



May 18, 2017

David Goodwin  
Director  
Planning & Economic Development Department  
City of St. Petersburg

Re: City of St. Petersburg

Dear Mr. Goodwin,

The following is the summary of Keane Acoustics' acoustical study for the City of St. Petersburg.

### **Introduction**

Keane Acoustics was commissioned to undertake a noise impact assessment of neighborhoods within St. Petersburg city limits in an effort to better understand how to best protect citizens from excessive noise events. This document deals strictly with noise impacts from musical events in the following areas: Downtown Jannus Landing Block and along Beach Drive through Vinoy Park.

Jannus Landing Block – This neighborhood is an area surrounded by a dense network of businesses. Many of these businesses host both live and prerecorded music events. It is understood that residents complain about noise emissions from these businesses in the late evenings and into the early mornings. The businesses investigated in this neighborhood are bounded by 1<sup>st</sup> Avenue North and Central Avenue to the north and south, and 2<sup>nd</sup> Street North and 3<sup>rd</sup> Street North to the east and west, respectively.

Beach Drive and Vinoy Park – This neighborhood is a historically quiet business neighborhood surrounded by busy streets. In recent years a surge in construction of businesses and residential condominiums along these streets has emerged, including numerous sidewalk cafes. Many of these businesses host mostly prerecorded music in the evenings with occasional music themed festivals.

### **Noise Criteria**

The results of this study will help inform the development of quantitative sound level (decibel) requirements for a proposed revision of the City Noise Ordinance.

No suggestions regarding proposed decibel levels will be discussed in this document.

## **Noise Monitoring**

Noise monitoring was conducted on Saturday, April 8<sup>th</sup> from approximately 8:30pm -11:30pm.

### Instrumentation

Measurement instrumentation for the ambient sound measurements consisted of one Bruel and Kjaer Type 2270 Hand Held Analyzer, Serial No. 2664160, which meets ANSI standards for Type 1 instruments. The calibration of the instruments was checked before and after measurements with a Bruel and Kjaer Calibrator Type 4231, Ser. No. 2545588.

### Atmospheric Conditions

During the visit, the wind was blowing at 6-11 mph from the north and the temperature ranged from approximately 65 to 68 degrees Fahrenheit. Relative humidity was 40-52%.

### Methodology

A running “logging” style measurement was conducted at 1 second intervals, measuring Leq (equivalent), maximum, and minimum values for each second. Both sound level data and digital audio were recorded during the measurements.

Sound level readings were taken at property lines of the noise source and when possible, the nearest receivers. Often the sidewalk measurement locations share both the property lines of the noise source and nearest receivers. When measuring at the nearest receiver wasn't possible, an alternate location with a similar distance and direct line of sight was used.

Sound levels were also measured in transit from location to location as the investigator walked. Sound sources were identified by Venue and notes were taken to determine the degree of audibility with distance (approximate distances verified with satellite maps).

