RAIL CROSSING EVALUATION

APPENDIX A

Other Studies and Reports

- Hearing Examiner Street Vacation Request #124.1351 Narrows Marina LLC
- Guidance on the Quiet Zone Creation Process
- The Tacoma Dome Quiet Zone Report Tacoma, WA March 1, 2013
Dear Hearing Examiner,

Narrows Marina respectfully requests the vacation of the northern 24 feet of the segment of S. 19th Street that bisects its property west of the BNSF Railroad tracks. This western-most segment of 19th Street serves as the main entrance into Narrows Marina. As such, it is a central element of Narrows Marina’s plans to redevelop its site.

Narrows Marina is planning to revitalize its site with additional commercial services, residential facilities and recreational uses. We hope that this revitalization will not only stimulate enhanced economic activity for the Marina, but also generate new employment opportunities for the surrounding community as well as increased tax revenues for the City.

A central element of our economic revitalization plan is to redesign 19th Street to provide a more attractive and welcoming entrance to the Marina, give the Street greater definition, enhance its function and, most importantly, improve safety for drivers and pedestrians. Accordingly, the new streetscape will be designed to slow traffic entering the Marina, create clearer directional markers for vehicles accessing different facilities, improve circulation, delineate parking areas, and provide sidewalks and crosswalks for pedestrians crossing the site.

As shown on the attached Exhibits, pedestrians accessing the main entrance will use a sidewalk on the south side of 19th Street that will be elevated and separated from the driving lanes by curbs and planters. Marked crosswalks will safely guide pedestrians to various Marina facilities both south and north of 19th Street.

Vehicles accessing the main entrance will be guided by new signage and striping for various Marina facilities, and more defined turns from 19th Street onto 91st Ave. W. to the south and S. Wilton Rd. to the north. As shown on the attached Exhibits, planters will delineate vehicle parking areas both south and north of 19th Street. The planters on the northern edge of the driving lanes will be movable, in order to facilitate turning movements by longer boat trailers.
when accessing the boat launch waiting area and to facilitate maintenance of underground utilities.

As shown on Exhibit 2, the new streetscape includes two 14-foot driving lanes. The redesigned driving lanes will continue to provide access to the handful of properties other than Narrows Marina that still use 19th Street for ingress and egress. These include to the south, Day Island Yacht Club, off 91st Ave. W. Day Island Yacht Club has provided a letter indicating they have no objection to the vacation. And to the north, four condominiums and the Wilton Apartments, off S. Wilton Rd. An easement will be provided across the vacated portion of 19th Street to connect to S. Wilton Rd. as shown on Exhibit 1.

The City’s Real Property Services Division (“RPSD”) finds this street vacation will be in the public interest and recommends approval. As discussed in the RPSD Report, this street vacation meets all of the approval criteria in TMC 9.22.070:

1. The vacation will provide a public benefit and/or will be for a public purpose.

Vacation of this portion of 19th Street will help to create a more attractive, functional and safer main entrance to Narrows Marina - a central element of the plans to revitalize this site with new commercial residential and recreational uses. Redevelopment is expected to generate additional economic activity for the Marina, new employment opportunities for the surrounding community and increased tax revenues for the City.

2. The vacation will not adversely affect the street pattern or circulation.

The redesigned section of 19th Street will continue to provide access to the handful of properties other than the Marina - Day Island Yacht Club, four condominiums and the Wilton Apartments.

3. The public need will not be adversely affected.

The RPSD Report confirms that this portion of 19th Street no longer serves a broader thoroughfare function.

4. The right-of-way is not contemplated or needed for future public use.

The RPSD’s recommended conditions of approval include reserved easements for utilities that are located in the right-of-way.

5. No abutting owner will become land-locked or have access impaired.

The RPSD’s recommended conditions of approval also include an easement that will be provided across the vacated portion of 19th Street for access to S. Wilton Rd., for the four condominiums and the Wilton Apartments to the north, as shown on Exhibit 1.
6. The vacation complied with RCW 35.79.035.

This portion of 19th Street is not adjacent to the water, and therefore does not trigger RCW 35.79.035.

In sum, this street vacation meets all of the applicable approval criteria. Therefore, Narrows Marina respectfully requests approval.

Sincerely,

Scott Wagner
Owner/General Manager Narrows Marina LLC

Attachments:

Pyramid Engineering LLC, Exhibit 1, Narrows Marina LLC Right Of Way Vacation, Site
Pyramid Engineering LLC, Exhibit 2, Narrows Marina LLC Right Of Way Vacation, Section A
Note: Conceptual site improvements are shown.
GUIDE TO THE QUIET ZONE
ESTABLISHMENT PROCESS

AN INFORMATION GUIDE

Federal Railroad Administration
1200 New Jersey Avenue S.E.
Washington, DC 20590
Telephone: 202-493-6299
www.fra.dot.gov

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Purpose of the Guide

This brochure was developed to serve as a guide for local decision makers seeking a greater understanding of train horn sounding requirements and how to establish quiet zones. Its purpose is to provide a general overview and thus does not contain every detail about the quiet zone establishment process. For more detailed and authoritative information, the reader is encouraged to review the official regulations governing the use of locomotive horns at public highway-rail grade crossings and the establishment of quiet zones that are contained in 49 CFR Part 222. A copy of the rule can be downloaded or printed at http://www.fra.dot.gov/eLib/Details/L02809.

About Quiet Zones

FRA is committed to reducing the number of collisions at highway-rail grade crossings, while establishing a consistent standard for communities who opt to preserve or enhance quality of life for their residents by establishing quiet zones within which routine use of train horns at crossings is prohibited.

Federal regulation requires that locomotive horns begin sounding 15–20 seconds before entering public highway-rail grade crossings, no more than one-quarter mile in advance. Only a public authority, the governmental entity responsible for traffic control or law enforcement at the crossings, is permitted to create quiet zones.

A quiet zone is a section of a rail line at least one-half mile in length that contains one or more consecutive public highway-rail grade crossings at which locomotive horns are not routinely sounded when trains are approaching the crossings. The prohibited use of train horns at quiet zones only applies to trains when approaching and entering crossings and does not include train horn use within passenger stations or rail yards. Train horns may be sounded in emergency situations or to comply with other railroad or FRA rules even within a quiet zone. Quiet zone regulations also do not eliminate the use of locomotive bells at crossings. Therefore, a more appropriate description of a designated quiet zone would be a “reduced train horn area.”

Communities wishing to establish quiet zones must work through the appropriate public authority that is responsible for traffic control or law enforcement at the crossings.
Historical Context

Historically, railroads have sounded locomotive horns or whistles in advance of grade crossings and under other circumstances as a universal safety precaution. Some States allowed local communities to create whistle bans where the train horn was not routinely sounded. In other States, communities created whistle bans through informal agreements with railroads.

In the late 1980’s, FRA observed a significant increase in nighttime train-vehicle collisions at certain gated highway-rail grade crossings on the Florida East Coast Railway (FEC) at which nighttime whistle bans had been established in accordance with State statute. In 1991, FRA issued Emergency Order #15 requiring trains on the FEC to sound their horns again. The number and rate of collisions at affected crossings returned to pre-whistle ban levels.

In 1994, Congress enacted a law that required FRA to issue a Federal regulation requiring the sounding of locomotive horns at public highway-rail grade crossings. It also gave FRA the ability to provide for exceptions to that requirement by allowing communities under some circumstances to establish "quiet zones."

The Train Horn Rule became effective on June 24, 2005. The rule set nationwide standards for the sounding of train horns at public highway-rail grade crossings. This rule changed the criteria for sounding the horn from distance-based to time-based. It also set limits on the volume of a train horn. The rule also established a process for communities to obtain relief from the routine sounding of train horns by providing criteria for the establishment of quiet zones. Locomotive horns may still be used in the case of an emergency and to comply with Federal regulations or certain railroad rules.
Because the absence of routine horn sounding increases the risk of a crossing collision, a public authority that desires to establish a quiet zone usually will be required to mitigate this additional risk. At a minimum, each public highway–rail crossing within a quiet zone must be equipped with active warning devices: flashing lights, gates, constant warning time devices (except in rare circumstances) and power out indicators.

**In order to create a quiet zone, one of the following conditions must be met**

1. **The Quiet Zone Risk Index (QZRI) is less than or equal to the Nationwide Significant Risk Threshold (NSRT)** with or without additional safety measures such as Supplementary Safety Measures (SSMs) or Alternative Safety Measures (ASMs) described below. The QZRI is the average risk for all public highway-rail crossings in the quiet zone, including the additional risk for absence of train horns and any reduction in risk due to the risk mitigation measures. The NSRT is the level of risk calculated annually by averaging the risk at all of the Nation’s public highway-rail grade crossings equipped with flashing lights and gates where train horns are routinely sounded.

2. **The Quiet Zone Risk Index (QZRI) is less than or equal to the Risk Index With Horns (RIWH)** with additional safety measures such as SSMs or ASMs. The RIWH is the average risk for all public highway-rail crossings in the proposed quiet zone when locomotive horns are routinely sounded.

3. **Install SSMs at every public highway-rail crossing.** This is the best method to reduce to reduce risks in a proposed quiet zone and to enhance safety.

SSMs are pre-approved risk reduction engineering treatments installed at certain public highway-rail crossings within the quiet zone and can help maximize safety benefits and minimize risk. SSMs include: medians or channelization devices, one-way streets with gates, four quadrant gate systems, and temporary or permanent crossing closures. Examples of SSMs are shown on the next page.

ASMs are safety systems, other than SSMs, that are used to reduce risk in a quiet zone. ASMs typically are improvements that do not fully meet the requirements to be SSMs and their risk reduction effectiveness must be submitted in writing and approved by FRA.

FRA strongly recommends that all crossings in the quiet zone be reviewed by a diagnostic team. A diagnostic team typically consists of representatives from the public authority, railroad, and State agency responsible for crossing safety and FRA grade crossing managers.
Public Safety Considerations continued

Examples of SSMs

<table>
<thead>
<tr>
<th>Crossing Closure</th>
<th>Four Quadrant Gate System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gates with Channelization Devices</td>
<td>Gates with Medians</td>
</tr>
</tbody>
</table>

**Wayside Horns** The train horn rule also provides another method for reducing the impact of routine locomotive horn sounding when trains approach public highway-rail grade crossings. A wayside horn may be installed at highway-rail grade crossings that have flashing lights, gates, constant warning time devices (except in rare circumstances), and power out indicators. The wayside horn is positioned at the crossing and will sound when the warning devices are activated. The sound is directed down the roadway, which greatly reduces the noise footprint of the audible warning. Use of wayside horns is not the same as establishing a quiet zone although they may be used within quiet zones.

**Cost Considerations**

The enabling Federal statute did not provide funding for the establishment of quiet zones. Public authorities seeking to establish quiet zones should be prepared to finance the installation of SSMs and ASMs used. Costs can vary from $30,000 per crossing to more than $1 million depending on the number of crossings and the types of safety improvements required.

**Legal Considerations**

The courts will ultimately determine who will be held liable if a collision occurs at a grade crossing located within a quiet zone, based upon the facts of each case, as a collision may have been caused by factors other than the absence of an audible warning. FRA’s rule is intended to remove failure to sound the horn as a cause of action in lawsuits involving collisions that have occurred at grade crossings within duly established quiet zones.
The Quiet Zone Establishment Process

Under the Train Horn Rule, only public authorities are permitted to establish quiet zones. Citizens who wish to have a quiet zone in their neighborhood should contact their local government to pursue the establishment of a quiet zone. The following is a typical example of the steps taken to establish a quiet zone:

1. **Determine** which crossings will be included in the quiet zone. All public highway-rail crossings in the quiet zone must have, at a minimum, an automatic warning system consisting of flashing lights and gates. The warning systems must be equipped with constant warning time devices (except in rare circumstances) and power out indicators. The length of the quiet zone must be at least one-half mile in length.

2. **Identify** any private highway-rail grade crossings within the proposed quiet zone. If they allow access to the public or provide access to active industrial or commercial sites, a diagnostic review must be conducted and the crossing(s) treated in accordance with the recommendations of the diagnostic team.

3. **Identify** any pedestrian crossings within the proposed quiet zone and conduct a diagnostic review of those crossings too. They also must be treated in accordance with the diagnostic team’s recommendations. **NOTE:** While it is not required by the regulations, FRA recommends that every crossing within a proposed quiet zone be reviewed for safety concerns.

4. **Update** the U.S. DOT Crossing Inventory Form to reflect current physical and operating conditions at each public, private, and pedestrian crossing located within a proposed quiet zone.

5. **Provide** a Notice of Intent (NOI) to all of the railroads that operate over crossings in the proposed quiet zone, the State agency responsible for highway safety and the State agency responsible for crossing safety. The NOI must list all of the crossings in the proposed quiet zone and give a brief explanation of the tentative plans for implementing improvements within the quiet zone. Additional required elements of the NOI can be found in 49 CFR 222.43(b). The railroads and State agencies have 60 days in which to provide comments to the public authority on the proposed plan.

6. **Alternative Safety Measures** – If ASMs are going to be used to reduce risk, an application to FRA must be made. The application must include all of the elements provided in 49 CFR 222.39(b)(1) and copies of the application must be sent to the entities listed in 49 CFR 222.39(b)(3). They will have 60 days to provide comments to FRA on the application. FRA will provide a written decision on the application typically within three to four months after it is received.
7. **Determine** how the quiet zone will be established using one of the following criteria: (Note that Options 2 through 4 will require the use of the FRA Quiet Zone Calculator available at [http://safetydata.fra.dot.gov/quiet/](http://safetydata.fra.dot.gov/quiet/).)

1. Every public highway-rail crossing in the proposed quiet zone is equipped with one or more SSMs.
2. The Quiet Zone Risk Index (QZRI) of the proposed quiet zone is less than or equal to the Nationwide Significant Risk Threshold (NSRT) without installing SSMs or ASMs.
3. The QZRI of the proposed quiet zone is less than or equal to the Nationwide Significant Risk Threshold (NSRT) after the installation of SSMs or ASMs.
4. The QZRI of the proposed quiet zone is less than or equal to the Risk Index with Horns (RIWH) after the installation of SSMs or ASMs.

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8. **Complete** the installation of SSMs and ASMs and any other required improvements determined by the diagnostic team at all public, private, and pedestrian crossings within the proposed quiet zone.

9. **Ensure** that the required signage at each public, private, and pedestrian crossing is installed in accordance with 49 CFR Sections 222.25, 222.27, and 222.35, and the standards outlined in the Manual on Uniform Traffic Control Devices. These signs may need to be covered until the quiet zone is in effect.

10. **Establish** the quiet zone by providing a Notice of Quiet Zone Establishment to all of the parties that are listed in 49 CFR Section 222.43(a)(3). Be sure to include all of the required contents in the notice as listed in 49 CFR Section 222.43(d). The quiet zone can take effect no earlier than 21 days after the date on which the Notice of Quiet Zone Establishment is mailed.

***Appendix C to the Train Horn Rule provides detailed, step by step guidance on how to create a quiet zone.***
Guide to the Quiet Zone Establishment Process

Required Documentation

Public authorities interested in establishing a quiet zone are required to submit certain documentation during the establishment process. FRA has provided checklists for the various documents that can be found at [http://www.fra.dot.gov/Elib/Details/L03055](http://www.fra.dot.gov/Elib/Details/L03055).

FRA’s Regional Grade Crossing Managers are available to provide technical assistance. A State’s department of transportation or rail regulatory agency also may be able to provide assistance to communities pursuing quiet zones.

Public authorities are encouraged to consult with the agencies in their State that have responsibility for crossing safety. Some States may have additional administrative or legal requirements that must be met in order to modify a public highway-rail grade crossing.

Role of Railroads

Communities seeking to establish a quiet zone are required to send a Notice of Intent and a Notice of Quiet Zone Establishment to railroads operating over the public highway-rail grade crossings within the proposed quiet zone. Railroad officials can provide valuable input during the quiet zone establishment process and should be included on all diagnostic teams. Listed below are links to the Class I Railroads and Amtrak.

<table>
<thead>
<tr>
<th>BNSF Railway (BNSF)</th>
<th>Canadian Pacific (CP)</th>
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<tr>
<td>CSX Transportation (CSX)</td>
<td>Norfolk Southern (NS)</td>
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<tr>
<td>Canadian National (CN)</td>
<td>Union Pacific (UP)</td>
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<tr>
<td>Kansas City Southern (KCS)</td>
<td>Amtrak (ATK)</td>
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FINAL NOTE

The information contained in this brochure is provided as general guidance related to the Quiet Zone Establishment Process and should not be considered as a definitive resource. FRA strongly recommends that any public authority desiring to establish quiet zones take the opportunity to review all aspects of safety along its rail corridor. Particular attention should be given to measures that prevent trespassing on railroad tracks since investments made to establish a quiet zone may be negated if the horn has to be routinely sounded to warn trespassers.
POINTS OF CONTACT

**General Questions:**
Inga Toye, 202-493-6305
Debra Chappell, 202-493-6018
Ron Ries, 202-493-6285

**Regional Contacts**

**Region 1** Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, and Vermont  
1-800-724-5991

**Region 2** Delaware, Maryland, Ohio, Pennsylvania, Virginia, West Virginia, and Washington, D.C.  
1-800-724-5992

**Region 3** Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee  
1-800-724-5993

**Region 4** Illinois, Indiana, Michigan, Minnesota, and Wisconsin  
1-800-724-5040

**Region 5** Arkansas, Louisiana, New Mexico, Oklahoma, and Texas  
1-800-724-5995

**Region 6** Colorado, Iowa, Kansas, Missouri, and Nebraska  
1-800-724-5996

**Region 7** Arizona, California, Nevada, and Utah  
1-800-724-5997

**Region 8** Alaska, Idaho, Montana, North Dakota, South Dakota, Oregon, Washington, and Wyoming  
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September 2013
1. Identify all the crossings you wish to include as part of the proposed Quiet Zone (QZ).

2. Check whether each crossing qualifies as a pre-rule crossing (horns not sounding on October 9, 1996 and December 18, 2003 because of state/local law or community agreement with the railroads). If all crossings do not qualify as pre-rule crossings, then the proposed quiet zone does not qualify as a Pre-Rule QZ, and you should refer to Section III, New Quiet Zones.

3. Determine whether you wish to eliminate any crossings from the proposed QZ. The length of a Pre-Rule QZ may continue unchanged from that which existed on October 9, 1996. If, however, you choose to eliminate a crossing, the QZ must be at least ½ mile in length along the railroad tracks.

4. A QZ may include highway-rail grade crossings on a segment of rail line crossing more than one political jurisdiction, or there may be roads within a particular area that are the responsibility of different entities (State or county roads within a town, for example). If the selected crossings are the responsibility of more than one entity, obtain the cooperation of all relevant jurisdictions.

5. Update the USDOT Grade Crossing Inventory Form to reflect conditions at each public and private crossing; this update should be complete, accurate, and be dated within 6 months prior to the QZ implementation. For instructions on how to complete the update, see the FRA website at http://www.fra.dot.gov/eLib/details/L02730.

6. If each public crossing in the proposed QZ is equipped with one or more Supplementary Safety Measures (SSMs) as defined in Appendix A of the Rule, the QZ qualifies for Automatic Approval. To complete the process of creating the QZ, notify the parties listed in rule section 222.43 by December 18, 2004.

   Note: Once the QZ has been created, install the required signage by December 18, 2006. (Refer to rule sections 222.25 and 222.35 for details.)

   Note: Periodic updates, including updated USDOT Grade Crossing Inventory Forms, must be submitted to FRA every 4.5-5 years. (Refer to rule section 222.47 for details.)

7. If every public crossing is not equipped with at least one SSM, then the QZ can automatically qualify by comparing its Quiet Zone Risk Index (QZRI) with the Nationwide Significant Risk Threshold (NSRT). However, these QZs are subject to annual review by the FRA.

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8. Using the FRA’s Quiet Zone Calculator, a web-based tool that can be found at http://safetydata.fra.dot.gov/quiet/, determine whether the QZRI of the proposed QZ is less than or equal to the NSRT. If the QZRI is less than or equal to the NSRT, the QZ qualifies for Automatic Approval. Notify the parties listed in rule section 222.43 by December 18, 2004.

