

## SOUND AND PRIVACY FENCING ALTERNATIVES MEMORANDUM

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To: Robert Bean, PE, Civil Engineer, City of Arlington  
 Ryan Morrison, PE, City Engineer, City of Arlington

From: Vincent Wen, PE, Project Manager

Date: September 10, 2020

Re: City of Arlington 173<sup>rd</sup> Street NE Phase 1 Project  
 Sound and Privacy Fencing Alternatives Memorandum

### INTRODUCTION

The 173<sup>rd</sup> Street NE Phase 1 project will construct a new local access road from Smokey Point Blvd to approximately 800 feet east of the intersection of 173<sup>rd</sup> St and 40<sup>th</sup> Ave. The project includes an 8-foot wide multiuse trail, a 10-foot-wide landscaped buffer, and two 13-foot-wide travel lanes. Based on community input, it was requested that the City evaluate installation of a noise attenuation and privacy fence for residences located north of this proposed 173<sup>rd</sup> St roadway.

A noise analysis was prepared in August 2011 by Parsons for 173<sup>rd</sup> St Phase I and II, this analysis evaluated noise generated from projected traffic and construction along the proposed 173<sup>rd</sup> St. This noise analysis was updated in December 2018 by WSP that included development that had occurred since 2011 (hotel and medical facility). Since this project is not located on a state or federal facility, there are no agency requirements for noise abatement and mitigation. The City of Arlington has elected to work with the homeowners to install a privacy fence running the length of the project (approx. 1,930 linear ft) to help alleviate homeowner concerns of a new collector roadway adjacent to their property.

This memorandum analyzes four privacy fencing alternatives, three of those alternatives meet state sound attenuation/reflecting requirements. A summary of the fence evaluation criteria is presented in Table 1, a detailed of each fence and its evaluation is included in this memorandum. The City of Arlington preferred privacy fence for this project is the Trex Fence.

**TABLE 1 - FENCE ALTERNATIVES**

Name	Height	Sound Transmission Class (STC)	Mat. Cost <i>Std Aesthetics</i>	Material Cost <i>Upgd Aesthetics</i>	Installation Cost	Total Cost –
Tuf-Barrier by AIL Sound Walls	8'	31	\$118.56/LF	\$134.08/LF	\$100/LF	\$234.08/LF
Simulated Stone Fence by Vinyl Fence & Deck	8'	26	\$78.80/LF	N/A	\$45/LF	\$123.80/LF
Trex Fence by NPR Fence	8'	17	N/A	N/A	N/A	\$111.38/LF
Wood Fence by City Wide Fence Co.	8'	N/A	N/A	N/A	N/A	\$99.34/LF

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### TUF-BARRIER BY AIL SOUND WALLS

**Tuf-Barrier System:** The Tuf-Barrier System as provided by AIL Sound Walls, provides a sound transmission class (STC) rating of 31, and an approximate noise reduction of 25 dB when evaluating general roadway traffic noise. In addition, AIL Sound Walls touts their Tuf-Barrier System to be UV-resistant, impervious to rain, snow, and ice, and will not rust, rot, or stain. The costs for the Tuf-Barrier System shown in Table 1 includes structural design/submittal drawings, galvanized steel posts, post sleeves/caps, acoustic panels, and freight to the project site, and a one-year warranty. Installation cost is separate, and an approximation provided by AIL Sound Walls.

#### Tuf-Barrier System – Standard Aesthetics

Standard Aesthetics are offered in panel colors of Adobe, Gray, Tan, or White, with a smooth finish. Sample graphics are shown below:



Figure 1 – Tuf-Barrier White Smooth Finish



Figure 2 – Tuf-Barrier Tan Smooth Finish

#### Tuf-Barrier System – Upgraded Aesthetics

Upgraded Aesthetics are offered in panel colors of Green Teak or Honey Maple, with a textured woodgrain embossed finish. Sample graphics are shown below:



Figure 3 – Tuf-Barrier Green Teak Textured Finish



Figure 4 – Tuf-Barrier Honey Maple Textured Finish

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### SIMULATED STONE FENCE SYSTEM BY VINYL FENCE AND DECK

**Simulated Stone Fence System:** The Simulated Stone Fence System as provided by Vinyl Fence and Deck, provides a sound transmission class (STC) rating of 26, and an approximate noise reduction of 20 dB when evaluating general roadway traffic noise. Vinyl Fence and Deck advertises their Simulated Stone Fence System to be UV-resistant, graffiti resistant, durable in temperature extremes, and provides a superior wind rating. The cost for the Simulated Stone Fence System shown in Table 1 includes structural design/submittal drawings, foam filled posts and matching caps, acoustic panels and steel frames, and freight to the project site, as well as a lifetime warranty. Installation cost is separate, and an approximation provided by Vinyl Fence and Deck.

Simulated Stone Fence System – Standard Aesthetics are offered in panel colors of Brown Granite, Beige Granite, Gray Granite, Desert Granite, Dark Brown Granite, and Black Granite, with a simulated stone finish. Sample graphics are shown below:



Figure 5 – Simulated Stone Brown Granite



Figure 6 – Simulated Stone Fence Material

### TREX FENCE BY NPR FENCE

**Trex Fence:** The Trex fence as provided by NPR Fence, provides a sound transmission class (STC) rating of 17, and an approximate noise reduction of 14 dB when evaluating general roadway traffic noise. Alongside the road noise reduction, Trex fencing is advertised as a durable material resisting insect damage, won't rot or splinter, and will never need staining or painting. The Trex fence is 110 mph wind rated, and comes with a 25-year warranty. The as-installed total cost for the Trex fence is shown on Table 1.



Figure 7 – Trex Fence Winchester Grey



Figure 8 – Trex Fence Saddle Brown

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### WOOD FENCE BY CITY WIDE FENCE COMPANY

**Wood Fence:** A typical wood fence option as provided by City Wide Fence Company, would be constructed of western red cedar and treated posts with black powder coating to enhance durability. The as-installed total cost (including materials and installation) shown in Table 1, utilizes City Wide’s “post on pipe” installation concept. This as-installed cost may vary depending on the selected fence style. These fence styles are shown on the product website: <https://www.citywidefence.com/sample-page/fence-types/>. Additionally, City Wide Fence Company warranty’s labor and materials for one year.



Figure 9 – Wood Fence Full Panel Style



Figure 10 – Wood Fence With Grid Top

### RECOMMENDATION

Fencing options by AIL Sound Walls, Vinyl Fence and Deck, and NPR Fence provide varied levels of noise attenuation, with AIL Sound Walls providing a superior 25 dB reduction, to Vinyl Fence and Deck’s 20 dB reduction, and NPR Fence’s 14 dB reduction. The fencing options offer similar advertised qualities, but provide varied aesthetics as shown in the figures above and are estimated at different price points.

However, as the City is not required to provide noise attenuation per the December 2018 noise analysis and other properties being similar, it is recommended that the NPR Fence Trex Fencing option be selected for use. Not only does this option provide sound attenuation for the adjacent private properties, but it is also the most economic option, outside of the typical wood fence provided by City Wide Fence Company.