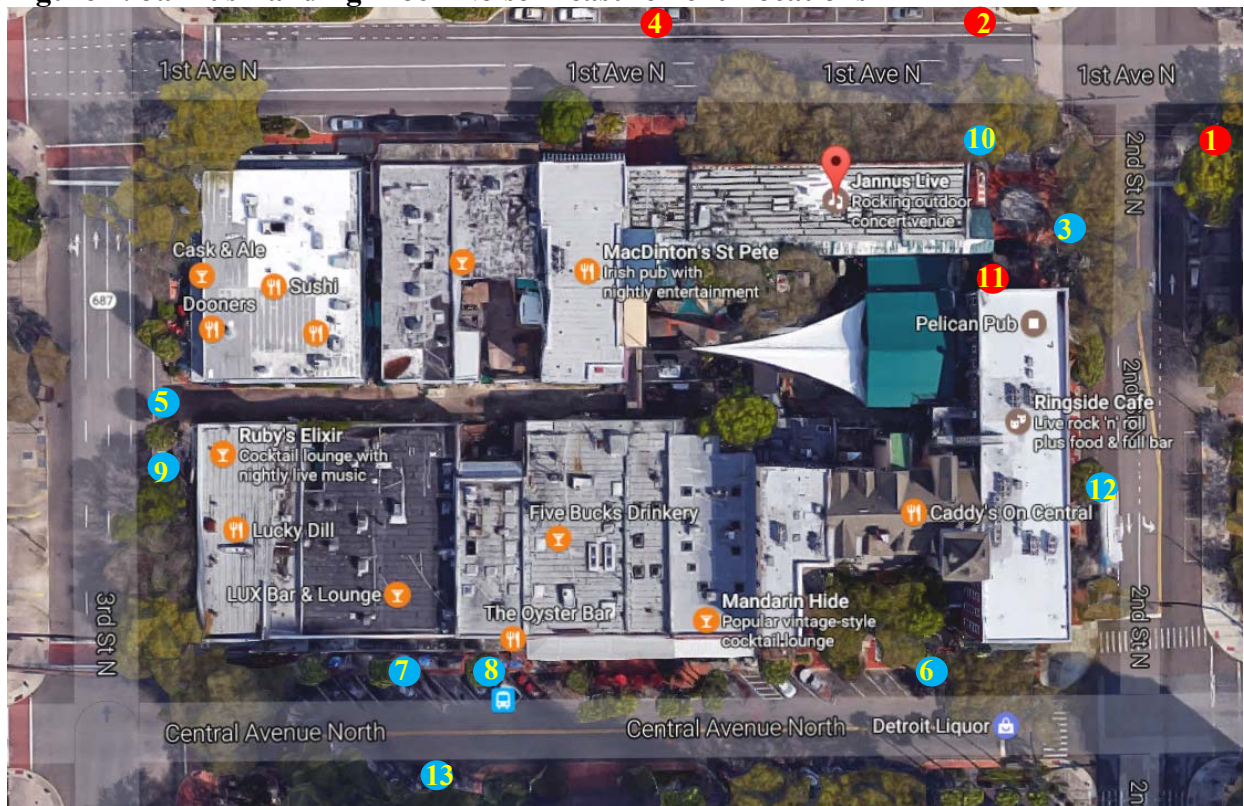
**Jannus Landing Block**

This is a mixed commercial/residential neighborhood hosting both live and prerecorded music events, along or nearby Central Avenue.

The following are some of the more popular music venues and the types of events hosted by each:

- *Jannus Live* – Live outdoor music
- *Caddy’s on Central* –Accessory outdoor music - live and prerecorded
- *Lux Bar and Lounge* – Sidewalk café - prerecorded
- *Del Mar* - Sidewalk café - prerecorded
- *Ruby’s Elixir* – Indoor music - live and prerecorded
- *The Landing* - Accessory outdoor music - prerecorded
- *MacDinton’s* - Indoor music - live and prerecorded
- *Ringside Café* - Indoor music - live and prerecorded

**Figure 1: Jannus Landing Block Noise Measurement Locations**



**Red dots = residential locations at which the noise measurements in this study were made.  
 Blue dots = sidewalk locations at which the noise measurements in this study were made.**

## Noise Monitoring

A site inspection was conducted to determine the nearest noise sensitive receivers for each venue.

Table 1 below presents the nearest “receiver” (either residential property line or public sidewalk) and distance to the noise source on the property. (Figure 1 above shows locations of these receivers.)