Note: Once the quiet zone has been created, install the required signage by December 18, 2006. (Refer to rule sections 222.25 and 222.35 for details.)

Note: Periodic updates, including updated USDOT Grade Crossing Inventory Forms, must be submitted to FRA every 2.5-3 years. (Refer to rule section 222.47 for details.)

9. If the QZRI is greater than the NSRT, use the FRA’s Quiet Zone Calculator to check whether it is less than twice the NSRT. If the QZRI is more than twice the NSRT, the QZ cannot qualify for Automatic Approval. For information on how to proceed, see Section II, Pre-Rule Quiet Zones Not Qualified for Automatic Approval.

10. If the QZRI is greater than the NSRT, but less than twice the NSRT, determine whether any of the public crossings have experienced a “relevant collision” on or after December 18, 1998. (See rule section 222.9 for the definition of a “relevant collision.”) If there have not been any “relevant collisions” at any public crossing since December 18, 1998, the QZ qualifies for Automatic Approval. Notify the parties listed in rule section 222.43.

Note: Once the quiet zone has been created, install the required signage by December 18, 2006. (Refer to rule sections 222.25 and 222.35 for details.)

Note: Periodic updates, including updated USDOT Grade Crossing Inventory Forms, must be submitted to FRA every 2.5-3 years. (Refer to rule section 222.47 for details.)

11. If the QZRI is greater than the NSRT, but less than twice the NSRT, and there has been a “relevant collision” at a public crossing within the proposed QZ, the QZ cannot qualify for Automatic Approval. For information on how to proceed, see Section II, Pre-Rule Quiet Zones Not Qualified for Automatic Approval.

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Section II. Pre-Rule Quiet Zones Not Qualified for Automatic Approval (Chart 1B)

1. Review Section I, Pre-Rule Quiet Zones: Qualifying for Automatic Approval, to confirm that the proposed Pre-Rule Quiet Zone does not qualify for Automatic Approval.

2. If each crossing qualifies as a pre-rule crossing (horns not sounding on October 9, 1996 and December 18, 2003 because of state/local law or community agreement with the railroads), send notice of continuation of the quiet zone to all parties by December 18, 2004. (Refer to rule section 222.43 for details.)

   Note: If you eliminated any pre-rule crossings to create the proposed Quiet Zone, the Quiet Zone must be at least ½ mile in length along the railroad tracks.

3. Submit to FRA a detailed plan for establishing a quiet zone before December 18, 2006. This plan should include a timetable for the implementation of safety improvements. If you intend to implement ASMs, the plan should include a completed application for FRA approval of their use. If a detailed plan is not been submitted by December 18, 2006, the quiet zone will terminate. (Refer to rule section 222.41 for details.)

   Note: Since the proposed quiet zone does not qualify for Automatic Approval, any SSMs and ASMs used must be implemented in accordance with rule section 222.39.1

   Note: For guidance on ASM use, see Section IV, Creating Quiet Zones using Engineering Alternative Safety Measures (modified SSMs) and Section V, Creating Quiet Zones using Non-engineering Alternative Safety Measures.

   Note: Required signage must also be installed by December 18, 2006. (Refer to rule sections 222.25 and 222.35 for details.)

4. Install SSMs and/or traffic control device upgrades as necessary to reduce risk within the proposed quiet zone.

5. If every public crossing in the proposed Quiet Zone is equipped with one or more SSMs as defined in Appendix A of the Rule, you can establish the proposed Quiet Zone through public authority designation by completing the following steps:

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1 Although the requirements for implementation of SSMs and ASMs must be in accord with rule section 222.39, the Pre-Rule Quiet Zone requirements covering minimum length and traffic control devices remain in effect for these crossings.

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a. Complete the planned improvements by December 18, 2008,\(^2\)

b. Update the USDOT Grade Crossing Inventory Form.

c. Notify the parties listed in the rule. (Refer to rule section 222.43 for details.)

Note: Periodic updates, including updated USDOT Grade Crossing Inventory Forms, must be submitted to FRA every 4.5-5 years. (Refer to rule section 222.47 for details.)

6. Using the FRA’s Quiet Zone Calculator, a web-based tool that can be found at [http://safetydata.fra.dot.gov/quiet/](http://safetydata.fra.dot.gov/quiet/), determine whether the implementation of SSMs, ASMs, and/or traffic control devices will reduce the QZRI of the proposed Pre-Rule Quiet Zone to the level of risk that would exist if the train horns were still sounded (RIWH). If the QZRI will be less than or equal to the RIWH, you can establish the Quiet Zone through public authority designation by completing the following steps:

   a. Complete the planned improvements by December 18, 2008,\(^2\)

   b. Update the USDOT Grade Crossing Inventory Form.

   c. Notify the parties listed in the rule. (Refer to rule section 222.43 for details.)

   Note: Periodic updates, including updated USDOT Grade Crossing Inventory Forms, must be submitted to FRA every 2.5-3 years. (Refer to rule section 222.47 for details.)

7. Using the FRA’s Quiet Zone Calculator, a web-based tool that can be found at [http://safetydata.fra.dot.gov/quiet/](http://safetydata.fra.dot.gov/quiet/), determine whether the implementation of SSMs, ASMs, and/or traffic control devices will reduce the QZRI of the proposed Pre-Rule Quiet Zone to the Nationwide Significant Risk Threshold (NSRT). If the QZRI will be less than or equal to the current NSRT, you can establish the Quiet Zone through public authority designation by completing the following steps:

   a. Complete the planned improvements by December 18, 2008,\(^2\)

   b. Update the USDOT Grade Crossing Inventory Form.

\(^2\) If the State is involved in the development of Quiet Zones, then the date for completion is extended an additional 3 years.

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c. Notify the parties listed in the rule. (Refer to rule section 222.43 for details.)

Note: Quiet Zones established by comparison to the NSRT are subject to annual FRA review. (Refer to rule section 222.51 for details.)

Note: Periodic updates, including updated USDOT Grade Crossing Inventory Forms, must be submitted to FRA every 2.5-3 years. (Refer to rule section 222.47 for details.)
Section III. Creating a New Quiet Zone Using SSMs (Chart 2)

1. Select the crossings to be included in the New Quiet Zone.

2. A Quiet Zone may include highway-rail grade crossings on a segment of rail line crossing more than one political jurisdiction, or there may be roads within a particular area that are the responsibility of different entities (State or county roads within a town, for example). If the selected crossings are the responsibility of more than one entity, obtain the cooperation of all relevant jurisdictions.

3. A New Quiet Zone must be at least ½ mile in length along the railroad tracks.

4. A New Quiet Zone must have, at a minimum, flashing lights and gates in place at each public crossing. These must be equipped with constant warning time devices where reasonably practical, and power out indicators. Any necessary upgrades must be completed before calculating risk for the quiet zone.

5. Are there any private crossings within the proposed Quiet Zone? If any private crossings allow access to the public or provide access to active industrial or commercial sites, you must conduct a diagnostic team review of those crossings. Following the diagnostic review, you must comply with the diagnostic team’s recommendations concerning those crossings.

6. Update the USDOT Grade Crossing Inventory Form to reflect conditions at each public and private crossing; this update should be complete, accurate, and dated within 6 months prior to the Quiet Zone implementation. For instructions on how to complete the update, see the FRA website at http://www.fra.dot.gov/Content3.asp?P=801.

7. Using the FRA’s Quiet Zone Calculator, a web-based tool that can be found at http://safetydata.fra.dot.gov/quiet/, determine whether the Quiet Zone Risk Index (QZRI) of the proposed Quiet Zone is less than or equal to the Nationwide Significant Risk Threshold (NSRT). If the QZRI is less than or equal to the NSRT, you can establish the Quiet Zone through public authority designation by completing the following steps:

   a. Install required signage at each crossing. (Refer to rule sections 222.25 and 222.35 for details.)

   b. Notify the parties listed in the rule. (Refer to rule section 222.43 for details.)

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3 For New Quiet Zones, the baseline conditions for calculating risk require that the minimum required traffic control devices are in place. This first Inventory update, therefore, must be completed after the gates, lights, and signs are in place, but before the SSMs and other measures are implemented.

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8. The step described above involves qualifying a quiet zone without implementing any Supplementary Safety Measures (SSMs) or Alternative Safety Measures (ASMs). If FRA’s Quiet Zone Calculator indicates that the proposed quiet zone will not qualify on that basis, install any measures that are needed. To qualify for Public Authority Designation, you must implement SSMs, build grade separations, close crossings, or install wayside horns.

   Note: If you would like to implement any ASMs, their use must be approved in advance by FRA, in accordance with Appendix B of the rule. For guidance on ASM use, see Section IV, Creating Quiet Zones using Engineering Alternative Safety Measures (modified SSMs) or Section V, Creating Quiet Zones using Non-engineering Alternative Safety Measures.

9. If every public crossing in the proposed Quiet Zone is equipped with one or more SSMs, you can establish the Quiet Zone through public authority designation by completing the following steps:

   a. Install required signage at each crossing. (Refer to rule sections 222.25 and 222.35 for details.)

   b. Update the National Grade Crossing Inventory to reflect current conditions at each public and private crossing within the Quiet Zone.

   c. Notify the parties listed in the rule. (Refer to rule section 222.43 for details.)

   Note: Periodic updates, including updated USDOT Grade Crossing Inventory Forms, must be submitted to FRA every 4.5-5 years. (Refer to rule section 222.47 for details.)

10. If every public crossing is not equipped with an SSM, use FRA’s Quiet Zone Calculator to determine whether enough SSMs have been implemented to reduce the QZRI to the level of risk that would exist if the train horns were still sounded (RIWH). The Quiet Zone Calculator can be found at http://safetydata.fra.dot.gov/quiet/. If the QZRI is less than or equal to the RIWH, you can establish the Quiet Zone through public authority designation by completing the following steps:

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a. Install required signage at each crossing. (Refer to rule sections 222.25 and 222.35 for details.)

b. Update the National Grade Crossing Inventory to reflect current conditions at each public and private crossing within the Quiet Zone.

c. Notify the parties listed in the rule. (Refer to rule section 222.43 for details.)

Note: Periodic updates, including updated USDOT Grade Crossing Inventory Forms, must be submitted to FRA every 2.5-3 years. (Refer to rule section 222.47 for details.)

11. Use FRA’s Quiet Zone Calculator to determine whether enough SSMs have been implemented to reduce the QZRI to the Nationwide Significant Risk Threshold (NSRT). The Quiet Zone Calculator can be found at http://safetydata.fra.dot.gov/quiet/. If the QZRI is less than or equal to the current NSRT, you can establish the Quiet Zone through public authority designation by completing the following steps:

a. Install required signage at each crossing. (Refer to rule sections 222.25 and 222.35 for details.)

b. Update the National Grade Crossing Inventory to reflect current conditions at each public and private crossing within the Quiet Zone.

c. Notify the parties listed in the rule. (Refer to rule section 222.43 for details.)

Note: Quiet Zones established by comparison to the NSRT are subject to annual FRA review. (Refer to rule section 222.51 for details.)

Note: Periodic updates, including updated USDOT Grade Crossing Inventory Forms, must be submitted to FRA every 2.5-3 years. (Refer to rule section 222.47 for details.)
Chart 1A - Pre-Rule Quiet Zones: Qualifying for Automatic Approval

A Pre-Rule crossing is one at which train horns were silenced as of October 9, 1996, and on December 18, 2003.

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Chart 1B - Pre-Rule Quiet Zones: Not Qualified for Automatic Approval

Notify Parties prior to December 18, 2004

File detailed plan with FRA, and install signage by 12/18/2006

If the State is involved in developing quiet zones, the deadline is extended until 12/18/2011.

no

Install SSMs and/or upgrade traffic control devices

yes

SSMs at every public xing?

no

QZRI < RIWH?

yes

Complete improvement by 12/18/2008

Qualified

Update National Inventory

Notify Parties

Send affirmation and updated inventory form to FRA every 4.5-5 yrs

no

QZRI < NSRT?

yes

Complete improvement by 12/18/2008

Qualified

Update National Inventory

Notify Parties

Send affirmation and updated inventory form to FRA every 2.5-3 yrs

no

ASM use requires FRA approval

QZs established on this basis subject to annual review

Go to chart 3A

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Chart 2 - Creating a New Quiet Zone using SSMs

Select crossings for inclusion in QZ

- Obtain cooperation from all affected jurisdictions
- QZ must be at least 1/2 mile long
- Install gates and lights at all public crossings

Pvt xings with public, industrial, or commercial access included?
- yes
  - Conduct diagnostic team review of pvt xings
  - Comply with diagnostic team's recommendations
- no

Update National Inventory to reflect existing conditions within 6 months prior to notification

QZRI ≤ NSRT?
- yes
  - Notify Parties, silence horns, and install signage at all crossings
  - Send affirmation and updated inventory form to FRA every 2.5-3 yrs
- no

QZs established on this basis subject to annual review

Install SSMs

SSMs at every public xing?
- yes
  - Update National Inventory
  - Notify Parties, silence horns, and install signage at all crossings
  - Send affirmation and updated inventory form to FRA every 4.5-5 yrs
- no

QZRI ≤ RiWH?
- yes
  - Update National Inventory
  - Notify Parties, silence horns, and install signage at all crossings
  - Send affirmation and updated inventory form to FRA every 2.5-3 yrs
- no

QZRI ≤ NSRT?
- yes
  - Update National Inventory
  - Notify Parties, silence horns, and install signage at all crossings
  - Send affirmation and updated inventory form to FRA every 2.5-3 yrs
- no

ASM use requires FRA approval

Go to Chart 3A

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Chart 3A - Creating a Quiet Zone using Engineering ASMs (Modified SSMs)

- From Charts 1B, 2
- Only SSMs or Modified SSMs used?
  - Yes: Determine effectiveness of proposed modified SSMs
  - No: Go to chart 3B

- Proposed QZRI < RIWH?
  - Yes: Apply to FRA, include analysis and data
  - No: FRA approved?
    - Yes: Install SSMs, modified SSMs
      - Qualified
      - Update National Inventory
      - Notify Parties, silence horns, and install signage at all crossings
      - Send affirmation and updated inventory form to FRA every 2.5-3 yrs
    - No: Not qualified

Strongly advised to consult FRA. QZs established on this basis subject to annual review.

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Conduct field study to obtain baseline violation rate
Implement ASM
Conduct field study to monitor change in violation rate (initial Violation Rate)
Determine ASM's effectiveness
Make improvements; install SSMs, modified SSMs

QZRI ≤ RIWH

QZRI ≤ NSRT

Apply to FRA, include analysis and data
FRA approved?

Complete installation of SSM’s, engineering ASMs
Update National Inventory
Notify Parties, silence horns, and install signage at all crossings

Send affirmation and updated inventory form to FRA every 2.5-3 yrs

Strongly advised to consult with FRA

QZs established on this basis subject to annual review

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List of Crossings within Quiet Zone

Submit to all Parties

Quiet Zone Name:___________________________________________________

The following crossings are included in the above named Quiet Zone:

<table>
<thead>
<tr>
<th>USDOT Crossing ID Number</th>
<th>Street or Highway Name</th>
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Basis for Continuation of a Pre-Rule Quiet Zone:

Submit to all Parties

Quiet Zone Name:__________________________________________________

This quiet zone is being continued in compliance with the following (check all that apply):

☐ §222.41(a) Pre-Rule Quiet Zones that qualify for automatic approval because
  every crossing is equipped with an SSM,
  QZRI ≤ NSRT, or
  NSRT < QZRI < 2* NSRT, and there have been no relevant collisions within the 5 years preceding December 18, 2003

☐ §222.41(b) Pre-Rule Quiet Zones that do not qualify for automatic approval

Note: Quiet Zones established in accordance with §222.41(b) can be maintained under that provision for an interim period only. Continuation of the quiet zone beyond the interim period will require implementation of SSMs or ASMs in accordance with the section of the rule governing establishment of a New Quiet Zone (§222.49).

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FRA Quiet Zone Calculator Pages

*Submit to all Parties*

If the Quiet Zone is being continued under §222.41(a), Pre-Rule Quiet Zones which qualify for automatic approval, the notification to the parties must also include a copy of the FRA web page containing the quiet zone data upon which the public authority relies.

The Quiet Zone Calculator can be found at: http://safetydata.fra.dot.gov/quiet/

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Certificate of Service (submit one for each party notified)

Submit to all Parties including FRA

Quiet Zone Name: ____________________________________________________

Notice of the establishment or continuation of this Quiet Zone was provided to the following:

<table>
<thead>
<tr>
<th>Name:</th>
<th></th>
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<tbody>
<tr>
<td>Title:</td>
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</tr>
<tr>
<td>Organization:</td>
<td></td>
</tr>
<tr>
<td>Address:</td>
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<tr>
<td>Notification Method:</td>
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<tr>
<td>Notification Date:</td>
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</tbody>
</table>

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Grade Crossing Inventory Form (Initial)

Submit to FRA Associate Administrator, Office of Safety

Submit an accurate and complete Grade Crossing Inventory Form for each public and private crossing within the quiet zone, dated within six months prior to notification of the quiet zone. This form should reflect conditions prior to implementation of SSMs and ASMs.

Copies of the Grade Crossing Inventory Form FRA 6180.71 can be downloaded from the FRA web site at http://safetydata.fra.dot.gov/officeofsafty/Forms/Default.asp.

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Grade Crossing Inventory Form Reflecting Improvements

Submit to FRA Associate Administrator, Office of Safety

Submit an additional accurate and complete Grade Crossing Inventory Form for each public and private crossing within the quiet zone, reflecting the improvements implemented within the Quiet Zone.

Copies of the Grade Crossing Inventory Form FRA 6180.71 can be downloaded from the FRA web site at http://safetydata.fra.dot.gov/officeofsafty/Forms/Default.asp.

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**Point of Contact Information**

*Submit to FRA Associate Administrator, Office of Safety*

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<tr>
<th>Quiet Zone Name:</th>
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<th>Date:</th>
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The following individual is responsible for monitoring compliance with §222:

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<th>Name:</th>
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<th>Title:</th>
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Chief Executive Officer Statement

Submit to FRA Associate Administrator, Office of Safety

Quiet Zone
Designation:__________________________________________________

I hereby certify that responsible officers of the public authority of which I am the
Chief Executive Officer have reviewed documentation prepared by or for the FRA,
filed in Docket No. FRA-1999-6439, sufficient to make an informed decision
regarding the advisability of establishing the quiet zone.

Signature_________________________Date_________________________

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published in the Federal Register on December 18, 2003. Should any portion of
this summary conflict with the interim final rule, the language of the interim final
rule shall govern.
Pre-Rule Quiet Zone Notification Checklist

Be sure to include the following information when providing notification of the continuation of a pre-rule quiet zone. Notifications must be sent by certified mail, return receipt requested.

All parties, including FRA, must receive:

- List of Crossings within Quiet Zone
- Basis for Continuation of a Pre-Rule Quiet Zone
- FRA Quiet Zone Calculator Page if quiet zone qualifies for automatic approval under §222.41(a)
- Certificate of Service (submit one for each party notified)

FRA must also receive the following:

- Grade Crossing Inventory Form (Initial)
- Grade Crossing Inventory Form Reflecting Improvements (when applicable)
- Point of Contact Information
- Chief Executive Officer Statement

Notification should be mailed to FRA at the following address:

Associate Administrator for Safety
Federal Railroad Administration
1120 Vermont Avenue, NW
Washington, DC 20590

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- Basis for Continuation of a Pre-Rule Quiet Zone
- FRA Quiet Zone Calculator Page if quiet zone qualifies for automatic approval under §222.41(a)
- Certificate of Service (submit one for each party notified)

FRA must also receive the following:
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New Quiet Zone Notification

Parties to be notified

Once a public authority has successfully established a quiet zone either through public authority designation or through FRA approval, it must provide written notice to several parties. These parties include the following:

- All railroads operating over the public highway-rail grade crossings within the quiet zone,
- The highway or traffic control authority, or the law enforcement authority with jurisdiction over motor vehicle traffic at the quiet zone crossings,
- Landowners with control over any private crossings within the quiet zone,
- The State agency responsible for highway and road safety, and
- The FRA Associate Administrator.

