source noise transients per NEMA TS2 2003, Paragraph 2.1.6.1.

Temperature range per NEMA TS2 2003, Paragraph 2.1.5.1.

Humidity per NEMA TS2 2003, Paragraph 2.1.5.2.

Shock test per NEMA TS2 2003, Paragraph 2.2.9.

Vibration per NEMA TS2 2003, Paragraph 2.2.8.

Proof of compliance from an independent testing lab shall be provided.

Each piece of equipment supplied as part of the priority control system intended for use in or on priority vehicles will operate properly across the entire spectrum of combinations of environmental conditions (temperature range, relative humidity, vehicle battery voltage) per the individual component specifications.

QUALIFICATIONS

The manufacturer of the required priority control system will verify the proven, safe operation of the system's technology through current examples of installed priority control systems. Upon request, the manufacturer will produce a list of user agencies having experience interfacing priority control equipment with programmable controller types.

RESPONSIBILITIES

The manufacturer of the required priority control system and/or the manufacturer's representative will provide responsive service before, during and after installation of the priority control system. The manufacturer and/or the manufacturer's representative, as consultants to the installer, will provide certified, training technicians having traffic systems industry experience and operational knowledge of priority control systems.

The lowest fully responsive bidder will be required to supply working production components specified herein within 14 calendar days from the purchase order date. Failure to do so will render the bid non-responsive.

Paragraph B will not be required if, prior to the bid opening, the bidder demonstrated to the city that the equipment bid meets these specifications.

SUBSTANTIATED WARRANTY

The manufacturer of the required priority control system will warrant that, provided the priority control system has been properly installed, operated and maintained, component parts of a matched component system (see Section II) that prove to be defective in workmanship and/or material during the first two (2) years from the date of shipment from the manufacturer will be covered in a documented system-protection plan.

The protection plan will warrant that component parts of a matched component system that are not subject to coverage limitations and prove to be defective in workmanship and/or materials during the first two (2) years from the date of shipment from manufacturer will be repaired at no charge.

In total, the warranty/maintenance coverage must assure that system components will be available to allow system operation during the two (2) year warranty/maintenance coverage.

A copy of the manufacturer's written warranty outlining the conditions stated above will be supplied with the bid. Coverage and coverage limitations are to be administered as detailed in the manufacturer's Warranty/Maintenance document.

VIII. CERTIFICATE OF INSURANCE

The manufacturer of the required priority control system will provide a certificate of product liability insurance protection for $5,000,000 assuring the priority control user that the manufacturer is insured against civil damages if proven to be at fault for an

accident due to equipment failure within the system of matched priority control components. This certificate, however, need not, and is not meant to, provide liability insurance protection to the priority control system dealer, installer or user.

IX. USER SUPPORT SERVICES

The manufacturer of the required priority control system will offer support programs to assist the purchase and implementation of a priority control system program, including:

a. Public relations assistance to promote the system within the user community.

b. Intersection survey service to document appropriate equipment interfaces.

c. Customized proposals to assist the procurement process.

d. Driver Training Program

X. CERTIFICATION

The manufacturer of the required GPS priority control system will certify that all component products are designed, manufactured and tested as a system of matched components and will meet or exceed the requirements of this specification.

XI. FIELD UNIT VERIFICATION/VALIDATION PERFORMANCE TEST PLAN

Successful Bidder will develop, document, and implement a Field Unit Verification/Validation Performance Test Plan. The Verification portion of the plan will demonstrate system performance to the specifications guaranteed by the equipment provider and insure that the installations are completed per manufacturer documented installation procedures. The Validation portion of the plan will demonstrate that the system meets user expectations as defined in the IFB document(s) and insure that any/all performance issues have been addressed.

Successful Bidder will work with the user, stakeholders, and installers to finalize, coordinate and implement the Field Unit Verification/Validation Performance Test Plan. Successful Bidder will, furthermore, document and distribute Verification/Validation Performance Test Plan results in a predetermined and agreed to format.

The Field Unit Verification/Validation Performance Test will be completed no later than 60 days after award of contract. The Final Test Plan will specify the number of completed intersections and vehicles required to perform a comprehensive test.

XLL. PATENT INFRINGEMENT

Bidder represents that the user's use of the products as contemplated herein does not and will not infringe any patent, copyright, or other proprietary right of any third party,

and there is currently no actual or threatened suit by any such third party based on an alleged violation of such right by the Bidder.

XLLL. USE OF INTELLECTUAL PROPERTY

Bidder represents that it has secured all necessary licenses, consents or approvals to use the components of any intellectual property, including computer software, used in the rendering of the scope of services and the production of the materials produced under this Agreement, and that the user has full legal title or the right to use such materials. Bidder covenants to defend, indemnify and hold the user harmless of any loss, claim or liability in any way related to a claim that the user through its authorized use of the priority control system is violating federal, state or local laws, or any contractual provisions relating to trade names, licenses, franchises, patents or other means of protecting interests in products or inventions. Bidder shall bear all costs arising from the use of third party patented, copyrighted, trade secret or trademarked materials, equipment, devices or processes used on or incorporated in the performance of the scope of services and materials produced under this Agreement. In case such materials, equipment, devices or processes are held to constitute an infringement and their use is enjoined, Bidder, at its expense shall: (a) secure for the user the right to continue using the materials by suspension of any injunction or by procuring a license or licenses for the user; (b) modify the materials so that they become non-infringing; or (c) refund the applicable fees paid to the Bidder by the user for such infringing materials, equipment, devices or processes, excepting amounts reflecting deprecation, user's actual use of the infringing materials, equipment, devices or processes prior to their enjoined use, or other such reasonable adjustments. These covenants shall survive the termination of this Agreement.

APPENDIX D

FEE SCHEDULE
False and Nuisance Fire Alarms

DESCRIPTION	REFERENCE	FEE
Failure to return a Report of Service/Repair	7(A) (1) & (2)	250.00
False Fire Alarm caused by on-site Alarm Company Employee	8(C) (2)	125.00
1st False Fire Alarm	8(C) (5)	0.00
2nd False Fire Alarm	8(C) (5)	0.00
3rd False Fire Alarm	8(C) (5)	0.00
4th False Fire Alarm	8(C) (5)	100.00
5th False Fire Alarm	8(C) (5)	200.00
6th False Fire Alarm and above	8(C) (5)	300.00
1st Nuisance Fire Alarm	8(D) (1)	0.00
2nd Nuisance Fire Alarm	8(D) (1)	0.00
3rd Nuisance Fire Alarm	8(D) (1)	0.00
4th Nuisance Fire Alarm	8(D) (1)	100.00
5th Nuisance Fire Alarm	8(D) (1)	200.00
6th Nuisance Fire Alarm and above	8(D) (1)	300.00
Late Fee	8(B)	25.00
Appeal Fee	10(A)	25.00
Reconnection Fee	11(D)	25.00