*Table 1: Noise Sensitive Receivers – Jannus Landing Block*

<b>Music Venues</b>	<b>Sound Measurement Location {All distances are approximate}</b>	<b>Receiver Type</b>
Jannus Live	1: Future hotel, 143’ from stage 2: Future Condo, 154’ from stage 3: East opening, 53’ from stage 4: North opening, 175’ from stage 5: West opening, 306’ from stage	Residence Residence Sidewalk Residence Sidewalk
Caddy’s on Central	6: 5’ from stage	Sidewalk
Lux Bar and Lounge	7: 10’ from wall mounted outdoor loudspeaker	Sidewalk
Del Mar	8: 10’ from canopy mounted outdoor loudspeaker	Sidewalk
Ruby’s Elixir	9: 10’ from front door	Sidewalk
The Landing	10: on sidewalk directly below 11: on sidewalk directly below residence windows 15’ to the south	Residence Sidewalk
Ringside Café	12: 10’ from front door	Sidewalk
The Mill (receiving property)	13: At tables 10’ from street	Sidewalk

## Typical Ambient Noise Level

The ambient noise level defines the baseline of noise in a neighborhood. Readings significantly higher than the ambient noise level are considered noise events. Typical ambient noise levels (in absence of nearby noise events) during the survey ranged from 64 to 72 dBA and 74 to 82 dBC during the visit. In the downtown area, the ambient sound is more of an average of the music venues, which explains the escalated sound levels. It is understood that this elevated ambient sound level often persists after midnight.

## Non-Venue Noise Sources

Observations of non-venue noise sources include:

- vehicular noise (mostly slow moving vehicles)
- braking noise and occasional music from vehicles
- louder vehicles consisting of trucks, sports cars and motorcycles

## Venue Noise Sources

The following table shows the typical sound level range measured the evening of the visit and the degree of impact for each venue observed during the visit:

*Table 2: Impacts at Noise Sensitive Receivers – Jannus Landing Block*

<b>Music Venues</b>	<b>Measurement Location</b>	<b>Typical dBA<sup>1</sup> Range</b>	<b>Typical dBC<sup>2</sup> Range</b>	<b>Impact</b>	<b>Typical Plainly Audible Distance From Sound Source (feet)</b>
Jannus Live	1: future hotel	84-86	90-92	4	700+
	2: future condo	84-86	90-92	4	
	3: east opening	86-89	100-103	4	
	4: north opening	73-76	91-98	4	
	5: west opening	79-83	95-99	3/4	
Caddy's on Central	6: near stage	90-95	100-105	4	450
Lux Bar and Lounge	7: sidewalk	78-82	87-92	3	60 (masked <sup>3</sup> )
Del Mar	8: sidewalk	81-85	92-95	3	75 (masked <sup>3</sup> )
Ruby's Elixir	9: sidewalk	79-89	92-98	3/4	100+ (masked <sup>3</sup> )
The Landing	10: sidewalk	72-77	85-90	4	150+ (masked <sup>3</sup> )
	11: near residence	84-91	90-102		
Ringside Café	12: sidewalk	80-85	90-95	3	100 (masked <sup>3</sup> )
The Mill (receiver)	13: at tables	76-78	88-93	4	-

*Impact Scale:*

- 1) *No impact – sound emissions often masked by ambient noise or adjacent (louder) venues*
- 2) *Slight impact – sound levels exceed ambient noise on occasion by more than 5 dB*
- 3) *Moderate impact – sound levels exceed ambient noise on a regular basis and by more than 10 dB on occasion*
- 4) *Strong impact – sound levels significantly exceed ambient noise – often by a considerable amount (~10 dB or more)*

**Note: The impact scale above takes account of the adjacent properties in conjunction with the overall sound levels to determine degree of impact (not just overall sound level).**

<sup>1</sup> dBA refers to an A-weighted measurement where the decibel values of sounds at low frequencies are reduced, compared with unweighted decibels. This metric represents the way the human ear perceives the intensity of different audio frequencies from quiet to moderate sound levels.

<sup>2</sup> dBC refers to a C-weighted measurement where the decibel values of sounds at very low frequencies are only slightly reduced, compared with unweighted decibels. This metric is more commonly associated with loud music. The human ear hears most audio frequencies fairly evenly at loud levels commonly associated with music venues.

<sup>3</sup> Masking is the inability to hear a given sound due to being drowned out or covered up by another (usually louder) sound. Music from several of the smaller venues on Central Avenue are masked by music from larger venues.