All notices must be provided by certified mail, return receipt requested.

Deadlines

The notice sent to the above parties must designate a specific date on which the routine sounding of horns at crossings within the quiet zone shall cease. On no account shall this date be earlier than 21 days after the mailing of this written notification.

---

1 This collection of information will be used by FRA to increase safety at highway-rail grade crossings. Public reporting burden is estimated to average five (5) hours per response for notifications, and thirty-five (35) hours per response for the certification, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Please note that an agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The OMB control number for this collection of information is 2130-0560.

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Notification contents

- The notice must unambiguously state which crossings will be contained within the quiet zone. Each public and private crossing must be identified by both the U.S. DOT National Highway-Rail Grade Crossing Inventory number and the street or highway name.

- The notification must also clearly cite the regulatory provision that provides the basis for establishing the quiet zone. For a new quiet zone, one of the following provisions should apply:
  
  - §222.39(a)(1), implementation of SSMs at every public crossing in the quiet zone;
  
  - §222.39(a)(2)(i), the QZRI is at or below the NSRT without installation of any SSMs;
  
  - §222.39(a)(2)(ii), SSMs were implemented at some crossings to bring the QZRI to a level at or below the NSRT;
  
  - §222.39(a)(3), SSMs were implemented at some crossings to bring the QZRI to a level at or below the RIWH; or
  
  - §222.39(b), public authority application to the FRA.

- If the quiet zone is established on the basis of §222.39(a)(1), (2), or (3), the notification must include a copy of the FRA web page containing the quiet zone data upon which the public authority is relying.

- If the quiet zone is being established on the basis of §222.39(b) (public authority application to the FRA), the notification must include a copy of the FRA’s notification of approval.

- All notifications must contain a certificate of service. This certificate of service shall show to whom the notice was provided, and by what means the notice was provided.

Additional information that must be submitted to FRA

The items listed above must be submitted to each of the parties listed in the section labeled “Parties to be notified”. Public authorities are also required to submit the following information in their submission to FRA:

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☐ An accurate and complete Grade Crossing Inventory Form for each public and private crossing within the quiet zone, dated within six months prior to designation or FRA approval of the quiet zone;

☐ An accurate, complete, and current Grade Crossing Inventory Form reflecting the SSMs and ASMs implemented within the quiet zone. (SSMs and ASMs that cannot be fully described on the Inventory Form must be described separately);

☐ The name and title of the person responsible for monitoring compliance with the requirements of the rule and his/her contact information. In addition to the person’s name, title, and organization, contact information should include his/her business address, telephone number, fax number, and email address;

☐ A list of all parties notified in accordance with the rule; and

☐ A statement signed by the Chief Executive Officer (CEO) of each public authority establishing the quiet zone. In the CEO’s statement, he or she must certify that responsible officials of the public authority have reviewed the documentation prepared by or for the FRA, and filed in Docket No. FRA-1999-6439, sufficient to make an informed decision regarding the advisability of establishing the quiet zone.

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Pre-Rule Quiet Zone Notification

Parties to be notified

A public authority that wants to continue silencing the locomotive horn at grade crossings within a Pre-Rule Quiet Zone must provide written notice to several parties. These parties include the following:

- All railroads operating over the public highway-rail grade crossing within the quiet zone,
- The highway or traffic control authority, or the law enforcement authority with jurisdiction over motor vehicle traffic at the quiet zone crossings,
- Landowners with control over any private crossings within the quiet zone,
- The State agency responsible for highway and road safety, and
- The FRA Associate Administrator.

All notices must be provided by certified mail, return receipt requested.

Deadlines

Notice of the continuation of a Pre-Rule Quiet Zone must be served no later than December 18, 2004.

1 This collection of information will be used by FRA to increase safety at highway-rail grade crossings. Public reporting burden is estimated to average five (5) hours per response for notifications, and thirty-five (35) hours per response for the certification, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Please note that an agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The OMB control number for this collection of information is 2130-0560.

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Notification contents

- The notice must unambiguously state which crossings are contained within the quiet zone. All public and private crossings must be identified by both the U.S. DOT National Highway-Rail Grade Crossing Inventory Number, and by street or highway name.

- The notification must clearly cite the regulatory provision that provides the basis for continuing the Quiet Zone.

  Note: The continuation of Pre-Rule Quiet Zones that qualify for automatic approval is governed by § 222.41(a). All other Pre-Rule Quiet Zones are governed by § 222.41(b).

- The notification must also include an explanation as to how the quiet zone is in compliance with § 222.41.

- If the quiet zone is being continued on the basis of §222.41(a) (automatic approval), the notification must include a copy of the FRA web page containing the quiet zone data upon which the public authority is relying.

- All notifications must contain a certificate of service. This certificate of service shall show to whom the notice was provided, and by what means the notice was provided.

Additional information that must be submitted to FRA

The items listed above must be submitted to each of the parties listed in the section labeled “Parties to be notified”. Public authorities are also required to submit the following information in their submission to FRA:

- An accurate and complete Grade Crossing Inventory Form for each public and private crossing within the quiet zone, dated within six months prior to designation of the quiet zone;

- An accurate, complete, and current Grade Crossing Inventory Form reflecting the SSMs and ASMs implemented within the quiet zone;

- The name and title of the person responsible for monitoring compliance with the requirements of the rule and his/her contact information. In addition to the person’s name, title, and organization, contact
information should include his/her business address, telephone number, fax number, and email address;

- A list of all parties notified in accordance with the rule; and

- A statement signed by the Chief Executive Officer (CEO) of each public authority continuing the quiet zone. In the CEO’s statement, he or she must certify that responsible officials of the public authority have reviewed the documentation prepared by or for the FRA, and filed in Docket No. FREA-1999-6439, sufficient to make an informed decision regarding the advisability of establishing the quiet zone.

Note: Pre-Rule Quiet Zones that do not qualify for automatic approval can only be maintained for an interim period. Continuation of the quiet zone beyond the interim period will require submission of a detailed plan, as well as implementation of SSMs or ASMs in accordance with section 222.39. Please refer to sections 222.39 and 222.41 for more information.
The Tacoma Dome Quiet Zone Report
Tacoma, WA.

MCR Logistics LLC

March 1, 2013
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</table>
Appendix

Appendix A – Quiet Zone Alternative Costs

Appendix B-1 – Quiet Zone Calculator; existing conditions
Appendix B-2 – Quiet Zone Calculator; Alternative 1
Appendix B-3 – Quiet Zone Calculator; Alternative 2
Appendix B-4 – Quiet Zone Calculator; Alternative 3
Appendix B-5 – Quiet Zone Calculator; Alternative 4
Appendix B-6 – Quiet Zone Calculator; Manipulated Alternative

Appendix C – Notice of Intent Letter

Appendix D-1 – Plan E. “D” Street – 4 Quad Gates
Appendix D-2 – Plan E. “D” Street - Medians
Appendix D-3 – Plan E. “C” Street - Medians
Appendix D-4 – Plan E. “C” Street – 4 Quad Gates
Appendix D-5 – Plan S. “C” Street – Medians

Appendix E-1 – Estimate E. “D” Street – 4 Quad Gates
Appendix E-2 – Estimate E. “D” Street - Medians
Appendix E-3 – Estimate E. “C” Street - Medians
Appendix E-4 – Estimate E. “C” Street – 4 Quad Gates
Appendix E-5 – Estimate S. “C” Street - Medians
Executive Summary

The Department of Transportation, through the Federal Railroad Administration, issued a final rule on August 17, 2006 on the Use of Locomotive Horns at Highway-Rail Grade crossings. The train horn rule details the requirements for sounding the train horn at at-grade crossings and what options are available to silence the train horn while the train is crossing at-grade crossings.

This report introduces the concept of quiet zones, and explains the rationale for the Federal Railroad Administration (FRA) policy with respect to approval of quiet zones. The report continues with a description of existing conditions at the at-grade railroad crossings within the Tacoma Dome Quiet Zone.

Each crossing was evaluated for quiet zone alternatives by applying two types of Supplemental Safety Measures (SSMs). The table shown in Appendix A identifies the range in costs with the establishment of a quiet zone.

We did not apply all of the SSM alternatives to all of the crossings. SSMs that were not considered or evaluated in the report were (1) one-way streets, (2) grade separations (over or under-crossings), and crossing closures.

This report has provided estimated costs for each of the evaluated alternatives. The estimated costs associated with the implementation of the Tacoma Dome Quiet Zone ranged from $17,906 to $394,174. The higher cost estimates were reflective of the SSM alternative selected. The installation of four-quadrant gates, for example, would be done at a higher cost than the installation of median barriers.

Covered under state law, the initial installation of warning devices at a railroad crossing is at the expense of the City of Tacoma and the maintenance of those warning devices is the responsibility of Sound Transit. It is understood that the initial two quadrant lights and gates scenario is required for roadway safety whereby construction and maintenance responsibilities are directed under state law. Because the establishment of a quiet zone is a City sponsored quality of life improvement, the maintenance of additional warning devices that are required for establishing a quiet zone will be the responsibility of the City. If medians are selected as the appropriate SSM, there will be no additional maintenance expense provided to Sound Transit.
Therefore, as addressed in the previous paragraph, all costs associated with the quiet zone will be the City’s responsibility. In addition to construction costs, Sound Transit will determine and invoice the City an annual maintenance fee for the additional lights and gates installed at the at-grade crossings. Maintenance expense is estimated to be $7,000 per crossing, per year. Sound Transit would also expect the City to reimburse them for all future gate breakages.

After the installation of the additional warning devices, the original warning devices will be maintained according to state law while the additional warning devices will be maintained by Sound Transit at the expense of the City. All medians and other roadway improvements including the loop detection devices will be constructed and maintained by the City.

The time associated in implementing a quiet zone to the time a quiet zone is constructed and the train stops blowing its horn through the crossings within the quiet zone is approximately 12 to 18 months.

Introduction
MCR Logistics, LLC has prepared this report to document the findings of a diagnostic study to investigate the possibility of reducing railroad-related noise in Tacoma, Washington. The investigation focused on strategies for the implementation of a “quiet zone”, as well as other devices that would reduce train horn noise. This report discusses the concept of quiet zones, existing conditions at the project location, and potential solution strategies, along with preliminary cost estimates.

Quiet Zones
The FRA has issued a revised final ruling regarding the use of train horns at public railroad grade crossings nationwide. The ruling took effect September 18, 2006 and replaces the current mixture of state/local laws governing the use of locomotive horns at such crossings. This federal ruling also establishes the procedure by which a quiet zone may be established.

As with most all railroads, it is the position of Sound Transit that the train horn is a more effective warning device than what an engineered quiet zone can provide. When a train is approaching a crossing, the train blows its horn and the traveling public as well as nearby pedestrians will know that a train is approaching and from which direction. In a quiet zone, the lights, gates and bell will activate, but the traveling public will not know the direction of the approaching train. It may lead to a false sense of security for the traveling public.

The object of a quiet zone is to replace the train horn with a system of devices that are considered by the FRA to effectively compensate for the absence of the warning provided
by the locomotive horn. The FRA rates the effectiveness of a proposed quiet zone, and ultimately approves the zone, by a comparison of before and after risk scores. These risk scores are obtained by using the FRA’s web-based Quiet Zone Calculator. (Appendix B-1 through B-4) The calculator stores the crossing data for every public crossing in the nation along with each crossing’s level of risk. This existing base case score is termed the Risk Index With Horns (RIWH) and is unique to every public crossing. The risk index after quiet zone improvements are implemented must be less than the RIWH. The calculator allows a user to input the calculated value of quiet zone improvements to individual crossings and the tool will return a comparative risk value and an assessment if the proposed improvement measures qualify the quiet zone for approval. An explanation as to when and how to use the calculator is explained below. Ultimately, it is still the locomotive crew’s prerogative to sound a train horn if the crew perceives a situation that so warrants (i.e., a pedestrian on the tracks). In order to reduce the use of train horns at crossings, a quiet zone strategy must provide physical barriers to prevent motorists from entering an at-grade crossing when trains approach and occupy a crossing. The FRA regulations stipulate that engineering solutions known as “Supplemental Safety Measures” (SSMs), intended to increase the relative safety at each crossing, must be installed prior to the inauguration of a quiet zone. Typical SSM’s that would be appropriate for the study area include:

The Quiet Zone Calculator

If all of the crossings within the quiet zone have SSMs such as in the Tacoma Dome Quiet Zone, the use of the calculator is not necessary. The calculator is necessary only if the City decided not to use all SSMs within the Quiet Zone. Appendix B-1 through B-5 (the calculator) is used in this report as to demonstrate the use of the calculator.

Not recommended, but if the City wishes, it can try to manipulate the calculator to reduce the QZRI to equal to or lower than the NSRT or RIWH. The city may wish to install 4 quad gates at E. “D” Street and do nothing at all at E. “C” Street and medians at So. “C” Street. This would be enough to lower the QZRI below the NSRT or RIWH (Appendix B-6) When lowering the QZRI through manipulation, the quiet zone is required to be evaluated annually to determine if the risk has changed or not. If the risk rises above the QZRI at a later date, the City has 3 years to have all the crossings with SSMs in order to reduce the risk. Failure to add SSMs will result in the loss of the quiet zone. To keep the quiet zone the installation of medians or 4 quad gates at the E. “C” Street crossing would be required. It is strongly recommended that SSMs be installed at all of the crossings within the zone. This will eliminate the need for reevaluation and the additional expense in retaining the quiet zone at a later time.
In comparing Appendix B-1 (Risk assessed to the crossings as is) with Appendix B-2 (Risk assessed after installing SSMs) note how the risk has been lowered with the installation of the SSM associated to each crossing. E “D” Street changed from 27,557.81 (App B-1) to 6,338.30 (App B-2). The bottom line (QZRI), shown in green, changed from 18,911.11 to 4,182.59. There is a line item on the calculator that addresses estimated total cost. Please disregard this line item. Based on my own experience the estimate is not accurate.

**Supplemental Safety Measures (SSMs)**

![Figure 1](image)

**Four-quadrant gate system.**
A 4-quadrant gate system prevents motorists from entering the rail crossing from any travel lane, even if the motorist attempts to proceed around gates by using the oncoming travel lane. A typical 4-quad gate system includes safety measures to provide an escape route if a motorist is in the crossing when the crossing signals are activated. Figure 1 depicts a typical 4-quad gate installation. Notice the “No Train Horn” sign. This sign is required at all crossings within the quiet zone.
Two-quadrant gate system plus median barriers. A conventional 2-quad gate system can be coupled with the installation of a raised median barrier down the centerline of the road to physically prevent motorists from entering the rail crossing by proceeding down an on-coming lane. This design will qualify as an SSM, but the median barrier can only be installed if it does not hamper access to and from the roadway to be protected. The raised median must be a minimum of 100’ in length from the crossing gate arm to the nearest street intersection or driveway. Alternatively, if an intersecting street or driveway can be converted to right-in/rightout access, a raised median barrier may be reduced in length to 60’. Figure 2 depicts a typical two-quadrant gate system with median barriers. It is recommended that medians are 8” high, but 6” high medians are acceptable.
One Way Street. One-way streets are streets where the direction of vehicular travel is limited to one direction. Flashing lights and gates on the same side of the crossing are required such that all approaching roadway lanes to the crossing are completely blocked.

Initiating a Quiet Zone
A typical procedure to initiate a quiet zone in Tacoma would involve the following steps:

- Select crossings to be included in the zone and ensure that the zone is at least ½ mile in length
- Select appropriate SSM’s to bring the risk of a collision in the Tacoma quiet zone below the National Significant Risk Threshold
- Perform a diagnostic examination with the FRA, the WUTC, Sound Transit, and the City of Tacoma.
- Submit a notice of intent to establish a quiet zone to all railroads operating in the proposed quiet zone. (Appendix C)
- Procure project funding.
- Install SSM devices.
- Submit notification of the creation of a quiet zone and silence train horns.
Existing Conditions

Sound Transit has a single track mainline running from Freighthouse Square to Lakewood, WA. There is a second track paralleling the Sound Transit track that crosses both the E. “D” Street and the E. “C” Street crossings operated by Tacoma Rail. Sound Transit operates 10 through passenger trains per day between Freighthouse Square in Tacoma and Lakewood. Tacoma Rail operates 3 trains a week with occasional switching movements.

The Tacoma Dome Quiet Zone Study Area Crossings.

The Tacoma Dome quiet zone includes 3 at grade crossings described below. At the end of the existing condition report of each crossing is a chart identifying the total risk factor of the Tacoma Dome Quiet Zone

![East “D” Street](image)

East “D” Street crossing,
RR milepost 2.00, DOT 396639A

The East “D” Street crossing is a three lane roadway crossing with 2 bike lanes and 2 sidewalks crossing two tracks. Most northerly track is the mainline track operated by Sound Transit. The most southerly track is operated by the Tacoma Municipal Belt Line, otherwise known as Tacoma Rail. There are driveways in the northwest and southwest quadrants of the crossing. The crossing is located immediately to the west of the Freighthouse Square train station. There is one driveway located in the northeast quadrant of the crossing which accesses Freighthouse Square. The speed limit is posted at 25 mph. This crossing has an ADT of 4,260 whereby 10% are trucks.
The Railroad crossing is made of concrete. The warning devices at the East “D” Street crossing are flashing light traffic control devices with two gates and a bell. There are also three pedestrian gates. The mainline track is controlled by constant warning time devices and advanced pre-emption. The maximum train speeds at this crossing are 35 mph for passenger and freight trains. Wayside horns were installed in order to create a directional sound of the train horn reducing the noise into the surrounding community. After the installation was complete, the warning devices, including the horn, would continue to operate for an extended period of time whenever the train would stop at Freighthouse Square to pick up and drop off passengers. Due to community complaints the wayside horns were disconnected and the trains are now blowing their horns.

The train horn issue may be corrected. In order to determine if the blowing of the train horn can be minimized at the “E. D. Street crossing, we will require a copy of the circuit diagrams of the horn installation. Robert Albritton, CEO of Quiet Zone Technologies has agreed to assist the City in its review of the circuit diagrams for the installation of the train horn at E. D and E. C Streets. Robert Albritton can be reached at 1-817-307-8885 or RLA@quietzontech.com Mr. Albritton believes the installation of the train horn may not have been engineered correctly.

East “C” Street

East “C” Street crossing
 RR milepost 2.10, DOT # 396-640U

The East “C” Street crossing is a two lane roadway crossing. Roadway also includes 2 bike lanes, 2 sidewalks and parking on both sides of the roadway south of the crossing. There are driveways along both sides of the roadway. Two of the driveways access parking lots along the north side of the crossing. The speed limit is posted at 25 mph. The crossing has an ADT of 2500 whereby 10% are trucks.
There is one Sound Transit track and one track operated by Tacoma Rail. The railroad crossings are made of concrete. The warning devices at the East “C” Street crossing are flashing lights with gates and a bell. There are also pedestrian lights and gates. The tracks are controlled by constant warning time devices. Maximum train speeds at this crossing are 35 mph for passenger and freight trains. As in E. “D” Street, wayside horns were installed in order to create a directional sound of the train horn reducing the noise into the surrounding community. After the installation was complete, the warning devices, including the horn, would continue to operate for an extended period of time whenever the train would stop at Freighthouse Square to pick up and drop off passengers. Due to community complaints the wayside horns were disconnected and the trains are now blowing their horns.

South “C” Street crossing
RR milepost 2.36, DOT # 945-989J

The South “C” Street crossing is a two lane roadway crossing one Sound Transit track. Tacoma Rail does not operate over this crossing. Roadway also includes 2 sidewalks and parking on both sides of the roadway south of the crossing. There are driveways along both sides of the roadway. Two of the driveways access parking lots along the north side of the crossing. The speed limit is posted at 25 mph. The crossing has an ADT of 1751 whereby 10% are trucks.
There is one Sound Transit track. The railroad crossing is made of concrete. The warning devices at the South “C” Street crossing are flashing lights with gates and a bell. There are also pedestrian lights and gates. The tracks are controlled by constant warning time devices. Wayside Horns are installed. Unlike E. “D” and E.” C” Street crossings the wayside horns are operable. Maximum train speeds at this crossing are 35 mph for passenger trains.

