



FORT WORTH RAILROAD SAFETY PROGRAM
GUIDELINE FOR PROJECTS: RAILROAD GRADE CROSSINGS
AND QUIET ZONES
November 2005

Introduction

The goals of the City's Railroad Safety Program are to improve railroad grade crossings, reduce train horn noise, and improve crossing safety. These goals will be accomplished by improving crossing protection devices, deploying quiet zones, and promoting the safe use and operation at railroad grade crossings. This guideline identifies types of projects, funding sources, and methods for initiating railroad crossing projects.

The implementation the Railroad Safety Program includes an evaluation of railroad crossings in the city, an examination of a range of improvements, and the recommendation of specific projects and enhancements. These projects will achieve many of the City Council's strategic goals - improve public safety, promote orderly growth in new developing areas, revitalize the central city, and improve mobility and air quality.

The type of applicable projects, design methods, and funding options are described in the following sections:

1. Railroad Crossing Improvements

Typical projects include, but are not limited to, the following:

a. Crossing Protection Improvements

Railroad crossing protection devices (signing, signals and gates) may be proposed based on safety improvements recommended in conjunction with this Program. In addition, TxDOT's annual railroad program evaluates and improves crossings statewide, usually addressing crossings with cross-buck signs or older railroad signal installations. Locations selected for this state program are based on TxDOT's statewide priority index.

Usually crossing protection equipment is upgraded with new signals and gates. The City participates in the TxDOT projects located in Fort Worth. These projects are funded by federal and state funds; however, the city is required to fund any necessary roadway adjustments in conjunction with a new railroad signal.

b. Crossing Elimination

The closure of a street at a grade crossing will eliminate the railroad crossing. To initiate a closure, an engineering review is conducted to determine the impact to traffic circulation and emergency vehicle access. Estimated costs and funding sources are identified. If the closure is deemed feasible, then Plan Commission approval and City Council authorization are required.

c. Quiet Zone Development

A quiet zone is one crossing or a group of crossings in an area that use Supplemental Safety Measures to eliminate the use of train horns, thus improving the environmental (noise) quality in a neighborhood.

2. Quiet Zones

On June 24th, 2005, a new law became effective that allows the City to create Quiet Zones. The Federal Railroad Administration (FRA) developed the train horn rule published as 49 CFR Parts 222 and 229, Use of Locomotive Horns at Highway Grade Crossings; Final Rule. With this rule, the City of Fort Worth has the authority to establish quiet zones if certain safety devices are deployed at grade crossings to compensate for the discontinuance of use of the locomotive train horn.

A quiet zone is typically deployed to reduce the noise around a residential neighborhood, school, hospital or other sound-sensitive area. If a railroad crossing is within ½ mile of another crossing, then the next crossing should be included within the quiet zone boundary. It is necessary to evaluate each individual crossing to determine if the site is suitable for quiet zone techniques.

The FRA's new Train Horn Rule established standards for acceptable quiet zone methods. This Program clarifies the methods suitable for use in Fort Worth.

a. Train Horn Rule Summary

- i. The City and TxDOT are responsible for safety and maintenance of public roadways that cross railroad tracks, and the City is the only entity that can apply for quiet zone status.
- ii. Engineering solutions, known as Supplementary Safety Measures (SSM), are specific devices that can be used to improve safety at public highway-rail crossings in lieu of sounding locomotive horns.
- iii. Once each grade crossing has been improved with a quiet zone method as stated in this policy, the City can issue a formal notice that the crossing is in conformance with the federal rules for a quiet zone, and instruct the railroad to stop sounding the horn commencing from a specified date.

This notice is provided to the FRA, the railroad, the state transportation agency, and the police department.

b. Quiet Zone Measures

The FRA specifies several methods to implement a quiet zone. Because every crossing has different roadway widths and unique characteristics, the specific crossing characteristics may dictate the use of one method over another. In addition, an upgrade to the existing railroad signal to bring it up to modern standards may be required. In some cases, it may be impractical to create a Quiet Zone. Finally, consistent with the Train Horn Rule, the City will be required to complete the comprehensive documentation to establish the crossing(s) as a quiet zone.

The following techniques provide a basic description of measures to deploy a quiet zone. For additional information on these methods, refer to the Federal Railroad Administration publication, 49 CFR Parts 222 and 229, Use of Locomotive Horns at Highway Grade Crossings; Final Rule.