### Regarding Sound Level Measurements and Distance

The sound level measurements above were conducted at the locations illustrated in Figure 1 (red and blue dots), which would be the likely sound measurement points for enforcement. Note some of these measurements are located at very close distances to the noise source (such as the sidewalk cafes) whereas other measurements are located further away (such as Jannus Live).

### **Buskers**

Buskers were commonly observed throughout this location, with a stronger presence on Central Avenue. The musicians in this area tended to be playing wind instruments (such as saxophones). The loudest busker was a guitarist with an amplifier. Typical sound levels measured 68-78 dBA, and 78-86 dBC at short distances of 10-15 feet. The degree of audibility by distance depended upon the noise emissions from adjacent venues. Buskers were occasionally audible from over 100 feet.

### **Observations**

In general, nearly all venues exceeded 90 dBC and multiple venues were well in excess of 85 dBA and 100 dBC at the property lines (commonly used to assess compliance with a decibel based noise ordinance) and were often plainly audible at distance of several hundred feet or more.

Often the “plainly audible” distance for the smaller venues is reduced due to noise masking from the larger venues (such as Jannus Live or Caddy’s). Otherwise these venues would be audible from much further away.

It was noted that several of the sidewalk cafes investigated have loudspeakers pointing outward toward the sidewalks resulting in a high dBA and dBC measurement.

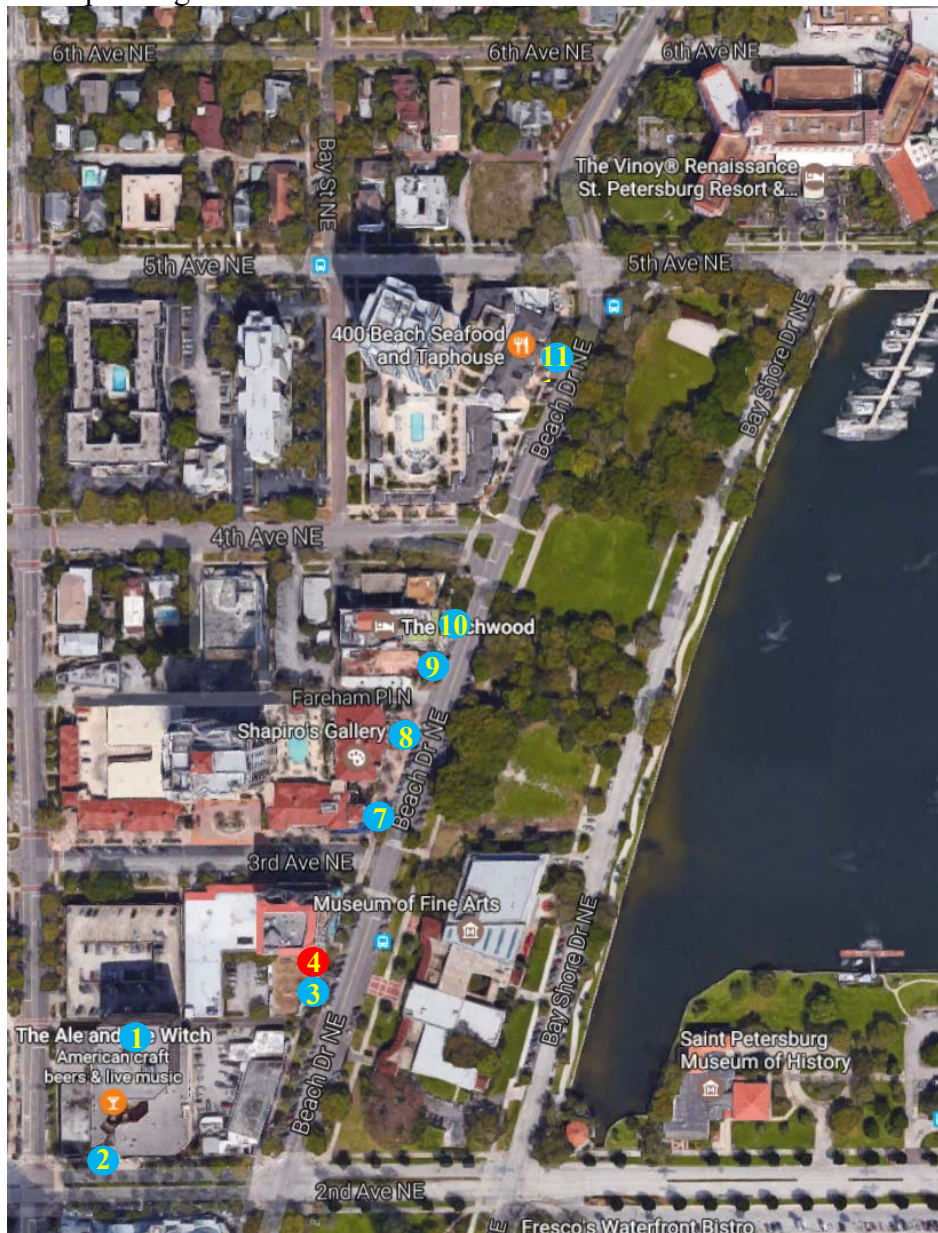
The combined effect of the noise from the sidewalk cafes and Caddy’s is a high resultant sound level at locations on the south side of central (such as the Mill which measured 78 dBA and 93 dBC).