**Strategies for the Tacoma Dome Quiet Zone**

The Tacoma Dome Quiet Zone is 0.86 of a mile in length. The Tacoma Dome neighborhood constitutes an area of commercial, retail, hotels, the Tacoma Dome, the Auto Museum and light residential. The neighborhood surrounding S. “C” Street is mainly residential and commercial.

It is also necessary for the city and the community to understand that although the quiet zone will silence train horns for the purposes of the crossings, it may not eliminate train horn noise entirely. Sound Transit is still required by Federal mandate to sound their horn in case of an emergency, prior to any train movement, and when approaching men and equipment that are in the process of maintaining the tracks and other facilities. In the case of this Tacoma Dome quiet zone study area, when the train leaves Freighthouse Square Station the train must blow its horn regardless of an existing quiet zone. The crossing bell at the crossing will continue to sound irrespective of the quiet zone. The horn is primarily necessary for the warning of pedestrians and in particular those who are visually impaired.

**East “D” Street**

East “D” Street is a heavily used urban street with an AADT of 4,260. In particular, it is one of the primary roads accessing and leaving the Tacoma Dome. There are 4 driveways (3 on the west side of the crossing and one on the east side of the crossing) along East “D” Street. There are two viable SSMs for the East “D” Street crossing. Because of the apparent driveways along East “D” Street it makes it difficult to apply centerline medians to each of the approaches to the crossing unless the channelization of traffic patterns is changed. If it is acceptable to apply right in and right out at each of the driveways, medians would be appropriate and would cost considerably less than four quadrant gates. A four quadrant gate system is the other viable SSM alternative to the East “D”. Street crossing (Appendix D-1). Cost estimate is shown in Appendix E-1.

Implementing the use of medians would require a traffic lane revision resulting in the reduction of storage capacity to the northbound left hand turn traffic. The length of the medians must be 100’. The traffic lane revision would also provide better access to the driveway located in the southwest quadrant. Because of the close proximity to the E. 25th
Street intersection of East “D” Street to the crossing an 80’ median would be acceptable. The median to the south would be 100’ in length (Appendix D-2). Cost estimate is shown in Appendix E-2.

Reducing storage capacity may have unwanted impacts to the surrounding businesses, therefore, before implementing the use of medians as a quiet zone alternative a traffic study and a business impact study on the surrounding businesses will be required.

**East “C” Street**

East “C” Street is a heavily used urban street with an AADT of 2,500. In particular, it is one of the primary roads accessing and leaving the Tacoma Dome. There are 3 driveways (2 of the crossings access individual parking lots located north of the crossing and on either side of the street. On the west side and north of the crossing there is a driveway for access to the railroad bungalow. There are two viable SSMs for the East “C” Street crossing. Because of the apparent driveways along East “C” Street it difficult to apply centerline medians to each of the approaches to the crossing unless the channelization of traffic patterns is changed. If it is acceptable to apply right in and right out at each of the driveways, medians would be appropriate and would cost considerably less than four quadrant gates (Appendix D-3). Cost estimate is shown in Appendix E-3. A four quadrant gate system is the other viable SSM alternative to the East “C” Street crossing (Appendix D-4). Cost estimate is shown in Appendix E-4.

The length of the medians must be 100’. Because of the close proximity to the E. 25th Street intersection of East “D” Street to the crossing, an 80’ median would be acceptable. Median to the north would be 100’ in length.

Making changes to current traffic patterns may have unwanted impacts to the surrounding businesses, therefore, before implementing the use of medians as a quiet zone alternative a traffic study and a business impact study on the surrounding businesses will be required.

**South “C” Street**

South “C” Street is an often used urban street with an AADT of 1,750, but with less usage than the East C and East D Street crossings. There is a driveway immediately north and in the northwest quadrant of the crossing. There is also a driveway 90’ to the south of the crossing, leading to a business. There is currently a centerline median in front of the driveway, therefore extending the medians to 100’ in each approach to the crossing is the most viable and only option the City will consider. The length of the medians will be 100’ in the approach from the north and 90’ in the approach from the south (Appendix D-5). Cost estimate is shown in Appendix E-5.
Quiet Zone Construction Timeline

The construction of the Tacoma Dome quiet zone begins with the city submitting a letter of intent (Appendix "C") to Sound Transit with copies to WSDOT, the WUTC, the FRA, and the Tacoma Municipal Beltline (Tacoma Rail). Sound Transit would then request a diagnostic review of the crossing. In the case of the Tacoma Dome quiet zone the diagnostic review was scheduled and attended prior to the letter of intent. After the diagnostic review has been completed and the letter of intent has been forwarded, Sound Transit, WSDOT, the WUTC, the FRA and Tacoma Rail have 60 days to respond to the City’s intent to proceed with the quiet zone. After the City has received comments, the City will determine whether or not to proceed with the quiet zone. If the answer is yes than the quiet zone is moved forward. Sound Transit will then prepare detailed cost estimates for their portion of the work. Sound Transit and the City will enter into a construction and maintenance agreement for the quiet zone and is executed between the City and Sound Transit. Sound Transit will likely prepare the construction and maintenance agreement. Sound Transit will procure the necessary warning devices. The quiet zone is constructed and the written notice to the FRA and Sound Transit for the implementation of the quiet zone is given. The timeline to construct a quiet zone is between 12 and 18 months.
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# Appendix B-1

Create New Zone  
Manage Existing Zones  
Log Off

### Step by Step Instructions:

**Step 1:** To specify New Warning Device (For Pre-Rule Quiet Zone Only) and/or SSM, click the **MODIFY** button.

**Step 2:** Select proposed warning device or SSM. Then click the **UPDATE** button. To generate a spreadsheet of the values on this page, click on **ASM** button—This spreadsheet can then be used for ASM calculations.

**Step 3:** Repeat Step (2) until the **SELECT** button is shown at the bottom right side of this page. Note that the **SELECT** button is shown ONLY when the Quiet Zone Risk Index falls below the NSRT or the Risk Index with Horn.

**Step 4:** To save the scenario and continue, click the **SELECT** button.

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### Existing Conditions

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* Only Public At Grade Crossings are listed.  

Click for Supplementary Safety Measures (SSM)  
Click for ASM spreadsheet:  
* Note: The use of ASMs requires an application to and approval from the FRA.

### Summary

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1/31/2013
Appendix B-2

Step by Step Instructions:

Step 1: To specify New Warning Device (For Pre-Rule Quiet Zone Only) and/or SSM, click the MODIFY button.

Step 2: Select proposed warning device or SSM. Then click the UPDATE button. To generate a spreadsheet of the values on this page, click on ASM button. This spreadsheet can then be used for ASM calculations.

Step 3: Repeat Step 2 until the SELECT button is shown at the bottom right side of this page. Note that the SELECT button is shown ONLY when the Quiet Zone Risk Index falls below the NSRT or the Risk Index with Horn.

Step 4: To save the scenario and continue, click the SELECT button.

* Only Public At Grade Crossings are listed.

ALERT: Quiet Zone qualifies because SSM has been applied in each crossing.

Click for Supplementary Safety Measures (SSM)

Click for ASM spreadsheet: ASM

* Note: The use of ASMs requires an application to and approval from the FRA.

Summary

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<td>TACOMA DOM_39180</td>
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<tr>
<td>Estimated Total Cost:</td>
<td>$271,000.00</td>
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<tr>
<td>Nationwide Significant Risk Threshold:</td>
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<tr>
<td>Risk Index with Horns:</td>
<td>11337.59</td>
</tr>
<tr>
<td>Quiet Zone Risk Index:</td>
<td>4182.59</td>
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</tbody>
</table>

Alternative 1
Appendix B-3

<table>
<thead>
<tr>
<th>Crossing</th>
<th>Street</th>
<th>Traffic</th>
<th>Warning Device</th>
<th>Pre-SSM</th>
<th>SSM</th>
<th>Risk</th>
<th>Modify</th>
</tr>
</thead>
<tbody>
<tr>
<td>396639A</td>
<td>EAST &quot;D&quot; ST.</td>
<td>4260</td>
<td>Gates</td>
<td>0</td>
<td>13</td>
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<td>396640U</td>
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<tr>
<td>945989J</td>
<td>SOUTH C STREET</td>
<td>1751</td>
<td>Gates</td>
<td>0</td>
<td>13</td>
<td>3,339.37</td>
<td>MODIFY</td>
</tr>
</tbody>
</table>

* Only Public At Grade Crossings are listed.

**ALERT:** Quiet Zone qualifies because SSM has been applied in each crossing.

Click for Supplementary Safety Measures [SSM]

Click for ASM spreadsheet: ASM | * Note: The use of ASMs requires an application to and approval from the FRA.

**Summary**

<table>
<thead>
<tr>
<th>Proposed Quiet Zone:</th>
<th>TACOMA DOME QZ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type:</td>
<td>New 24-hour QZ</td>
</tr>
<tr>
<td>Scenario:</td>
<td>TACOMA DOM_39180</td>
</tr>
<tr>
<td>Estimated Total Cost:</td>
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</tr>
<tr>
<td>Nationwide Significant Risk Threshold:</td>
<td>13722.00</td>
</tr>
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<td>Risk Index with Horns:</td>
<td>11337.59</td>
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<tr>
<td>Quiet Zone Risk Index:</td>
<td>3782.22</td>
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</table>

Alternative 2


1/31/2013
Appendix B-4

Step by Step Instructions:

Step 1: To specify New Warning Device (For Pre-Rule Quiet Zone Only) and/or SSM, click the MODIFY button.

Step 2: Select proposed warning device or SSM. Then click the UPDATE button. To generate a spreadsheet of the values on this page, click on ASM button—This spreadsheet can then be used for ASM calculations.

Step 3: Repeat Step 2 until the SELECT button is shown at the bottom right side of this page. Note that the SELECT button is shown ONLY when the Quiet Zone Risk Index falls below the NSRT or the Risk Index with Horn.

Step 4: To save the scenario and continue, click the SELECT button.

* Only Public At Grade Crossings are listed.

Alert: Quiet Zone qualifies because SSM has been applied in each crossing.

Click for Supplementary Safety Measures (SSM)

Click for ASM spreadsheet: ASM

* Note: The use of ASMs requires an application to and approval from the FRA.

Alternative 3

Summary

<table>
<thead>
<tr>
<th>Proposed Quiet Zone</th>
<th>Type</th>
<th>Scenario</th>
<th>Estimated Total Cost</th>
<th>Nationwide Significant Risk Threshold</th>
<th>Risk Index with Horn</th>
<th>Quiet Zone Risk Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>TACOMA DOME QZ</td>
<td>New 24-hour QZ</td>
<td>TACOMA DOM_39180</td>
<td>$158,000.00</td>
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<td>11337.59</td>
<td>4057.8</td>
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</table>


1/31/2013
Appendix B-5

Create New Zone
Manage Existing Zones
Log Off

Step by Step Instructions:

Step 1: To specify New Warning Device (For Pre-Rule Quiet Zone Only) and/or SSM, click the MODIFY button.

Step 2: Select proposed warning device or SSM. Then click the UPDATE button. To generate a spreadsheet of the values on this page, click on ASM button—This spreadsheet can then be used for ASM calculations.

Step 3: Repeat Step (2) until the SELECT button is shown at the bottom right side of this page. Note that the SELECT button is shown ONLY when the Quiet Zone Risk Index falls below the NSRT or the Risk Index with Horn.

Step 4: To save the scenario and continue, click the SELECT button.

ALTERNAIVE 4


1/31/2013
Appendix B-6

Create New Zone
Manage Existing Zones
Log Off

Step by Step Instructions:

Step 1: To specify New Warning Device (for Pre-Rule Quiet Zone Only) and/or SSM, click the MODIFY button.

Step 2: Select proposed warning device or SSM. Then click the UPDATE button. To generate a spreadsheet of the values on this page, click on ASM button—This spreadsheet can then be used for SSM calculations.

Step 3: Repeat Step (2) until the SELECT button is shown at the bottom right side of this page. Note that the SELECT button is shown ONLY when the Quiet Zone Risk Index falls below the NSRT or the Risk Index with Horn.

Step 4: To save the scenario and continue, click the SELECT button.

Click for Supplementary Safety Measures [SSM]

Click for ASM spreadsheet: ASM

* Only Public At Grade Crossings are listed.

Summary

<table>
<thead>
<tr>
<th>Proposed Quiet Zone:</th>
<th>Tacoma Dome QZ</th>
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</thead>
<tbody>
<tr>
<td>Type:</td>
<td>New 24-hour QZ</td>
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<tr>
<td>Scenario:</td>
<td>Tacoma Dom_39326</td>
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<td>Estimated Total Cost:</td>
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<td>Nationwide Significant Risk Threshold:</td>
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<td>Risk Index with Horns:</td>
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<td>Quiet Zone Risk Index:</td>
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Manipulated Alternative


2/19/2013
APPENDIX “C”

Date

Associate Administrator for Safety
Federal Railroad Administration
Office of Safety, RRS-23
120 Vermont Avenue, NW
Washington, DC 20590

Subject: Notice for Intent to Establish a Railroad Quiet Zone Under 49 CFR 22.43
Quiet Zone: City of Tacoma Quiet Zone

This letter and the attachments are a Notice of Intent for the creation of a quiet zone. As required by the Federal Railroad Administration, the following information is provided to you and other parties.

All public highway-rail grade crossings to be included within the proposed quiet zone are:

<table>
<thead>
<tr>
<th>Crossing ID</th>
<th>Street Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>396639A</td>
<td>E. “D” Street</td>
</tr>
<tr>
<td>396640U</td>
<td>E. “C” Street</td>
</tr>
<tr>
<td>945989J</td>
<td>S. “C” Street</td>
</tr>
</tbody>
</table>

The quiet zone is proposed to restrict the routine sounding of locomotive horns 24-hours a day.

The City of Tacoma’s plan to implement a quiet zone at each crossing is:

E. “D” Street: Installation will comply with the requirements of Appendix A to Part 222 A 3 type of SSM

E. “C” Street: Installation will comply with the requirements of Appendix A to Part 222 A 3 type of SSM

S. “C” Street: Installation will comply with the requirements of Appendix A to Part 222 A 3 type of SSM
Notice for Intent to Establish a Railroad Quiet Zone Written Notice Recipients

1. Railroads operating over the grade crossings:

   Eric Beckman  
   Engineering Dept.  
   Sound Transit  
   401 S. Jackson Street  
   Seattle, WA 98104-2826

   Dale King  
   Rail Superintendent  
   Tacoma Rail  
   2601 SR 509  
   No. Frontage Road  
   Tacoma, WA 98411

2. State agency responsible for highway and road safety, and State agency responsible for grade crossing safety:

   Ahmer Nizam  
   Railroad Specialist  
   Washington DOT  
   PO Box 47329  
   Olympia, WA 98504-7329

   Katherine Hunter  
   Transportation Compliance Manager  
   Washington Utilities and Transportation Commission  
   1300 S. Evergreen Park Dr. SW  
   PO Box 47250  
   Olympia, WA 98504-7250

3. Federal Railroad Administration

   Associate Administrator for Safety  
   Federal Railroad Administration  
   Office of Safety, RRS-23  
   1120 Vermont Avenue, NW  
   Washington, DC 20590

   Christine Adams  
   Regional Manager for Grade Crossing Safety  
   Federal Railroad Administration  
   4106 NE 47th Ave  
   Vancouver, WA 98661
Name and title of person who will act as point of contact during the quiet zone development process:

    Chris Storey
    Project Engineer
    Public Works Engineering
    747 Market Street, Rm 544
    Tacoma, WA. 98402-3701
    Email: CSTOREY@ci.tacoma.wa.us

See the attached list of each party receiving this notification.

**ACTION REQUIRED**
Please consider this notice as the beginning date of the required 60-day comment period in the Quiet Zone process. The 60-day comment period for this Quiet Zone will end on (date sent plus 60 days), or when written comments or a “no comment” statement is received from each recipient of this notice.

Respectfully submitted,

Chris Storey
Project Engineer
E. 25TH ST

Freighthouse Square Sounder Station

Lakewood

Sound Transit

Tacoma Rail

Work by Sound Transit

- Remove 1 automatic flashing light pedestrian gate
- Install 1 automatic flashing light exit gates
- Install Exit Gate
- Install Management System
- Install Loop Detectors
- Remove Train Horns

Work by City

Install QZ Warning signs

M. Quad
Gates QZ

"East "D" Street Quiet Zone
DOT 396. 639A
MP 2.00

Appendix D-1
E. 25TH ST

FREIGHTHOUSE SQUARE
SOUNDER STATION

SOUND TRANSIT

TACOMA RAIL

WORK BY
SOUND TRANSIT

REMOVE: TRAIN HORNS

WORK BY
CITY OF TACOMA

REALIGN - LEFT HAND TURN LANE

EXTEND 20' MEDIAN TO 80' NORTH
INSTALL 100' MEDIAN SOUTH
INSTALL 02 WARNING SIGNS

E. "D" STREET
Quiet Zone
DOT 396-639A
MP 2.00

Appendix D-2
E. 25TH ST

WORK BY SOUND TRANSIT

REPLACE - Pedestrian Lights and gate's with exit lights and gates
INSTALL - Exit Gate Management System
INSTALL - In pavement Loop detectors
REMOVE - Train Horns
Work BY CITY
INSTALL - QZ warning signs

4-Quad Gates QZ

"East "C" Street Quiet Zone
DOT 3910-640U
MP 2.10

Appendix D.4
WORK BY SOUND TRANSIT

REMOVE TRAIN HORNS

WORK BY CITY OF TACOMA

EXTEND MEDIANs FROM 20' TO (NORTH - 80') (SOUTH - 100')

INSTALL Q2 WARNING SIGNS

EAST "C" STREET
QUIET ZONE
DOT 346-640U
MP 2.10

Appendix D-3
WORK BY
SOUND TRANSIT

REMOVE - TRAIN HORNS

WORK BY
CITY OF TACOMA

EXTEND - MEDIANS FROM 20
TO - (NORTH - 100')
10' - (SOUTH - 50')

INSTALL - QZ WARNING
SIGNS

South 'C' Street
Quiet Zone
DOT 945-989J
MP 2.36

Appendix D-5
### Tacoma Dome QZ Conceptual Cost Estimate

**Appendix "E-1"**

**East "D" Street (Four-Quad Gates)**

<table>
<thead>
<tr>
<th>Description</th>
<th>Units</th>
<th>Unit Cost</th>
<th>Quantity</th>
<th>Total</th>
</tr>
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<tbody>
<tr>
<td>Quiet Zone Crossing Signal Equipment Installation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mobilization 8% of Quiet Zone Construction</td>
<td>LS</td>
<td>$8,148</td>
<td>1</td>
<td>$8,148</td>
</tr>
<tr>
<td>Exit Gates</td>
<td>EA</td>
<td>$30,000</td>
<td>2</td>
<td>$60,000</td>
</tr>
<tr>
<td>Exit Gate Mgt. System</td>
<td>EA</td>
<td>$37,000</td>
<td>1</td>
<td>$37,000</td>
</tr>
<tr>
<td>Loop Detectors *</td>
<td>EA</td>
<td>$500</td>
<td>8</td>
<td>$4,000</td>
</tr>
<tr>
<td>Quiet Zone Warning Signs</td>
<td>EA</td>
<td>$324</td>
<td>4</td>
<td>$1,296</td>
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<tr>
<td>Remove train horns</td>
<td>EA</td>
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<td>$200</td>
</tr>
<tr>
<td>Labor (25% Construction)</td>
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<td></td>
<td></td>
<td>$25,462</td>
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**SUBTOTAL** $136,106

<table>
<thead>
<tr>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Sales Tax</td>
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**SUBTOTAL** $149,717

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<tbody>
<tr>
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**$194,632**

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Estimate is in 2013 dollars
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<td>Remove Train Horns</td>
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<tr>
<td>Realignment Lefthand turn lane</td>
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<tr>
<td>Labor (25% Construction)</td>
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<td>$1,138</td>
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</table>

**SUBTOTAL**                                      |       |           |          | $5,691 |

Sales Tax                                          | 8.40% |           |          | $478   |

**SUBTOTAL**                                      |       |           |          | $6,169 |

Contingencies                                     | 30%   |           |          | $1,851 |

**$8,020**

Estimate is in 2013 dollars
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<td>Quiet Zone Crossing Signal Equipment Installation</td>
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<td>Mobilization 8% of Quiet Zone Construction</td>
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<tr>
<td>Loop Detectors</td>
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<td>2</td>
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<tr>
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Estimate is in 2013 dollars
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<td>Mobilization 8% of Quiet Zone Construction</td>
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<tr>
<td>Median Barrier (minimum 6&quot;)</td>
<td>LF</td>
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<td>$1,280</td>
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<td>Remove Train Horns</td>
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</tr>
<tr>
<td>Labor (25% Construction)</td>
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<td>$200</td>
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**Subtotal** $4,185

Sales Tax 8.40% $352

**Subtotal** $4,537

Contingencies 30% $1,361

**Total** $5,898

Estimate is in 2013 dollars
<table>
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<th>Units</th>
<th>Unit Cost</th>
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<th>Total</th>
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</thead>
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<td>$1,280</td>
</tr>
<tr>
<td>Median Barrier (minimum 6&quot;)</td>
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<td>$648</td>
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<tr>
<td>Labor (25% Construction)</td>
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<td></td>
<td>$532</td>
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<td><strong>$2,830</strong></td>
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<tr>
<td><strong>Sales Tax</strong></td>
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<td><strong>$3,068</strong></td>
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<td><strong>$3,988</strong></td>
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</tbody>
</table>

Estimate is in 2013 dollars
RAIL CROSSING EVALUATION

APPENDIX B

Communications and Meeting Plan
Rail Crossing Evaluation

Communications and Meeting Plan

Prepared for:
City of Tacoma

Prepared by:
PH Consulting & Acutanza STS

December 2017
PURPOSE AND OBJECTIVES

This outlines an engagement strategy and an initial event plan for the Tacoma Rail Crossing project.