- i. **Grade Crossing Elimination.** The closure of a roadway can be accomplished if traffic circulation, emergency access, and local community desires are addressed. A road closure will require the installation of barricades and possible pavement and curbing adjustments. In some cases, right-of-way acquisition, constructing a cul-de-sac, or creating a new alternate route will be necessary.
- ii. **Median Barrier.** Use of a concrete median barrier in the center of a road of a sufficient length from the tracks prohibits vehicular movement around the gates. The FRA requires a median barrier to be 100 feet in length (60 feet if a driveway or cross street is present) from the nose of the median to the tip of the railroad crossing gate.
- iii. **Wayside Horn System.** This system utilizes speakers mounted adjacent to the crossing. Upon arrival of every approaching train, the speakers emit a pre-recorded train horn sound. The speakers are directed toward each roadway approach to alert motorists about the approaching train. In addition to the installation cost, an annual expense is required to maintain the special hardware.
- iv. **Four-Quadrant Gate System.** This system uses gates in all four corners of a crossing which, when lowered, prohibits vehicular movement around the gates. In addition to the installation cost, the railroad companies typically require an annual fee (over \$5,000) to maintain the additional railroad signal equipment.
- v. **One-Way Street with a Crossing Signal.** A street with one-way traffic flow and a standard crossing signal will use gates which, when lowered, prohibit vehicular movement around the gates. A conversion of a street to one-way traffic flow may be considered.

c. Quiet Zone Liability

It is understood that railroad crossings will be modified and improved as a result of this program. The City and railroad companies will strictly follow the guidelines within the FRA Train Horn Rule to eliminate or limit any liability involved with quiet zone projects. No deviation from the FRA guidelines will be allowed by the City.

3. Railroad Project Funding

Funding for railroad projects may be accomplished with Capital Improvement Project (CIP) funds, federal and state grant programs, developer projects, or other sources. Whenever possible, railroad projects will be accomplished in conjunction with roadway construction projects or grant programs that target rail improvements. CIP Railroad Program funds are intended to support projects initiated by the city.

If a private entity provides complete project funding (installation and maintenance), then the project will be installed with respect to this guideline.

Any installation funded by the City or a private entity that requires an annual maintenance expense will require special approval and financing.

4. New City Streets and Developments

All new roads that are planned to cross a railroad track will require a 100-foot long median barrier as part of the roadway design. This would allow for the installation of a quiet zone at a minimum cost. Use of any other crossing method will require approval by the TPW Director. In undeveloped areas, the City's Master Thoroughfare Plan designates that only major arterial streets are to cross railroad tracks. To the extent possible, those roads should be grade separated.

5. Capital Project Ranking and Project Selection

To ensure the best use of public funds, a project ranking and selection process is used. Candidate projects are rated using the project priority rating criteria shown in the appendix. A project ranking tabulates and prioritizes all projects under consideration. Basic steps for a candidate project that meets all requirements in this policy are as follows.

a. Project Evaluation

An evaluation of the crossing(s) and local project area will be conducted. Requirements within this policy will be applied; basic design and preliminary costs will be produced. The project will be rated with other crossing projects, and as funds are available, higher rated projects will be recommended. Any opportunity to seek grant funding or the inclusion into planned roadway projects will be considered.

b. Preliminary Engineering and Community Support

Projects that are recommended from the Project Evaluation stage will be further examined for feasibility. Preliminary engineering will be undertaken with the railroad company and roadway designers to determine a scope of work and cost estimate for the project. Community support for the project may also be attained at this time.

c. Project Authorization

The City Council will authorize projects, as necessary. The project will be designed, and construction will commence.

Appendix

Railroad Safety Program – Project Priority Rating Criteria

The priority rating criteria in the table below is intended to provide rankings of candidate projects. Evaluation criteria for each individual project consist of factors related to the anticipated benefits from a proposed improvement.

1. Project Crossing Exposure – Based on the amount of train use.

<u>Points</u>	<u>Measurements</u>
—	Number of trains per day divided by 2.
5	Amtrak or TRE passenger service on line.
<input type="text"/>	<i>Total of points</i>

2. Land Use and Density – Based on population, schools and hospitals within ½ mile of the crossing. A ½ mile diameter circle approximates the area of land that is exposed to a noise level of 80 decibels or more from a train horn.

<u>Points</u>	<u>Measurements:</u>
—	Total population residing in Fort Worth within ½ mile of each crossing. Divide population amount by 300, and add 3 points for each school or hospital.
<input type="text"/>	<i>Total of points</i>

3. Local Site and Other Considerations – Based on improvement to address specific issues.

<u>Points</u>	<u>Measurements:</u>
30	Project to close street at a crossing
20	Project to alleviate a blocked crossing
10	Multiple crossings in project
10	Major railroad signal upgrade (e.g. add gates)
10	Geometric design improvement
10	Crossing in conjunction with city initiatives
10	Quiet zone complete with this project
<input type="text"/>	<i>Points of highest measurement chosen</i>

4. Project Cost – Based on the cost to construct the project and to maintain the facility. Improvements funded by a grant or outside contributions will lower the city's cost to deploy the project.

<u>Points</u>	<u>Measurements:</u>
	City's cost to deploy the project plus ten years of annual maintenance cost.
	A cost of \$0 = 20 points, a cost of \$800,000 or more = 0 points.
	Formula: Points = 40 – installation and maintenance cost/20,000
<input type="text"/>	<i>Total of points</i>

Project Total, sum of all criteria points