### Beach Drive Neighborhood

The Beach Drive neighborhood appears to be transitioning from a quiet neighborhood to one that is shared with an increasing number of businesses. A growing number of cafes host mostly prerecorded music (some with DJs). The following are some of the more popular music venues and the types of events hosted by each:

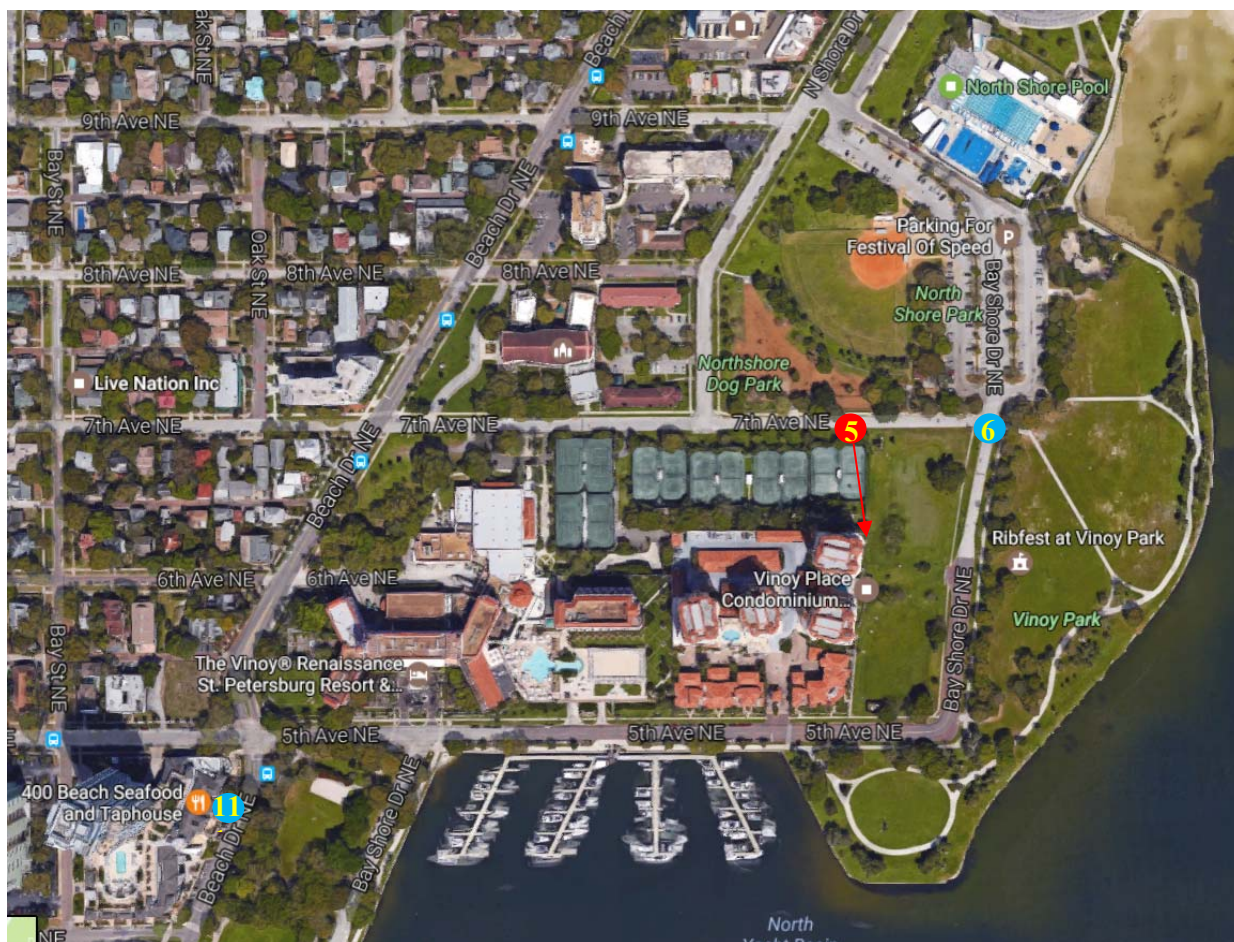
- *Blues Fest at Vinoy Park* – Live outdoor music
- *Tryst* – Accessory outdoor music - live and prerecorded
- *Ale and Witch* – Accessory outdoor music - live and prerecorded