Purpose of Project

The purpose of this project is to develop alternatives to improve rail crossing conditions, including addressing operational, mobility, safety, noise, and economic or other quality of life issues at the six rail crossing locations below:

- Old Town: N. McCarver Street and Ruston Way
- Dome District: E. D Street between E. 25th and E. 26th Streets
- Dome District: E. C Street between E. 25th and E. 26th Streets
- Dome District: S. C Street north of South Tacoma Way
- West End: 6th Avenue and Titlow Beach
- West End: Narrows Marina and S. 19th Street

This project develops a framework through which crossings can be evaluated within any range of engineering options.

Engineering options may include, but are not limited to, a no action Option, implementation of various quiet zone standards (as applicable), and grade separations (vehicular and pedestrian, where appropriate). Issues, engineering options and rankings will be supported with public outreach. Rough order-of-magnitude estimates, including maintenance costs, will be developed for all scenarios. Concept plans are developed for all Options.
History/Background of Project

These locations have been identified as locations with problematic crossing issues by local residents and property owners.

Tracks in these locations are managed by BNSF or Sound Transit for Link Light Rail. BNSF tracks are used for freight and passenger rail (AMTRAK and Sounder Commuter Rail).

Tacoma Link Light rail in the Dome District was implemented in 2001 and is planned to be extended in 2018/2019. Regional light rail service from to Seattle is planned by 2039. Other regional rail projects include the Point Defiance Bypass that reroutes AMTRAK and Sounder to a shorter more direct rail line.

This Bypass project was expected to be complete and opened by the end of 2017. A current opening date has not been determined.

Project Funding

This project to evaluate engineering options is funded by the City of Tacoma.

Goals and Objectives of the Engagement Strategy

The goals for this plan are to:

- Create opportunities for neighborhoods to provide feedback and comments on the project purpose, help define and evaluate engineering options, and assess and review affects.
- Through collaboration and outreach, develop an optimal investment with community support and agency partnership to champion the project.
- Remain consistent with City of Tacoma outreach and engagement strategies and processes by communicating with internal City resources.

The objectives for this outreach are to effectively connect with communities located near the crossings and consider different engineering options at each location.
Key Project Messages

Problem
At-grade crossings with high train volumes experience noise from trains and horns, and blockages from trains. These blockages impact pedestrians, bicyclists, and vehicles.

Potential Engineering options
Engineering options may include, but are not limited to, a no action alternative, implementation of various quiet zone standards (as applicable), and grade separations (vehicular and pedestrian, where appropriate).

Anticipated Product
The anticipated product of this study is a summary report identifying Options of rail crossing engineering options at each location, screening of Options, with potential implementation strategies.

Schedule of Project and Outreach
A general schedule suggests a 7 to 8-month timeline to define engineering options at each location, develop preliminary concepts, and document results. An initial outreach effort is planned for early January to define community needs, concerns, and goals.

<table>
<thead>
<tr>
<th>November</th>
<th>December</th>
<th>January</th>
<th>February</th>
<th>March</th>
<th>April</th>
<th>May</th>
<th>June</th>
</tr>
</thead>
</table>

Outreach and Data Collection
Discovery

Analysis

Options Evaluation

Outreach

Documentation

Organization/Coordination/Partnerships
In addition to communities and collaborating with the City, the consultant team will work with other agency partners that may have relevant data and information as well as share a stake in the project. These stakeholders include other transportation providers (Pierce Transit, Sound Transit and WSDOT), the BNSF Railway, neighborhood business and community groups and local property owners.

Strategies

Community Meetings at each location – Set-up meetings near each of the locations broadly advertised to the communities at two junctures, first to introduce the project and second to review engineering options.

Listserv – Develop a list of interested parties to continue communications.

Drop ins – Offer opportunities for one-on-one drop-ins with businesses and property owners to review project status and take comments.

Agency Consultations – Agency consultations either with other service providers, regulatory agencies, data providers, etc. These meetings are expected to be technical in nature.
ROLES AND RESPONSIBILITIES
Project organization and the roles and responsibilities for outreach and engagement are described below.

City of Tacoma – The City will work in collaboration with the Consultant Team providing guidance, coordinate data, coordinate with internal departments. City staff will attend outreach events.

Consultant Team – The Consultant Team will develop materials and conduct analysis for review by the City staff. Consultant will coordinate and lead outreach events.

STAKEHOLDER ANALYSIS

Agencies and Local Jurisdictions
Coordination with regional agency stakeholders may be necessary to understand their ongoing planning activities and align outreach to provide clear and coordinated messaging for the public. These include, but are not limited to, the following agencies/jurisdictions:
- City of Tacoma
- Bicycle Pedestrian Technical Advisory Group
- City of University Place
- WSDOT
- BNSF
- Sound Transit
- Port of Tacoma
- Pierce County / Pierce Transit
- Pierce County
- FRA
- Emergency Responders
- Law Enforcement

Tribes
- Puyallup

Community Representatives
Coordination with Community Representatives is necessary to better understand the needs of community groups. These groups include, but are not limited to, the following:
- Old Town Business Association
- Dome District
- Business Owners in the Tacoma Narrows Business District
- West Slope Neighborhood Coalition
- Downtown on the Go
- Puyallup Watershed Initiative
- Neighborhood groups
- Modal Advocacy Groups
- Other business and economic development groups (Chambers of Commerce and Cross District Association)
- Environmental groups
- Transit riders
- Low income, special needs and other hard to reach advocacy groups
- Service providers
Freight providers
- Education providers

**General Public**
The general public refers to the broadest community that may be interested in this project. The general public includes those with disabilities, and those with limited English proficiency. Efforts will be made to coordinate with all interested parties including complying with Title VI.

**Media**
- TV Stations
- Radio stations
- Daily newspapers News Tribune
- Community newspapers

**Transportation Boards**
- Downtown on the Go

**Advocacy**
- Transportation Choices Coalition
- Transit Riders Union
- Washington Bikes
- Cascade Bicycle Club
- Washington Bikes
- Feet First

**PUBLIC ENGAGEMENT STRATEGY & TACTICS**

The following outlines the engagement strategies and tactics which are recommended for the alternatives development, and solution development phases of this project.

**Branding**
Create a consistent name such as ‘Rail Crossing Improvement Project’ adding location names for West End Crossings, Dome District, and McCarver/Ruston Way.

**Media Tracking**
Media (newspapers, blogs, etc.) will be tracked for relevant articles related to the project.

**Social Media**
Utilize city social media channels such as city Facebook site, Twitter, and e-alerts. Forward these messages for promotion on neighborhood and business district channels. (coordinate with the City’s Media and Communications Office on this, we will post news releases, updates on Facebook and Twitter)

**Project Folios**
Develop project folio with content describing project status and elements of the project to support outreach and public meetings.
Listserv
Maintain a specific listserv for the project and collect information from interested parties. The listserv will reach out to all interested parties to provide updates at key project milestones and track community interest.

Advertisements/Press Releases
Prepare both public meeting advertisements as well as press releases in advance of document publications, key decision milestones, and public meetings.

Translation
Translation of materials is not anticipated for this project.

Public/Neighborhood Meetings
Public meetings provide opportunities for the community to engage with the project team and comment at key decision milestones.
Meeting Notifications/Project Updates
- Advertise online and/or hard copy Tacoma News Tribune
- Issue News Releases
- Updates on Social Media
- Hand deliver/post flyers to local businesses
- Email blasts
- Update main City and project webpage
- Etc.
Event Plans

Two rounds of community engagement meetings are proposed as part of this engagement plan. The two rounds will be conducted close to the crossing locations listed below:

- Old Town: N. McCarver Street and Ruston Way
- Dome District: E. D Street between E. 25th and E. 26th Streets
- Dome District: E. C Street between E. 25th and E. 26th Streets
- Dome District: S. C Street north of South Tacoma Way
- West End: 6th Avenue and Titlow Beach
- West End: Narrows Marina and S. 19th Street

The Dome District locations will be combined into a single event and the West End locations will be combined into a single location.

Preparation for these events will include confirming the exercises with the project team and working to broadly advertise, invite and encourage members of the community to attend. The team will work with City communications staff and neighborhood staff to utilize City outreach channels. Locations will be in-close proximity to the crossings.

Tacoma Rail Crossing Evaluation

Community Kick off Meetings Event Plan Series of events in January 2018

Purpose: January meet with community groups to introduce the community to the project, confirm the community’s concerns and describe potential engineering options.

The outline for the first round of meetings is noted below:

- Welcome table and sign-in plus project flyer up to 15 minutes prior to the meeting to build the interested party list.
- Consultant Team/Rail Experts welcome neighbors, identifying their role in the project, provide an overview of the project, identify goals, how will we be successful, imagine you would need to start with a short presentation.
- Invite the community to participate in two activities:

  **Defining the problem:**
  With maps for each location and post-it notes or pens, have people add issues to a project map. A feedback and comment form will also be available to provide feedback on rail crossing issues.

  **Educate people on potential engineering options:**
  Provide posters of ‘toolbox’ of potential engineering options including order of magnitude costs and constraints.
Event Logistics:

Proposed meeting Timeline:

One hour before: Setup Meeting Room with Boards, Staff – tables for comments and sign in.

On Half Hour Before meeting: Brief Team

10 Minutes before Meeting Starts: Welcome Table Opens
Open, sign in and meet/greet with staff with content from City of Tacoma including an info sheet with the project schedule.

- Project Info Sheet
- Comment forms

Circulate to visit displays
15 Minutes After Start: Council Member Welcome and Meeting Purpose (Scripted Remarks)
Coffee and water supplied for the meeting
6-7 PM Clean up

Location and Room Layout maps: (Any pictures or layout)

TBD.

Directions:

TBD.

Staffing Plan

<table>
<thead>
<tr>
<th></th>
<th>Set-up</th>
<th>Welcome Table</th>
<th>Welcome Speech</th>
<th>Issues Station</th>
<th>Options Station</th>
<th>Comments Station</th>
<th>Clean Up</th>
<th>Media</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kirsten Reynolds</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Maryanne Zukowski</td>
<td>X</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Pablo Para</td>
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<td>X</td>
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<td></td>
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<tr>
<td>Jeanne Acutanza</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tim Oster</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Week of Dec 4-8
☐ Confirm Locations and Dates (Before or After Events)
☐ Confirm Plan with City Communications Staff and confirm any speakers
☐ Confirm Meeting Logistics are adequate for meetings (ADA Accessible, Transit friendly etc)
☐ City e-mail contact for project?
☐ Identify and Assign Graphic Materials
☐ Outline Messaging for Social Media, Folio and City Web page

Week of Dec 11-15
☐ Establish Media Outreach with city
☐ Review locations and add details for set up and reserve tables other
☐ Interviews with Community and Business Group leaders
☐ Media Announcement for public meetings
☐ Media Guide and Briefing Outlines
☐ Draft Materials Review for Client (Folio, Displays, Sign in, Comment form)

Week of Dec 18 –22
☐ Revise materials
☐ Launch Webpage
☐ Initial Social Media Notices Launch (fb, twitter, neighborhood, e-lerts, twitter, listerv)
☐ Notices to Neighborhoods, Tribe Special Interest Groups, Agency Partners etc.
☐ Invite Council members

Week of Dec 25-29
☐ Happy Holiday’s!

Week of Jan 1-5
☐ Material Revisions
☐ Confirm refreshments (water)
☐ Final Walkthrough

Week of Jan 8 – 12
☐ Events and post event download for modifications

Week of Jan 15-19
☐ Summarize meeting feedback and comments
☐ Update list

Tacoma Rail Crossing Evaluation
Community Options Review Meetings Event Plan
Series of events in April 2018

Event details will be developed after debriefing of first round of meetings.
The City of Tacoma is studying rail crossings in three areas of the City (Old Town, West End, and the Dome District). The purpose of this project is to solicit community input regarding your values and concerns, develop alternatives to address those concerns, and utilize your stated values to inform the development of improvements at these locations. Rail crossing issues that could be discussed include operational, mobility, safety, noise, and economic or other quality of life concerns.

OLD TOWN

Please tell us your concerns regarding the McCarver St./Ruston Way grade crossing and any changes that you think might help.

________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________

Please rank the Old Town issues listed below (fill in the circle) based on their importance to you.

<table>
<thead>
<tr>
<th>Issue</th>
<th>Lowest</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>Highest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Pedestrian/Bicycle Mobility</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Vehicle Mobility</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Cost of Improvements</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Other (Please Specify)</td>
<td>○</td>
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<td>○</td>
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<td>○</td>
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</tr>
</tbody>
</table>

If you would like to receive updates on the study, please provide the information below and you will be added to our mailing list.

First and Last Name________________________________________________________
E-Mail Address____________________________________________________________
The City of Tacoma is studying rail crossings in three areas of the City (Old Town, West End, and the Dome District). The purpose of this project is to solicit community input regarding your values and concerns, develop alternatives to address those concerns, and utilize your stated values to inform the development of improvements at these locations. Rail crossing issues that could be discussed include operational, mobility, safety, noise, and economic or other quality of life concerns.

WEST END

Please tell us your concerns regarding the West End (6th Ave/ Titlow and S. 19th St./ Narrows Marina) rail crossings and any changes that you think might help.

Please rank the West End issues listed below (fill in the circle) based on their importance to you.

<table>
<thead>
<tr>
<th>Issue</th>
<th>Lowest</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>Highest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Pedestrian/Bicycle Mobility</td>
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<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Vehicle Mobility</td>
<td>○</td>
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<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Cost of Improvements</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Other (Please Specify)</td>
<td>○</td>
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<td>○</td>
<td>○</td>
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<td>○</td>
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</tr>
</tbody>
</table>

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E-Mail Address_____________________________________________________________

Phone Number (optional)_________________________________________________________
The City of Tacoma is studying rail crossings in three areas of the City (Old Town, West End, and the Dome District). The purpose of this project is to solicit community input regarding your values and concerns, develop alternatives to address those concerns, and utilize your stated values to inform the development of improvements at these locations. Rail crossing issues that could be discussed include operational, mobility, safety, noise, and economic or other quality of life concerns.

**DOME DISTRICT**

Please tell us your concerns regarding the Dome District (E. C & D Streets between E. 25th and E. 26th Streets) grade crossings and any changes that you think might help.

________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________

Please rank the Dome District issues listed below (fill in the circle) based on their importance to you.

<table>
<thead>
<tr>
<th></th>
<th>Lowest</th>
<th></th>
<th></th>
<th></th>
<th>Highest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○ ○ ○</td>
</tr>
<tr>
<td>Pedestrian/Bicycle Mobility</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○ ○ ○</td>
</tr>
<tr>
<td>Vehicle Mobility</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○ ○ ○</td>
</tr>
<tr>
<td>Cost of Improvements</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○ ○ ○</td>
</tr>
<tr>
<td>Other (Please Specify)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○ ○ ○</td>
</tr>
</tbody>
</table>

If you would like to receive updates on the study, please provide the information below and you will be added to our mailing list.

First and Last Name______________________________________________________________

E-Mail Address__________________________________________________________________

Phone Number (optional)__________________________________________________________
RAIL CROSSING EVALUATION

APPENDIX D

Phase 1 Outreach Summary
RAIL CROSSING EVALUATION

Phase 1 Outreach Summary

Rail Crossing Improvements January Community Meeting Summary
The City of Tacoma is studying rail crossings in three areas of the City (Old Town, West End, and the Dome District). The purpose of the project is to evaluate existing conditions at the crossings, understand the local needs/concerns, and use that information to develop engineering options to address the priority issues identified. The issues that will be considered include operational, mobility, safety, noise, and economic or other quality of life concerns. This summarizes the initial outreach to the community that occurred at three meetings near the crossing locations in late January 2018 including comments received at the meetings and via on-line survey. The on-line survey closed on February 4, 2018 after the community meetings. This summary describes the feedback received, including priorities and values at each location and provides a list of community members wishing to be contacted related to the study.

The public community meeting dates and locations are listed below:

Meeting Overviews

West End January 23, 2018 Titlow Lodge
Attendance 64
- Desire for train noise mitigation was most prominent concern from meeting.
- Impacts such as noise, vibrations, and air-quality from trains idling near crossing for extended periods of time noted as concern.
- The need for safe crossings through this high pedestrian volume and high train speed area was noted along with other safety concerns.
- Comments were received concerning pollutants and hazardous materials that the trains may be carrying and related incident response planning.

Dome District January 24, 2018 LeMay America’s Car Museum
Attendance 7
- Desire for quiet zone was main request from meeting attendees.
- Developers are interested in developing residential units and were concerned about access control and fencing access with alleys, and/or responsibility for safety and noise.
- Sound Transit (ST) offered to coordinate with the Tacoma Link Extension planning. Outreach may start in April 2018.

Old Town January 25, 2018 Old Town Music Society
Attendance 10
- Extended durations of blockages from parked and slow-moving trains were noted as a concern.
- Gates, gate crossings, and speeds were a heavy topic in Old Town.
- Concerns were raised that gates and fences would not stop people from crossing further away from the existing crossing.
Notifications and Promotion of the Community Meetings
Notifications and promotion of the three community meetings included notices on the City of Tacoma website home page and established project page, development of flyers and posters advertising the meetings.

Additionally, there was direct outreach to community members. This included volunteer going door to door in the West End neighborhoods, and direct contact with the Dome District Development Group and neighborhood associations. Flyers were delivered to businesses and neighbors. The image from the poster is provided on the left. Notifications were pushed through the City website and social media channels, as well as a press release.

The Posters were placed at the following locations:

**West End**
- Boathouse 19 Restaurant
- Titlow Lunch and Grocery
- Narrows Marina
- Steamers Restaurant
- Beach Tavern

**Old Town**
- The Spar (Bar and Grill)
- Starbucks
- Columbia Bank
- Montamarta Kitchen (Restaurant)
- Throwing Mud Gallery
- Anthem Coffee and Tea

**Dome District**
- Freighthouse Square
- Starbucks
- University of Tacoma
General Observations
The West End, which is a largely residential community, had the highest attendance. The Dome District had the lowest attendance. There were 64 attendees at the West End meeting, 7 at the Dome District and 10 at Old Town. More respondents participated on-line. On-line, respondents provided 142 comments with the most comments related to West End.

West End
For West End respondents, both on-line and in person, train noise was by far the highest concern with safety and other concerns as a secondary concern. Other concerns were identified including hazardous materials, environmental concerns (coal dust), vibration and idling trains listed as concerns. King 5 media covered the West End meeting on January 23, 2018. The story is provided here: http://www.king5.com/video/news/local/improving-safety-at-railroad-crossings/281-2892233

Dome District
For Dome District respondents, on-line respondents far outweighed in person respondents. In person respondents were concerned about access especially related to future development. On-line respondents were most concerned about safety and other concerns such as vehicle access and blockages, pedestrian access and safety.

Old Town
On-line, Old Town respondents ranked safety the highest concern with train noise second highest. With lower attendance at the public meeting, on-line comments outweighed in person comments; however pedestrian bicycle access was a secondary concern for on-line respondents and in person comments.
Comments

Comments that were offered at the community meetings are listed in the Table 1 below:

<table>
<thead>
<tr>
<th>ID</th>
<th>Comments</th>
<th>West End</th>
<th>Dome</th>
<th>Old Town</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Please continue to work diligently to work to implement the safety changes ASAP. I appreciate your continuing efforts.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>2</td>
<td>Trains sitting on or near the crossing slow trains/fast trains going through one after the other education.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>3</td>
<td>All the money spend will not prevent people to cross the tracks further to the west of the intersection.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>4</td>
<td>Pedestrians being aware of their surroundings awareness of distance of trains halting.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>5</td>
<td>Noise: Hours of silence e.g. 11PM - 6PM No Whistles.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>6</td>
<td>Train horn noise and install wayside horns at 6th and 19th. Danger of 2nd train approaching in the opposite direction - signs that light-up.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>7</td>
<td>As a resident of day island lagoon side, I am very interested. This noise pollution is out of control.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>8</td>
<td>I've lived on Seashore Drive for 27 years. The train horns are maddening. Pleased to see city is getting involved. Please set-up quiet zone. Thank you for having this meeting.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>9</td>
<td>Train horn from 6th and 19th street is almost a constant horn due to proximity of the two crossings. A quiet zone or other means to help reduce noise would help.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>10</td>
<td>Length of train horn signals and volume. No evening or night relief.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>11</td>
<td>Please spend $$ to improve handicapped access.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>12</td>
<td>The length and amount of large vibration is causing damage to foundations and structures.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>13</td>
<td>Noise dust and air pollution.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>14</td>
<td>Train volume of traffic has increased dramatically. Engineers blow horn far too often and longer than necessary. Excessive noise.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>15</td>
<td>Evacuation plan in case of oil spill fire.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>16</td>
<td>Study should include # of trains/24 hours all night long blowing horns. Why isn't physical count and decibel study part of this? Why are you using an old map? Density of residents is important.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>17</td>
<td>Safety; Hazards/disasters on the tracks or at Narrows Marina, Boathouse 19, Steamers, on the beach that could be blocked at the crossing. Schedule of trains median and different gates crew access. Noise of horns, can they be automated on the gates?</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>18</td>
<td>Improve existing crossings and STOP USING WHISTLES except for emergencies. At present, some engineers are very considerate and others &quot;lay on&quot; the horn for very long periods of time.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>19</td>
<td>The West slope neighborhood coalition does not speak for the entire neighborhood.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>20</td>
<td>The speed of the trains and the noise.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>21</td>
<td>Train Noise! Some engineers liberally apply the horn in the middle of the night loud &amp; long. Idling trains shake the house during track switching/over change for hours sometimes.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>ID</td>
<td>Comments</td>
<td>West End</td>
<td>Dome</td>
<td>Old Town</td>
</tr>
<tr>
<td>----</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>22</td>
<td>We are on the slope above Titlow Park. The train horns are very loud with no speed attenuation even 4 miles from the crossing at 5th Ave. The noise level within our home is much worse in the summer when windows are open.</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Nice safety speed.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>24</td>
<td>Noise: Horn is too loud. Steilacoom has the best. We need a change I can't wear my hearing aids when the train blows its horn.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>25</td>
<td>The number of trains is increasing. Train horns are heard loudly at all hours of the night and early morning impacting sleep and quiet.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>26</td>
<td>Primary concern is horn noise. In particular it seems unfair that Old Town has a wayside rather than train mounted horn and the West End doesn’t make the safety measures necessary to consider this a quiet zone. Quieter is better than 100% quiet.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>27</td>
<td>The current horns are too loud and oscillate up the hill at all hours.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>28</td>
<td>Concerned about approximate residents to track noise.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>29</td>
<td>How do we work with BNSF and Tacoma Rail?</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>30</td>
<td>Lots of pedestrian use safety should be a top concern.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>31</td>
<td>Use illuminated signals establish quiet zone and pedestrian gates.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>32</td>
<td>Study should include number of trains in 24 hours.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>33</td>
<td>Volume and length of noise with no nighttime relief.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>34</td>
<td>Can Titlow area be designated as a quiet zone?</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>35</td>
<td>Crossing tracks is unsafely Train related accidents, HAZMAT fires.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>36</td>
<td>Gates not working correctly.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>37</td>
<td>Add a sign to look both ways.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>38</td>
<td>Can noise on train horns be standardized to be more like Amtrak versus freight trains.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>39</td>
<td>Concerned about what trains are carrying.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>40</td>
<td>Train Accident evacuation plan.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>41</td>
<td>Concern for materials being transported across crossings and hazmat issues Derailments near dense populations and recreational area and commercial facilities.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>42</td>
<td>Hazardous materials cargo.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>43</td>
<td>Train noise is accentuated across the water.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>44</td>
<td>Vibration of trains.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>45</td>
<td>Coal pollution or waste contamination of sound due to uncovered loads.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>46</td>
<td>Residential density should be a factor in the study this is an old map.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>47</td>
<td>Coal toxins adding to pre-existing environmental issues of this area with the narrows habitat redevelopment effected and our health.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>48</td>
<td>The horn sounds of the trains are way too loud.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>49</td>
<td>Please stop the noise.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>50</td>
<td>Crossing bars are not always working.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>51</td>
<td>Sidewalks needed huge increase in car traffic brewpub and restaurant and marina also markings of crosswalks.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>52</td>
<td>Impacts to local businesses could use wayside horns.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>53</td>
<td>Coordinate with Metro Parks redevelopment of Titlow Park.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>
The on-line survey allowed respondents the opportunity to provide open ended comments. In some cases these comments give greater details and depth on concerns.

**Table 2 On-line Comments**

<table>
<thead>
<tr>
<th>ID</th>
<th>Comments</th>
<th>West End</th>
<th>Dome</th>
<th>Old Town</th>
</tr>
</thead>
<tbody>
<tr>
<td>54</td>
<td>Acoustics of local topography worsens the noise -- how to mitigate.</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>55</td>
<td>Citizens are not educated to lookout for trains and trains are too fast.</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>56</td>
<td>Coordinate with Metro Parks on the plan.</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>57</td>
<td>Train idling noise for hours.</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>58</td>
<td>Impacts and efficiency of meetings at Titlow lodge. Train noise interrupts meetings at the lodge and at the park.</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>59</td>
<td>Noise echoes off west slope louder on Titlow Road than near train.</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>Noise is very loud. I don't live on the map, but noise vibrates up the slope.</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>61</td>
<td>This is the City's only westward facing park Metro parks is working with railroad on pond and working with BNSF.</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>62</td>
<td>Quiet Zone -- Noise impacts events at park.</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63</td>
<td>Connection of C Street north -- should this be closed does this create gridlock when trains block crossing.</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>64</td>
<td>Do Bells go for gate and horns sound.</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>65</td>
<td>Will multifamily developments be required to put up fencing? Who owns the alleys. Noise.</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>66</td>
<td>Rails are blocked and not cleared efficiently. (stay on tracks at crossings but could be moved).</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Noise</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>It needs to be a quiet zone so that it can become a walkable Transit Oriented area</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Safety.</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Safety.</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Noise and Safety.</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Safety with high speed trains.</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Pedestrian and/or vehicle overpasses?</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Safety.</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Look at the similar rail crossings in Seattle at Clay, Vine, Wall, and Broad streets where they have implemented a &quot;quiet zone&quot;. I believe a similar solution would work will in the Dome District.</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>No concerns. Look both ways, obey the present signage and stay off the tracks if a train is coming.</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Pedestrian signage is needed.</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>The City of Destiny (Tacoma) literally grew up around rail access. New residents should understand that rail connections are part of our DNA. People that move into high-end condos and apartments need to understand that history. It's like people who move near an airport and the complain about flight paths.</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Train goes too slow.</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Treat this crossing similar to McCarver...design it well, with safety in mind first. When this crossing is busy with people, it is very busy.</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Safety.</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Pedestrian Safety.</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Safety.</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>ID</td>
<td>Comments</td>
<td>West End</td>
<td>Dome</td>
<td>Old Town</td>
</tr>
<tr>
<td>----</td>
<td>--------------------------------------------------------------------------</td>
<td>----------</td>
<td>------</td>
<td>----------</td>
</tr>
<tr>
<td>18</td>
<td>This is not an area I am familiar with. Can’t really comment.</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Safety always my top concern. Don’t use this district so will not comment. Hope to use when Link comes to Tacoma.</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Noise and pedestrian safety (gates for people as well as cars)</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>None needed at that location, it’s industrial.</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Bike safety.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Safety.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Fix Titlow and 19th St first.</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Exactly the same as 6th and 19th.</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>Blocked traffic at C St crossing between E 25th &amp; E 26th when there is a stopped train at the Freight House Square over 1 block away.</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>This situation is very different than the other two as the trains are either taking off from a standstill or coming in at 5 miles an hr. to stop at the station so as the neighborhood found out wayside horns are NOT the answer though the use of skirts and vehicle curbing are a given. Here, because of the fact that this is a TOD (Transit Oriented District), the designation of a Quiet Zone is imperative to the dense residential development expected of a TOD. The Dome District should be, next to the Downtown, the densest neighborhood in Tacoma. To have that happen we need this Quiet Zone to encourage residential development here.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>Same as above.</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>Noise, bicycle and pedestrian crossing.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>I dislike the sound of the horn. Otherwise, nothing.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>31</td>
<td>I’m glad this is being looked at, but I am concerned that one of the fixes could be a stationary train whistle. I much prefer the actual train whistle. The stationary whistle is discordant, strange and grating.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>32</td>
<td>Crossings safety, signage to wait to cross until both directions clear.</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>Noise levels</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>34</td>
<td>I think decreasing noise of our crossing may help, and given less traffic at our crossing safety is less of a concern.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>35</td>
<td>Two recent [past two years] pedestrian deaths. It looks like changes are coming along.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>36</td>
<td>Safety.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>37</td>
<td>Safety with high speed trains.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>38</td>
<td>Pedestrian / bike bridge over crossing as long term. Interim improvement of gate over the sidewalk when a train is crossing.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>39</td>
<td>Safety.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>The crossing arms should have skirts that make going under the arm more difficult.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>41</td>
<td>Still watching cars pull up and stop on tracks waiting for Ruston way light to change. A lot of Darwin Awards need to be given out. Or better yet a stiff fine to those that stop on track, endangering train crews and others.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>42</td>
<td>I have no concerns. Look both ways, obey the signage and stay off the tracks. Pretty simple.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>43</td>
<td>I like the changes that are happening. Let’s get them on the ground and working and see how that changes behavior.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>44</td>
<td>Great job on improvements.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>45</td>
<td>That intersection is used by a lot of runners wearing ear buds. Perhaps add a sign warning that multiple trains use those tracks? I shake my head at all the runners who disregard the gate and flashing lights.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>46</td>
<td>Ruston Way and all of its parks are an absolute magnet for people. The promenade is busy with pedestrians, bikes and other recreation during all daylight hours. The BNSF corridor along Ruston Way is really important to the</td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>
greater Puget Sound economy. Recognizing that these two uses are nearly incompatible, BNSF must realize that its reticence to implement needed safety changes, allowances for increased public use and adaptations for expected climate changes is not a practical approach to its management of its rail corridors through the Puget Sound, specifically Tacoma. At McCarver, BNSF, City and Metro Parks must work together to enhance, improve and beautify the crossing for the citizens of Tacoma. At this day in age, no one should be hurt (much less killed) by train traffic. There should be easy and safe design changes implemented that take into account pedestrian and vehicular needs, and BNSF should be a prudent landowner and operator of an asset and help lead that change.