See Figures 2/3 below for maps of the neighborhood showing the noise monitoring locations corresponding to the above venues:



**Figure 2: Beach Drive Noise Measurement Locations (South)**

**Red dots = residential locations at which the noise measurements in this study were made.**  
**Blue dots = sidewalk locations at which the noise measurements in this study were made.**



**Figure 3: Beach Drive Noise Measurement Locations (North)**

**Note:** the red dot shows the measurement location north of the Vinoy was used to estimate the sound level at the Vinoy (using a similar distance).

**Noise Monitoring**

Table 3 below presents the nearest “receiver” (either residential property line or public sidewalk) and distance to the noise source on the property. (Figure 3 above shows locations of these receivers.)

*Table 3: Noise Sensitive Receivers - Beach Drive North and South*

<b>Music Venues</b>	<b>Sound Measurement Location {All distances are approximate}</b>	<b>Receiver Type</b>
Ale and Witch	1: 100 ft north of performance area 2: 100 ft south of performance area	Sidewalk Sidewalk
Tryst	3: 5ft from loudspeaker near tables 4: 15 ft to north at closest facade	Sidewalk Residence
Blues Fest	5: 700ft to Vinoy Place 6: 250 ft to stage	Residence Sidewalk
Parkshore Grille	7: On sidewalk near center of tables	Sidewalk
Paciugo Caffe	8: On sidewalk near center of tables	Sidewalk
The Moon Under Water	9: On sidewalk near center of tables	Sidewalk
Birch and Vine Cafe	10: On sidewalk near center of tables	Sidewalk
400 Beach Cafe	11: On sidewalk near center of tables	Sidewalk



**Typical Ambient Noise Level**

The ambient noise level defines the baseline of noise in a neighborhood. Readings significantly higher than the ambient noise level are considered noise events. The typical ambient noise level (in absence of nearby noise events) during the visit survey ranged from 55 to 62 dBA and 65 to 72 dBC during the visit. The ambient sound in this area was likely escalated due to a combination of distant music venues and the activity related to Bluesfest at Vinoy Park. For reference, nighttime ambient sound levels are often below 50 dBA and 60 dBC in similar neighborhoods.