<table>
<thead>
<tr>
<th>ID</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>47</td>
<td>Safety.</td>
</tr>
<tr>
<td>48</td>
<td>Pedestrian Safety.</td>
</tr>
<tr>
<td>49</td>
<td>Safety.</td>
</tr>
<tr>
<td>50</td>
<td>Improve pedestrian crossing area to make safer.</td>
</tr>
<tr>
<td>51</td>
<td>Need for continued work on making this safe for pedestrians to cross.</td>
</tr>
<tr>
<td>52</td>
<td>More concerned with the Titlow area crossings.</td>
</tr>
<tr>
<td>53</td>
<td>Deaths and safety. Better barriers when trains coming.</td>
</tr>
<tr>
<td>54</td>
<td>It needs a better way to alert runners and walkers who may be unaware that two trains are passing at the same time. Maybe audio/visual or a sidewalk barrier that doesn’t open till all clear.</td>
</tr>
<tr>
<td>55</td>
<td>Noise reduction (every 2 hours throughout the night is unbearable), we hear it up at Proctor Street). Gate crossings for <em>pedestrians</em>.</td>
</tr>
<tr>
<td>56</td>
<td>The recent fatalities are tragic. Perhaps improved signage and additional education would be helpful.</td>
</tr>
<tr>
<td>57</td>
<td>A pedestrian overpass would be ideal, but cost is always a concern. Is this even feasible?</td>
</tr>
<tr>
<td>58</td>
<td>I think we should see how the improved signage is working.</td>
</tr>
<tr>
<td>59</td>
<td>Barriers seem clear. Education of children in schools and the general public as to appropriate rail crossing protocol would be helpful.</td>
</tr>
<tr>
<td>60</td>
<td>Please design for bike safety. Sorry to be so vague.</td>
</tr>
<tr>
<td>61</td>
<td>any grade crossing needs safety improvement. Zero safety laws Obama passed are being met.</td>
</tr>
<tr>
<td>62</td>
<td>I believe the quiet zone at McCarver was much needed and I’m sure the community appreciates it. As far as pedestrian fatalities, the public needs to be more diligent and take caution when approaching train tracks!</td>
</tr>
<tr>
<td>63</td>
<td>With the upgrades to pedestrian warning and controls, the crossing should be incident free, but until people take responsibility for their own actions, someone else will die at this crossing.</td>
</tr>
<tr>
<td>64</td>
<td>Since trains go by her quickly the wayside horns were a good alt to train horns but with double track and speed of trains, there needs to be more pedestrian deterrent to cross such as skirts on signal arms and signs and a good sidewalk/ bike lane that is big enough to allow the numbers using it during the summer and sunny days.</td>
</tr>
<tr>
<td>65</td>
<td>Sadly perhaps, given all the attention given this crossing, we are trying to make train traffic more real to modern persons at a location where it has been running for 100 plus years. While I am sorry for the lives lost and may be lost, I am left wondering what distracts humans from the reality of them versus mass steel rolling at any speed.</td>
</tr>
<tr>
<td>66</td>
<td>I’m primarily concerned with the S 19th St crossing. I worry about safety, then mobility of vehicles, pedestrians, and bicycles. Noise and the inconsistency of the horns blown by the different trains is also a big issue. I would like to see a</td>
</tr>
<tr>
<td>ID</td>
<td>Comments</td>
</tr>
<tr>
<td>----</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>67</td>
<td>Quieter with less impact to the environment- safer for bicycle crossings.</td>
</tr>
<tr>
<td>68</td>
<td>All the money currently spend can’t prevent from people being stupid. At least once or twice a day I see people walking across the tracks further down to the west to get to North 31st Street.</td>
</tr>
<tr>
<td>69</td>
<td>Absolutely none. This is the loudest train crossing I’ve ever witnessed. Its unfortunate people have not been paying attention to what they were doing and were hit.</td>
</tr>
<tr>
<td>70</td>
<td>We have lived at E. Day Island Blvd. for over 20 years, directly across from the 19th St. crossing. We have experienced all the mentioned problems stated in this survey. The number ONE major problem - is air pollution! The trains park directly across from our home waiting their turn to drive the Pt Defiance tunnel. They are parked from a few minutes to many minutes &quot;huffing and puffing&quot; emitting thick black diesel exhaust and soot. My wife developed bronchiectasis (look it up) during that time period. We are not saying the exhaust cased her medical problems, but it sure doesn’t help her condition! The pollution settles all over our deck and outdoor glass table. A white paper towel turns black when wiped on the table. All our neighbors have the same problem. Solution: make the trains stop South of Day Island. Comments please! Thank You.</td>
</tr>
<tr>
<td>71</td>
<td>Track accessibility from the park area.</td>
</tr>
<tr>
<td>72</td>
<td>Train noise. Damaging to children’s (and adult’s) heading and makes it difficult to enjoy the park and beach.</td>
</tr>
<tr>
<td>73</td>
<td>Noise pollution.</td>
</tr>
<tr>
<td>74</td>
<td>We have lived on Day Island for a little more than 25 years, my first wife died of non-small lung cancer in 2009. Our home is directly across the inlet from the 19th street crossing. My second wife has bronchiectasis and when we return from AZ in the summer she has added problems which breathing. Point being, trains park on the tracks directly across from our home and sit and run engines for many minutes to up to an hour. Not just one train but many trains each day. Consequently, every day we get a covering of diesel particles on our glass out door table and everything else! EVERYDAY. So - problem for us is a major air pollution problem. Same for all of our neighbors on the East side of Day Island. Solution for us - have the trains STOP several miles South of Day Island while they wait their turn to go through the Pt. Defiance tunnel. YOUR consideration will improve our lives. PS - we have lived with this for a very long time!</td>
</tr>
<tr>
<td>75</td>
<td>Why do the trains need to blow their whistles, don’t they think we can see the crossing arm come down and the flashing red lights and the ding ding noise? At a stop light do we get a horn or do we know that we need to stop. Doe’s the RR think we are stupid.</td>
</tr>
<tr>
<td>77</td>
<td>The frequency of train whistles and they amount of times they feel necessary to use them is too much, especially overnight.</td>
</tr>
<tr>
<td>78</td>
<td>Very, very noisy, day and night with whistle-blowing!</td>
</tr>
<tr>
<td>79</td>
<td>Safety.</td>
</tr>
<tr>
<td>80</td>
<td>It is so loud all through the night. If all the sound is necessary for safety, then so be it, but is there really nothing that can be done to reduce the noise?</td>
</tr>
<tr>
<td>81</td>
<td>The train whistles are often very loud. This is particularly disruptive through the night as it leads to multiple awakenings. I am also confused by the variability, some trains can really lay on the horn, with long and very loud horns, whereas others can be much shorter and somewhat quieter and on rare occasions a train can go by without any horn. Are the longest and loudest horns necessary all those times?</td>
</tr>
<tr>
<td>ID</td>
<td>Comments</td>
</tr>
<tr>
<td>----</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>82</td>
<td>Safety with high speed trains.</td>
</tr>
<tr>
<td>83</td>
<td>Sound barrier wall for this corridor? Starting from the Day Island bridge to the Titlow crossing (then no barrier so as not to obstruct the water views from Titlow park).</td>
</tr>
<tr>
<td>84</td>
<td>Safety/noise/ speed.</td>
</tr>
<tr>
<td>85</td>
<td>A wayside horn and skirt the crossing arms are immediate thoughts.</td>
</tr>
<tr>
<td>86</td>
<td>Very few vehicles use this crossing since the street ends. Better would be a gate that comes down for people crossing the tracks.</td>
</tr>
<tr>
<td>87</td>
<td>We live between 6th and 19th and the trains sound their horns the whole way through. The noise is excessive.</td>
</tr>
<tr>
<td>88</td>
<td>Reduce train and horn decibels. The old town crossing and Steilacoom noise levels are more acceptable.</td>
</tr>
<tr>
<td>89</td>
<td>Noise.</td>
</tr>
<tr>
<td>90</td>
<td>I think they are well marked and safe now.</td>
</tr>
<tr>
<td>91</td>
<td>No changes necessary. Obey the signage, stay off the tracks if a train is coming.</td>
</tr>
<tr>
<td>92</td>
<td>The trains whistles are too loud. They are inconsistent in length and intensity. I’d like to see a train crossing similar to the one in Old Town.</td>
</tr>
<tr>
<td>93</td>
<td>Noise!</td>
</tr>
<tr>
<td>94</td>
<td>I don’t have any concerns for this area because I don’t know it as well.</td>
</tr>
<tr>
<td>95</td>
<td>No changes necessary. Obey the signage, stay off the tracks if a train is coming.</td>
</tr>
<tr>
<td>96</td>
<td>Sometimes the trains blow their horn way too late. It is just before crossings sometimes. The horn noise is also so loud it could cause hearing loss. That is not good for pedestrians walking the path in Titlow park that is right next to the tracks. Adults can cover their ears and protect from the noise, but small kids and animals cannot. I think the Wayside horns would be a great option to help with this.</td>
</tr>
<tr>
<td>97</td>
<td>Exceptionally noisy, a lot of trains go through, blaring their horns at all hours. Quiet zone needed for people who live her and come for recreational purposes to enjoy the beach, the park, the restaurants, and the marina.</td>
</tr>
<tr>
<td>98</td>
<td>Night horn noise. Lived 13 years a mile from crossing and it still wakes me at night Please install an automated horn system.</td>
</tr>
<tr>
<td>99</td>
<td>Deafening noise.</td>
</tr>
<tr>
<td>100</td>
<td>Too loud! Frequent trains throughout the night are very disturbing.</td>
</tr>
<tr>
<td>101</td>
<td>A bridge or tunnel for pedestrian traffic here</td>
</tr>
<tr>
<td>102</td>
<td>I live in this neighborhood and have concerns about the frequency of trains now using the rails and how it impacts noise pollution. I’d like to know more information about how noise will be decreased as trains increase. I also have seen how much the Titlow park area is growing and improving and have concerns about what cargo is being shipped in this highly public area. What would happen if there were an accident or train derailment, what could we expect as a community to keep us safe and free from harm or exposure.</td>
</tr>
<tr>
<td>103</td>
<td>Metro parks has been working with BNSF and other partners on the cleanup and enhancement of Titlow Lagoon and the park for over a decade. This is a complex and expensive project, and MPT appreciates BNSF’s support along the way. The fact still remains that Titlow is Tacoma’s only west facing waterfront park, and it is horribly bisected by an extremely busy, dangerous and loud rail corridor. Again, MPT recognizes the importance of this corridor to the general wellbeing of the Puget Sound economy, but we believe that BNSF has the duty to be good stewards AND neighbors to the people near their operations. MPT would like to see enhanced safety designs placed at the 6th Avenue crossing along with quieter horns like those at McCarver that won’t disrupt park patrons as much as the current situation.</td>
</tr>
<tr>
<td>ID</td>
<td>Comments</td>
</tr>
<tr>
<td>-----</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>104</td>
<td>The noise from the freight train horns are ridiculous! Why do they need to blow their horns when there is a crossing guard on both sides of the sidewalk? And why do they need to blast them for so long? Amtrak trains are minimal, but freight trains are very alarming and scare people down at the park. The noise is a major problem and it needs to be eliminated. Even with my windows shut in my home it is very, very loud!</td>
</tr>
<tr>
<td>105</td>
<td>Very concerned about the noise as a result of the intense rail traffic in this corridor!! While the horns are important, when your u can have up to 50 trains a day at all hours blaring, that requires some mediation. Cmon City staff! I am glad this “study” is being done, but ultimately will the City belly up to the table and do something about it?! Please help us. And there is so much foot and bicycle traffic in the area given the beach and restaurants- you simply must be more active in managing that area. Have you ever communicated what the emergency procedures are to residents in the event of a derailment or hazmat incident?! No!! Hop to it! You are neglecting your duties to serve this community! Get in there and manage to situation before you have a massive incident on your hands. You all are extremely lucky nothing has happened yet. I encourage you and City Council to use this time more effectively to come up with a plan; otherwise you’ll all be culpable. I simply cannot believe you would hire a PR firm to front in a public meeting for highly paid staff. The firm was elusive at best, and it was a total failure not having one single rail representative present. You must be more assertive. Also, your website for this notice and feedback needs updating to reflect the actual calendar (you’d well be into analysis by now!), and your survey software INCORRECTLY has a limit to ISPs, so households with multiple residents or libraries are ARTIFICIALLY being eliminated! You are suppressing their voice!</td>
</tr>
<tr>
<td>106</td>
<td>Noise abatement.</td>
</tr>
<tr>
<td>107</td>
<td>Noise in the middle of the night</td>
</tr>
<tr>
<td>108</td>
<td>Noise, Noise, Noise!!! The noise and speed of the trains is too much. To frequent, too fast, and too damn loud. Solution? Slow the trains down and build better safety infrastructure.</td>
</tr>
<tr>
<td>108</td>
<td>Slower trains especially Amtrak.</td>
</tr>
<tr>
<td>110</td>
<td>Flow/back-up of traffic on 19th Street for trains and lack of sidewalks for safety. The area at both intersections needs to be upgraded cosmetically and for safety.</td>
</tr>
<tr>
<td>111</td>
<td>Train Noise--why do the freight trains have to blast their horns so long from the Day Island Bridge through Titlow?</td>
</tr>
<tr>
<td>112</td>
<td>The noise pollution from these crossings and increased train travel produces constant noise at all hours--let’s find a way to do a silent crossing here!</td>
</tr>
<tr>
<td>113</td>
<td>Train noise too loud would like horn to be quieter.</td>
</tr>
<tr>
<td>114</td>
<td>I would certainly appreciate a lower volume warning.</td>
</tr>
<tr>
<td>115</td>
<td>They need to eliminate the train horns and install the same system that Old Town has. The Old Town horn at the crossing is plenty loud and consistent. It's really loud at Titlow and because the two crossings are so close we have to hear their loud horns twice every time. It's tough sometimes.</td>
</tr>
<tr>
<td>116</td>
<td>When I was born 73 years ago my family lived at 18th &amp; walters road. I built a house on 17th 35 years ago. I LOVE THE TRAIN WHISTLES. I also resent people who moved here and now complain about the train noise. I do not want any changes to the train music.</td>
</tr>
<tr>
<td>117</td>
<td>Safety. With lower traffic than OLD TOWN, I see this as a lower priority. Current system works.</td>
</tr>
<tr>
<td>118</td>
<td>Lots of noise at this crossing! Residential neighborhoods surround the crossing and the non-stop trains are so loud!</td>
</tr>
<tr>
<td>ID</td>
<td>Comments</td>
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<tr>
<td>-----</td>
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</tr>
<tr>
<td>119</td>
<td>NOISE! Same issues with safety and mobility, but noise of trains is foremost.</td>
</tr>
<tr>
<td>120</td>
<td>NOISE (heard at N. 29th/Proctor and in Fircrest), Pedestrian gates wherever trains cross sidewalks</td>
</tr>
<tr>
<td>121</td>
<td>The fence between the public areas and tracks seems to help keep people off the tracks.</td>
</tr>
<tr>
<td>122</td>
<td>Noise, train signals all hours of the night.</td>
</tr>
<tr>
<td>123</td>
<td>Sight distance is a big issue here. When leaving Narrows Marina, you do not see northbound trains until they are very close. I have observed drivers considering driving around the gate.</td>
</tr>
<tr>
<td>124</td>
<td>Slow trains as they approach crossing areas, sound bells before trains reach crossing areas, decrease whistle volume especially at night, use whistle in appropriate areas (not necessary while engine is actually already in the intersection), use soundproofing materials similar to freeway noise reduction materials, education of the public in regard to crossing behavior and the possibility of trains coming from the opposite direction when one train has passed.</td>
</tr>
<tr>
<td>125</td>
<td>There are several businesses located literally on both sides of the tracks, along with access to public beach, trails, park. Particularly in the summer time, this is an incredibly busy area with people on bikes, walking with boats/kayaks, kids, dogs, you name it. Identifying greater safety opportunities would be issue #1, thereafter the next priority is to improve the experience and mitigate the impact of trains crossing for people immediately in the vicinity- both visitors and residents. It can be a very negative experience for bystanders and residents.</td>
</tr>
<tr>
<td>126</td>
<td>Train horns are too loud and they honk them too many times at the crossing</td>
</tr>
<tr>
<td>127</td>
<td>Noise from train whistle.</td>
</tr>
<tr>
<td>128</td>
<td>Train noise excessive...need silent intersection.</td>
</tr>
<tr>
<td>129</td>
<td>Need quiet zones at both crossings, there are too many trains running through that area.</td>
</tr>
<tr>
<td>130</td>
<td>Again, bike safety...</td>
</tr>
<tr>
<td>131</td>
<td>we need to comply to safety laws period!</td>
</tr>
<tr>
<td>132</td>
<td>First off, all the noise at these two crossings is exceptionally bad and needs to be addressed ASAP! Not sure why the highest priced houses in Tacoma are still without a quiet zone. The train whistle noise at the Titlow crossing specifically is so loud that kids on the beach or boardwalk will suffer hearing damage without proper ear protection. I work for the city railroad and am required to wear hearing protection, but the public has to suffer. These two crossings need a quiet zone badly! Can’t understand why the city would be discussing a quiet zone at “D” and “C” Street ahead of Titlow and 19th St.! Ridiculous!</td>
</tr>
<tr>
<td>133</td>
<td>The same problem exists at these crossings, people go around the gate before the warning devices stop. Change the gates to a European design. Gate rolls out from the side to block the street and sidewalk, with fences on both sides of the crossing.</td>
</tr>
<tr>
<td>134</td>
<td>Noise and frequency.</td>
</tr>
<tr>
<td>135</td>
<td>Habitual parking of an idling train near the south end of Day Island is confusing to drivers. The train's light gives the appearance that it is approaching the crossing, yet the bars are not down. This is unsafe. Why not have the train idle at Pioneer?</td>
</tr>
<tr>
<td>136</td>
<td>The constant blaring of train horns is excessive and goes on round the clock, if we could create a quiet zone, at a minimum from 6:00pm to 6:00am that would be ideal.</td>
</tr>
<tr>
<td>137</td>
<td>The noise and crossing when train is coming. Worry about pedestrians at crossing.</td>
</tr>
<tr>
<td>ID</td>
<td>Comments</td>
</tr>
<tr>
<td>----</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>138</td>
<td>Stationary whistle to alert those in the proximity rather than use of train whistle.</td>
</tr>
<tr>
<td>138</td>
<td>Trains go thru here fast so wayside horns may be the answer to noise along this track localizing it at the crossing.</td>
</tr>
<tr>
<td>140</td>
<td>Freight/coal trains blow whistles EXTREMELY LOUD and for extended durations late at night. Add to that the close proximity of the two crossings and the growth in train traffic and the noise issue is seriously and unnecessarily disruptive.</td>
</tr>
<tr>
<td>141</td>
<td>Noise. Train whistles in the middle of the night that go on for more than 3 minutes at a time.</td>
</tr>
<tr>
<td>142</td>
<td>All night, every day countless times a day there is train related noise. Some corporation is making huge benefits and monies at the expense of peace of mind and sleep. All doors and windows are closed and still the noise is unbearable. It is approximately a mile between 6th Avenue and 19th Street, yet the horn must sound 3 times, so most engineers’ just sound the horn 1 long horn all along the entire mile. Depending where the horn is initially sounded, it can be an internal surprise and shake you to your soul. People as far as Bridgeport Way complain about being awakened by the train noise. Why can’t a different pitch of horn be used? The commuter trains are less intrusive. There are accessibility improvements that must be made along with environmental necessities of quiet and serenity. We must do more to preserve our values, heritage, quiet and critical access to our precious waterfront areas. We deserve access, consideration and preservation equal to other Tacoma waterfront communities. The Titlow area should be made a quiet zone - other cities have done this for their entire city boundaries. The area is often used for a construction staging zone for the railroad with large machines and vehicles, people shouting well before 7 AM. It is unfair that we should have this going on continuously. Entire cargo trains sit and run their engines for hours, sitting and waiting for who knows what. Then attempt to sound the horn 3 times within a block. Please make the area a quiet zone, require the trains to “stage” elsewhere and install walkways and street stripping for walkers, or a rails to trails project. If this is to continue, the railroad should be required to put up sound walls and or provide sound proof windows similar to what is done at the airport. Some of the trains are so loud, it brings to question how current the equipment is and if it is maintained properly. The screeching and rubbing of wheels is high pitched and dangerous to hearing-can the City of Tacoma require better quieter equipment?</td>
</tr>
</tbody>
</table>
Contact List

A list of meeting attendees and on-line survey participants is available upon request.
Phase 2 Outreach Summary

Rail Crossing Improvements May Community Meeting Summary
The City of Tacoma is studying rail crossings in three areas of the City (Old Town, West End, and the Dome District). The purpose of the project is to evaluate existing conditions at the crossings, understand the local needs/concerns, and use that information to develop engineering options to address the priority issues identified. The issues that will be considered include operational, mobility, safety, noise, and economic or other quality of life concerns. This summarizes the second round of outreach to the community that occurred at three meetings near the crossing locations in late May 2018. The purpose of the meetings was to convey a set of proposed improvement options based on community priorities identified through surveys and public meetings held in January 2018 along with a technical evaluation conducted by consultant technical experts. The public community meeting dates and locations are listed below:

**Meeting Overviews**
At all three events a short presentation was led by the City of Tacoma and included a discussion of next steps.

---

**West End**
6th Avenue and S. 19th Street Crossings
Tuesday, May 22, 2018 4-6PM
Titlow Lodge
8426 6th Avenue,
Tacoma, WA

**Old Town**
McCarver Street Crossing
Wednesday
May 23, 2018 4-6PM
Old Town Music Society
2101 N 30th Street,
Tacoma, WA

**Dome District**
South C Street, East C Street and East D Street Crossings
Thursday, May 24, 2018 4-6PM
323 Puyallup Avenue
Tacoma, WA

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**NEXT STEPS**

<table>
<thead>
<tr>
<th>June 2018</th>
<th>Complete Rail Crossing Report Available online at cityoftacoma.org/railcrossings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer/Fall 2018</td>
<td>Report &amp; Recommendations to City Council</td>
</tr>
</tbody>
</table>

**CURRENT STATUS**

**West End: Titlow & S. 19th**
Funding: $1.1 Million for Titlow
$400,000 shared at Titlow and S. 19th
Begin Design: Summer/Fall 2018

**Old Town: McCarver**
Funding: $350,000
Sidewalk work: June 2018
Pedestrian gates: September/October 2018

**Dome District: E, C & D Streets and S. C Street**
Identify funding for future improvements
West End May 22, 2018 Titlow Lodge
Attendance  37
• Senator Steve O’Ban and Representative Dick Muri, representing the 28th Washington State Legislative District attended the meeting. Both advocated for funding to address noise and other issues at the West End crossings. Because of these efforts, the 6th Ave & S 19th St crossings received $400,000 in funding during this legislative session. Both legislators spoke and answered questions.
• People were generally grateful for the attention to the issues and the potential projects to reduce noise.
• Evacuation planning was discussed, and City noted planning by emergency services.
• The project consultant and city team reviewed the earlier outreach, potential ideas from the toolbox and technical evaluation.
• West End was by far the highest attended.

Old Town May 23, 2018 Old Town Music Society
Attendance 16
• People were generally grateful for the efforts of the city in addressing the issues of safety and noise.
• The project consultant and city team reviewed the earlier outreach, potential ideas from the toolbox and technical evaluation.
• Concerns were again raised related to safety, creating a new grade-separated crossing, slowing trains and eliminating the quiet zone.
• Trains parked on the track and blocking the crossing to vehicles, pedestrians, and bicycles for long periods of time is seen as very frustrating.

Dome District May 24, 2018 323 Puyallup Avenue
Attendance 10
• Attendees at this location were not in favor of grade separated crossings or road closures.
• Participating partners in attendance at this meeting were WSDOT Rail, Tacoma Rail, and Sound Transit.
• Comments heard during this meeting were supported interest in a quiet zone.
• People were generally grateful for the efforts of the city in addressing the issues of safety and noise.

Notifications and Promotion of the Community Meetings
Notifications and promotion of the three community meetings included notification to all attendees that signed up on the project listserv, notices on the City of Tacoma website home page, and established project page, development of flyers and posters advertising the meetings (see below) and notifications through the City website and social media channels like Next Door, as well as a press release.
Additionally, outreach included direct outreach to community businesses. The above posters were placed at the following locations:

**West End**
- Boathouse 19 Restaurant
- Narrows Marina Bait/Tackle
- Titlow Lunch and Grocery
- Steamers Restaurant
- Beach Tavern

**Old Town**
- The Spar (Bar and Grill)
- Spar Restaurant
- Starbucks
- Columbia Bank
- Montamarta Kitchen (Restaurant)
- Throwing Mud Gallery
- Anthem Coffee and Tea

**Dome District**
- Freighthouse Square
- 323 Puyallup Ave

No public comment was solicited at this meeting however attendees were invited to sign-in and will be added to the project listserv for any future project updates.
RAIL CROSSING EVALUATION

APPENDIX F

Crossing Hazard Index Definition:
Crossing Hazard Index Definition:

A hazard index for each public rail-highway crossing in the state is calculated annually using Federal Railroad Administration (FRA) formulas and guidelines. The Railroad-Highway Grade Crossing Handbook – Revised Second Edition (the handbook) is used as a basis for the hazard index calculation and is a single reference document based on the prevailing and best practices as well as adopted standards relative to rail-highway crossings. The guidelines and alternative improvements presented in the handbook are primarily those that have proved effective and are accepted nationwide.

A rail-highway crossing is unique in that it constitutes the intersection of two very different transportation modes. The hazard index is a measure of the potential for crashes (or predicted number of crashes per year) at the rail-highway crossing. The FRA safety database serves as the source of information for train traffic and accident history at all crossings. The hazard index is based on many factors including the number trains and vehicles at the crossing, the number of main tracks, is the road surface type, maximum train speed, and the number of highway lanes.

Because the FRA safety data cannot describe the precise characteristics of each crossing, such as sight distances, the calculation of predicted accident rates is improved by the addition of actual accident experience at a rail-highway crossing. The predicted accident rate is calculated using the factors above and the result is then multiplied by a factor containing the actual accident experience (usually the crash rate over a five-year period). The final hazard index is obtained after applying a normalizing constant. The normalizing constant correlates the accident prediction formulas with actual crash rates on a nationwide basis. This Accident prediction and resource allocation procedure normalizing constant is provided by the FRA.

The hazard index is used to compare the crash potential (predicted number of crashes per year) of one crossing to another in a consistent manner. Crossings with the highest hazard index value are studied in detail. In order to gauge effectiveness of likely countermeasures, crossings selected for improvement are analyzed based upon seven decision criteria to generate a final score or ranking. The seven decision criteria applied are the hazard index, type of improvement selected, type of protection already on the rail corridor, the type of development near the rail-highway crossing, motorist expectancy with regards to train movements, the type of highway, and finally the public or local authority interest or comments on safety of the rail-highway crossing. The seven decision criteria allow Agencies to incorporate the concerns of local officials, new development issues (such change of traffic patterns), and rail corridor projects into the project selection process.
RAIL CROSSING EVALUATION

APPENDIX G

Concept Drawings of Options
Option 1A: Warning Signage
Additional Train

BNSF RAILWAY MAINLINE

MCCARVER ST

ESTIMATED PROJECT COST:
PE/DESIGN: $25,000
ROW: $0
CONSTRUCTION: $125,000
TOTAL: $150,000

DOT Crossing
Inventory No:
085730J
Railroad Crossing Improvements:
Option 1C: Non-Motorized Grade Separation (Pedestrian Bridge)

LEGEND

- - - ROW (Approx.)

PEDESTRIAN RAILING

PAVEMENT

WALKWAY

ESTIMATED PROJECT COST:
PE/DESIGN: $4,000,000
ROW: $1,500,000
CONSTRUCTION: $14,500,000
TOTAL: $20,000,000

DOT Crossing
Inventory No: 085730J

PH Consulting LLC
Balanced Transportation Solutions
www.phtraffic.com

RAIL CROSSING IMPROVEMENTS ANALYSIS
MCCARVER ST
TACOMA, WA

PROJECT NO. 17-015
EXHIBIT-1
Option 1E: Two Quadrant Gate System and Medians

BNSF RAILWAY MAINLINE

RAIL CROSSING IMPROVEMENTS ANALYSIS
MCCARVER ST
TACOMA, WA

17-015
EXHIBIT-1

LEGEND

R/R GATE
CURB / MEDIAN
ROW (Approx.)

DOT Crossing
Inventory No:
085730J

ESTIMATED PROJECT COST:
PE/DESIGN: $50,000
ROW: $250,000
CONSTRUCTION: $400,000
TOTAL: $700,000

PH CONSULTING LLC
Balanced Transportation Solutions
www.phtraffic.com

RAIL CROSSING IMPROVEMENTS ANALYSIS
MCCARVER ST
TACOMA, WA

PROJECT NO:
17-015
EXHIBIT-1
RAIL CROSSING IMPROVEMENTS ANALYSIS

MCCARVER ST

TACOMA, WA

17-015

EXHIBIT-1

PH CONSULTING LLC
www.phtraffic.com

RAIL CROSSING IMPROVEMENTS ANALYSIS

MCCARVER ST

DOT Crossing No:

Inventory No:

ROW (Approx.)

TRANSIT ROW:

TOTAL: $400,000
CONSTRUCTION: $350,000
ROW: $50
PE/DESIGN: $50,000
ESTIMATED PROJECT COST:

TOTAL: $400,000
CONSTRUCTION: $350,000
ROW: $50
PE/DESIGN: $50,000
ESTIMATED PROJECT COST:

Option 1F: Four Quadrant Gate

BNSF RAILWAY

MAINLINE

ROW (approx.)

R/R Gate

LEGEND

PH CONSULTING LLC
www.phtraffic.com

17-015

MCCARVER ST

TACOMA, WA

RAIL CROSSING IMPROVEMENTS ANALYSIS

EXHIBIT-1

PH CONSULTING LLC
www.phtraffic.com

RAIL CROSSING IMPROVEMENTS ANALYSIS

MCCARVER ST

DOT Crossing No:

Inventory No:

ROW (Approx.)

TRANSIT ROW:

TOTAL: $400,000
CONSTRUCTION: $350,000
ROW: $50
PE/DESIGN: $50,000
ESTIMATED PROJECT COST:

TOTAL: $400,000
CONSTRUCTION: $350,000
ROW: $50
PE/DESIGN: $50,000
ESTIMATED PROJECT COST:

Option 1F: Four Quadrant Gate

BNSF RAILWAY

MAINLINE

ROW (approx.)

R/R Gate

LEGEND
Option 2A: Four Quadrant Gate System

Estimated Project Cost:
PE/DESIGN: $50,000
ROW: $25,000
CONSTRUCTION: $325,000
TOTAL: $400,000

DOT Crossing
Inventory No: 396639A
RAIL CROSSING IMPROVEMENTS ANALYSIS

EAST D STREET

TACOMA, WA

17-015

EXHIBIT-2

RAIL CROSSING IMPROVEMENTS ANALYSIS

396639A

DOT Crossing

INVENTORY NO:

SOUND TRANSIT

MAINLINE

DOT Crossing

INVENTORY NO:

SOUND TRANSIT

MAINLINE

TOTAL: $100,000

CONSTRUCTION: $54,000

ROW: $25,000

PE/DESIGN: $21,000

ESTIMATED PROJECT COST:

PROJECT NO.

BALANCED TRANSPORTATION SOLUTIONS

CONSULTING LLC

www.phtraffic.com

OPTION 2B: TWO QUADRANT GATE SYSTEM

AND MEDIAN

LEGEND
RAIL CROSSING IMPROVEMENTS ANALYSIS
EAST D STREET
TACOMA, WA
17-015
EXHIBIT-2

Project No.

DOT Crossing
Inventory No:

396639A

Option 2F: E D St Closure

TOTAL: $600,000
CONSTRUCTION: $300,000
ROW: $0
PE/DESIGN: $100,000
ESTIMATED PROJECT COST:

LEGEND

LANDSCAPE
ROW (Approx)
MEDIAN BARRIER
FENCE

SOUND TRANSIT
MAINLINE

Opitio 2F: E D St Closurer

East D St
Option 3A: Four Quadrant Gate System

ESTIMATED PROJECT COST:
PE/DESIGN: $50,000
ROW: $0
CONSTRUCTION: $350,000
TOTAL: $400,000
RAIL CROSSING IMPROVEMENTS ANALYSIS
EAST C STREET
TACOMA, WA
17-015
EXHIBIT-3

EXHIBIT-3
DOT CROSSING
Inventory No:
DOT CROSSING:
396640U

LEGEND

Option 3B: Two Quadrant Gate System and Median

SOUND TRANSIT
MAINLINE

ESTIMATED PROJECT COST:
PE/DESIGN: $50,000
ROW: $0
CONSTRUCTION: $100,000
TOTAL: $150,000

TOTAL: $150,000
CONSTRUCTION: $100,000
ROW: $0
PE/DESIGN: $50,000

East C St
ONE WAY

Balanced Transportation Solutions
www.phtraffic.com
PH CONSULTING LLC
RAIL CROSSING IMPROVEMENTS ANALYSIS

EAST C STREET
TACOMA, WA

EXHIBIT-3
PROJECT NO. 17-015

BALANCED TRANSPORTATION SOLUTIONS
PH CONSULTING LLC

LEGEND

LANDSCAPE
MEDIAN BARRIER
FENCE

DOT Crossing
Inventory No:
396640U

ROW (Approx.)

TOTAL: $600,000
CONSTRUCTION: $500,000
ROW: $0
PE/DESIGN: $100,000

OPTION 3F: E C ST ROAD CLOSURE

ESTIMATED PROJECT COST:
PE/DESIGN: $100,000
CONSTRUCTION: $500,000
ROW: $0
TOTAL: $600,000

SOUND TRANSIT MAINLINE
Option 4A: Four Quadrant Gate System

Legend:
- R/R GATE
- PED ESCAPE GATE
- FENCE
- SIDEWALK
- ROW (Approx.)

Estimated project cost:
PE/DESIGN: $50,000
ROW: $0
CONSTRUCTION: $350,000
TOTAL: $400,000

DOT Crossing Inventory No: 945989J
EXHIBIT 4

RAIL CROSSING IMPROVEMENTS ANALYSIS

SOUTH C STREET

TACOMA, WA

PH CONSULTING LLC

17-015

DOT CROSSING

Inventory No.

945989J

South C St

DOT CROSSING

TOTAL: $25,000
CONSTRUCTION: $20,000
ROW: $500
PE/DESIGN: $5,000

ESTIMATED PROJECT COST:

PE/DESIGN: $5,000
ROW: $0
CONSTRUCTION: $20,000
TOTAL: $25,000

Option 4B: Two Quadrant Gate

SOUND MAINLINE

SOUND TRANSIT

DOT Crossing

Inventory No:

945989J

Legend

R/R Gate
PED Escape Gate
Curb / Median
Fence
Sidewalk
ROW (Approx.)
South C St

DOT CROSSING

TOTAL: $25,000
CONSTRUCTION: $20,000
ROW: $500
PE/DESIGN: $5,000

ESTIMATED PROJECT COST:

PE/DESIGN: $5,000
ROW: $0
CONSTRUCTION: $20,000
TOTAL: $25,000

Option 4B: Two Quadrant Gate

SOUND MAINLINE

SOUND TRANSIT

DOT Crossing

Inventory No:

945989J

Legend

R/R Gate
PED Escape Gate
Curb / Median
Fence
Sidewalk
ROW (Approx.)
South C St
RAIL CROSSING IMPROVEMENTS ANALYSIS
6TH AVE / TITLOW BEACH
TACOMA, WA
17-015
EXHIBIT-5

LEGEND
WAYSIDE HORN
R/R GATE
PED ESCAPE GATE
CURB / MEDIAN
FENCE
CONCRETE PANEL
SIDEWALK

FEATURES

DOT CROSSING

INVENTORY No:
085742D

PH CONSULTING LLC
Balanced Transportation Solutions
www.phtraffic.com

Improvement Options Review
Option 5A: Wayside Horn & Pedestrian Improvements

ESTIMATED PROJECT COST:
PE/DESIGN: $200,000
ROW: $0
CONSTRUCTION: $900,000
TOTAL: $1,100,000
Option 5B: Four Quadrant Gate & Pedestrian Improvements

Estimated Project Cost:
PE/DESIGN: $200,000
ROW: $0
CONSTRUCTION: $1,000,000
TOTAL: $1,200,000
Option 5C: Full Grade Separation

Estimated Project Cost:
- PE/DESIGN: $10,000,000
- ROW: $25,000,000
- CONSTRUCTION: $25,000,000
- TOTAL: $60,000,000

Legend:
- SIDEWALK
- PEDESTRIAN RAILING
- CENTERLINE
- STRIPED
- PAVEMENT
- ROW (approx.)
- 6th Avenue
- BNSF RAILWAY
- MAINLINE ROW (Approx.)
Railroad Crossing Improvements:
Option 5D: Non-Motorized Grade Separation (Pedestrian Bridge)

6th Avenue

BNSF RAILWAY MAINLINE

LEGEND

--- ROW (Apprx.)

--- PEDESTRIAN RAILING

--- PHANTOM LINE

PAVEMENT

WALKWAY

ESTIMATED PROJECT COST:
PE/DESIGN: $4,000,000
ROW: $3,000,000
CONSTRUCTION: $18,000,000
TOTAL: $25,000,000

DOT Crossing
Inventory No: 085742D

PH Consulting LLC
Balanced Transportation Solutions
www.phtraffic.com

RAIL CROSSING IMPROVEMENTS ANALYSIS
6TH AVE / TITLOW BEACH
TACOMA, WA

PROJECT NO.
17-015
EXHIBIT-5
Option 6A: Wayside Horn & Pedestrian Improvements

ESTIMATED PROJECT COST:
PE/DESIGN: $100,000
ROW: $0
CONSTRUCTION: $400,000
TOTAL: $500,000
RAIL CROSSING IMPROVEMENTS ANALYSIS
SOUTH 19TH STREET
TACOMA, WA
17-015
EXHIBIT-6B

S 19th St
BNSF RAILWAY
MAINLINE

DOT Crossing
Inventory No:
085743K

Improvement Options Review
Option 6B: Four Quadrant Gate & Pedestrian Improvements

BNSF MAINLINE

LEGEND

R/R GATE
PED ESCAPE GATE
CURB / MEDIAN
FENCE
CONCRETE RAIL PANEL
SIDEWALK
ASPHALT ROW (Approx.)
MAST FLASHER
RK GATE

S 19th St

TOTAL: $1,000,000
CONSTRUCTION: $850,000
ROW: $0
PE/DESIGN: $150,000

PROJECT COST:

PE/DESIGN: $150,000
ROW: $0
CONSTRUCTION: $850,000
TOTAL: $1,000,000
Railroad Crossing Improvements:
Option 6C: Full Grade Separation

ESTIMATED PROJECT COST:
PE/DESIGN: $7,500,000
ROW: $7,000,000
CONSTRUCTION: $25,500,000
TOTAL: $40,000,000
RAIL CROSSING IMPROVEMENT ANALYSIS

SOUTH 19TH STREET
TACOMA, WA

17-015

EXHIBIT-6

085743K
DOT Crossing

LEGEND

ROW (Approx.)
PEDESTRIAN RAILING
SIDEWALK

TOTAL: $20,000,000
CONSTRUCTION: $15,500,000
ROW: $1,000,000
PE/DESIGN: $3,500,000

ESTIMATED PROJECT COST:

BNSF RAILWAY
MAINLINE

OPTION 6D: NON-MOTORIZED GRADE SEPARATION

S 19TH ST

Balanced Transportation Solutions
www.phtraffic.com
Railroad Crossing Improvements:
Option 6E: Non-motorized Grade Separation with Elevators

ESTIMATED PROJECT COST:
PE/DESIGN: $1,500,000
ROW: $0
CONSTRUCTION: $6,000,000
TOTAL: $7,500,000
Capital, Maintenance Costs, Cost Sharing Responsibilities, and Right of Way Needs Assessment
**Capital, Maintenance Costs, Cost Sharing Responsibilities, and Right-of-Way Needs Assessment**

The table provided in this Appendix summarizes the various planning level costs estimates for capital construction, potential right-of-way acquisition needs, as well as ongoing maintenance costs. The capital costs for improvements at the existing crossings will be the responsibility of the City. Portions of the work may be required to be completed by the railroads through negotiated project agreements. Cost-sharing of the capital improvements may be negotiable if the improvements also benefit the railroad depending on their policies. These opportunities can be explored in detail upon selection of a preferred option during subsequent phases of project development.

The railroads will continue to be responsible for maintenance and repair of rail signal and other grade crossing protection devices within their right of way. However, it is the policy of railways to require the maintenance costs of the exit gates on 4-quadrant systems be paid for by the City. Additionally, wayside horn systems are the maintenance and operations responsibility of the local agency. These estimated costs are reflected in the table.

Other maintenance costs considered in the table which will be the responsibility of the City include:

- Routine maintenance of additional infrastructure. (signs, median devices, etc...)
- Specialized maintenance of signals systems. (wayside horns, interconnect testing)
- Bridge maintenance, inspections, and maintenance.
- Elevator maintenance, testing, & inspections.
## APPENDIX H

### Capital, Maintenance Costs, Cost Sharing Responsibilities, and Right of Way Needs Assessment

#### Construction Costs

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Level of Cost</th>
<th>Magnitude of Cost</th>
<th>Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OPTION 1A</strong></td>
<td>Warning Signage</td>
<td>Additional Train</td>
<td>$25,000</td>
<td>$20,000</td>
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<tr>
<td><strong>OPTION 1B</strong></td>
<td>Full Grade Separation</td>
<td></td>
<td>$8,000,000</td>
<td>$3,000,000</td>
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<tr>
<td><strong>OPTION 1D</strong></td>
<td>Non-motorized Grade Separation with Elevators</td>
<td></td>
<td>$1,500,000</td>
<td>$500,000</td>
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<tr>
<td><strong>OPTION 1F</strong></td>
<td>Four Quadrant Gate System</td>
<td></td>
<td>$50,000</td>
<td>$350,000</td>
</tr>
<tr>
<td><strong>OPTION 2A</strong></td>
<td>Four Quadrant Gate System</td>
<td></td>
<td>$50,000</td>
<td>$25,000</td>
</tr>
<tr>
<td><strong>OPTION 2B</strong></td>
<td>Median</td>
<td></td>
<td>$21,000</td>
<td>$50,000</td>
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<tr>
<td><strong>OPTION 2C</strong></td>
<td>Full Grade Separation</td>
<td></td>
<td>$14,500,000</td>
<td>$500,000</td>
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<tr>
<td><strong>OPTION 2D</strong></td>
<td>Non-motorized Grade Separation</td>
<td></td>
<td>$6,000,000</td>
<td>$500,000</td>
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<tr>
<td><strong>OPTION 2E</strong></td>
<td>Non-motorized Grade Separation with Elevators</td>
<td></td>
<td>$1,500,000</td>
<td>$500,000</td>
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<tr>
<td><strong>OPTION 3B</strong></td>
<td>Median</td>
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<td>$50,000</td>
<td>$2,000</td>
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<tr>
<td><strong>OPTION 3C</strong></td>
<td>Full Grade Separation</td>
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<td>$14,500,000</td>
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<tr>
<td><strong>OPTION 3D</strong></td>
<td>Non-motorized Grade Separation</td>
<td></td>
<td>$6,000,000</td>
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<tr>
<td><strong>OPTION 4A</strong></td>
<td>Four Quadrant Gate System</td>
<td></td>
<td>$50,000</td>
<td>$7,500</td>
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<tr>
<td><strong>OPTION 4B</strong></td>
<td>Median</td>
<td></td>
<td>$5,000</td>
<td>$1,500</td>
</tr>
<tr>
<td><strong>OPTION 4C</strong></td>
<td>Full Grade Separation</td>
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<td>$8,500,000</td>
<td>$3,000,000</td>
</tr>
<tr>
<td><strong>OPTION 4D</strong></td>
<td>Non-motorized Grade Separation</td>
<td></td>
<td>$5,000,000</td>
<td>$2,500,000</td>
</tr>
<tr>
<td><strong>OPTION 5A</strong></td>
<td>Wayside Horns &amp; Pedestrian Improvements</td>
<td></td>
<td>$200,000</td>
<td>$100,000</td>
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<td><strong>OPTION 5B</strong></td>
<td>Four Quadrant Gate &amp; Pedestrian Improvements</td>
<td></td>
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<td>$150,000</td>
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<tr>
<td><strong>OPTION 5C</strong></td>
<td>Full Grade Separation</td>
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<td>$10,000,000</td>
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<td><strong>OPTION 5D</strong></td>
<td>Non-motorized Grade Separation with Ramps</td>
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<td>$4,000,000</td>
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<tr>
<td><strong>OPTION 5E</strong></td>
<td>Non-motorized Grade Separation with Elevators</td>
<td></td>
<td>$1,500,000</td>
<td>$500,000</td>
</tr>
<tr>
<td><strong>OPTION 6A</strong></td>
<td>Wayside Horn &amp; Pedestrian Improvements</td>
<td></td>
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<td>$30,000</td>
</tr>
<tr>
<td><strong>OPTION 6B</strong></td>
<td>Four Quadrant Gate &amp; Pedestrian Improvements</td>
<td></td>
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<td>$80,000</td>
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<tr>
<td><strong>OPTION 6D</strong></td>
<td>Non-motorized Grade Separation</td>
<td></td>
<td>$3,500,000</td>
<td>$2,000,000</td>
</tr>
<tr>
<td><strong>OPTION 6E</strong></td>
<td>Non-motorized Grade Separation with Elevators</td>
<td></td>
<td>$1,500,000</td>
<td>$500,000</td>
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<td><strong>OPTION 7</strong></td>
<td>Non-motorized Grade Separation with Elevators</td>
<td></td>
<td>$3,500,000</td>
<td>$1,500,000</td>
</tr>
<tr>
<td><strong>OPTION 8</strong></td>
<td>Non-motorized Grade Separation with Elevators</td>
<td></td>
<td>$3,500,000</td>
<td>$1,500,000</td>
</tr>
</tbody>
</table>

*Estimated Maintenance Costs based on crew time for annual testing, repairs, and damage reimbursements to BNSF.*
APPENDIX I

Definitions
RAIL CROSSING EVALUATION

Definitions

DEFINITIONS

AWC  Association of Washington Cities
DOE  Washington Department of Ecology
DOH  Department of Health
EPA  Environmental Protection Agency
FAST Act Fixing America’s Surface Transportation Act
FRA  Federal Railroad Administration
FMSIB Freight Mobility Strategic Investment Board
HSIP Highway Safety Improvement Program
JTC Joint Transportation Committee
Marine Cargo Forecast Pacific Northwest Marine Cargo Forecast and Rail Utilization Report
MPO Metropolitan Planning Organization
PSRC Puget Sound Regional Council
RTPO Regional Transportation Planning Organization
UTC Washington Utilities and Transportation Commission
WPPA Washington Public Ports Association
WSAC Washington State Association of Counties
WSDOT Washington State Department of Transportation
Rail Crossing Improvement Toolbox

**Signal Changes**

- Traffic Signal Timing Improvements: ~$3,000 Per Intersection
- Advanced Signal Interconnect Circuits: ~$50,000 - $100,000

**Signage**

- Another Train Coming: ~$50,000 - $100,000 Per Crossing
- Illuminated Signs: ~$5,000 Per Sign

**Access**

- Sidewalks: ~$200 - $500 per foot
- Pedestrian Bridge: ~$2,000,000 - $5,000,000

**Barriers**

- Fencing: ~$50 - $75 Per Lineal Foot
- Pedestrian Gates: ~$150,000 - $250,000 Per Crossing

**Noise Modifications**

- Quiet Zone: ~$100,000 - $1,000,000
- Wayside Horn System: ~$125,000 - $250,000