**Non-Venue Noise Sources**

Observations of non-Venue noise sources from both visits were as follows:

- Vehicular Noise – typically slow moving vehicles. Braking noise and occasional music from vehicles was observed. Louder vehicles consisted of trucks and motorcycles.
- Residential HVAC –the audible drone that helps set the background noise level. This sound was faintly audible on occasion near Beach Drive (typically when nearby vehicular traffic had momentarily subsided).

**Venue Noise Sources**

The following shows the degree of impact for each venue observed during the visit:

*Table 4: Impacts at Noise Sensitive Receivers - Beach Drive North and South*

<b>Music Venues</b>	<b>Measurement Location</b>	<b>Typical dBA<sup>1</sup> Range</b>	<b>Typical dBC<sup>2</sup> Range</b>	<b>Impact</b>	<b>Typical Plainly Audible Distance From Sound Source (feet)</b>
Ale and Witch	1: north courtyard	80-83	86-91	4	300
	2: south courtyard	74-77	83-86	4	
Tryst	3: sidewalk	78-82	88-90	4	80-100
	4: residence to north	73-77	85-88		
Blues Fest Vinoy Park	5: near Vinoy	69-75	85-89	4	1600
	6: sidewalk	83-86	96-99		
Parkshore Grille	7: sidewalk amongst seating areas	61-71	70-75	1	30-40
Paciugo Caffe	8: sidewalk amongst seating areas	62-69	70-74	1	30-40
The Moon Under Water	9: sidewalk amongst seating areas	60-65	70-72	1	20-30
Birch and Vine Cafe	10: sidewalk amongst seating areas	62-72	70-78	1	40-50
400 Beach Cafe	11: sidewalk amongst seating areas	61-71	70-74	1	30-40

*Impact Scale:*

- 1) *No impact – sound emissions often masked by ambient noise or adjacent (louder) venues*
- 2) *Slight impact – sound levels exceed ambient noise on occasion by more than 5 dB*
- 3) *Moderate impact – sound levels exceed ambient noise on a regular basis and by more than 10 dB on occasion*
- 4) *Strong impact – sound levels significantly exceed ambient noise – often by a considerable amount (~10 dB or more)*

<sup>1</sup> dBA refers to an A-weighted measurement where the decibel values of sounds at low frequencies are reduced, compared with unweighted decibels. This metric represents the way the human ear perceives the intensity of different audio frequencies from quiet to moderate sound levels.

<sup>2</sup> dBC refers to a C-weighted measurement where the decibel values of sounds at very low frequencies are only slightly reduced, compared with unweighted decibels. This metric is more commonly associated with loud music. The human ear hears most audio frequencies fairly evenly at loud levels commonly associated with music venues.

**Buskers**

Buskers were observed along Beach Drive, typically spaced in between Venues and Cafes. The musicians in this area tended to be singing and accompanied by guitars. Typical sound levels measured in the vicinity of 68-70 dBA and 78-81 dBC at short distances of 10-20 feet. The degree of audibility by distance depended upon the noise emissions from adjacent venues. Buskers were in this location were plainly audible from 30-40 feet, occasionally audible from roughly 50-60 feet, but rarely audible over 100 feet.

**Observations**

In general, the light music played at the sidewalk cafes (excluding Tryst), typically consisted of “background” music which was easily masked by the conversations of customers. Buskers in the area tended to limit their sound output such that it was usually masked by the sound from adjacent venues (either music, talking or both).

It is likely that the dBC levels from Tryst are propagating inside the residential building immediately to the north via the windows (which are typically poor at blocking bass).

Note the lower ambient noise in this neighborhood means impacts occur in a lower sound level range.

The infrequent festivals at Vinoy Park (such as Blues Fest) may help temper the noise impact for adjacent residents.

**Summary**

Keane Acoustics conducted a series of noise measurements at and around the Jannus Landing block along Beach Drive and nearby Vinoy Park on Saturday April 8<sup>th</sup> 2017. Sound levels from musical performances and related impacts have been presented in this report. This information will help inform any proposed revisions to the existing St. Petersburg Noise Ordinance.

Best regards,



Michael Keane, P.E