

# Noise, Acoustic, and Sound Consulting Services

August 28, 2023

**RFQ No. 2023-055**

**Submitted to:**

**City of Fort Pierce**  
Room 101  
100 North U.S. #1  
Fort Pierce, FL 34950  
Attn: Purchasing Division

**Prepared by:**



**Cross-Spectrum Acoustics**

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## EXECUTIVE SUMMARY

Cross-Spectrum Acoustics Inc. (CSA) is pleased to submit this proposal to the City of Fort Pierce, FL in response to the Request for Qualifications (RFQ) for Noise, Acoustic, and Sound Consulting Services.

CSA is a full-service noise and vibration consulting firm. Our consultants have over 190 years of combined experience in the noise and vibration field, with specialties in:

- Community, and recreational noise
- Industrial, and energy noise
- Transportation noise and vibration
- Architectural acoustics
- Noise and vibration measurement systems

Based in Massachusetts, Utah, and California, we offer our services nationwide. CSA consultants are active members of the acoustics community:

- Institute of Noise Control Engineering
- Acoustical Society of America
- National Council of Acoustical Consultants
- Transportation Research Board



CSA takes pride in our ability to help the public understand complex issues related to noise in a simple and straightforward manner. Our staff have represented municipal, state and federal clients in public meetings for projects across the country. We have also provided litigation support and expert witness testimony on behalf of our clients.

Another CSA hallmark is our belief that high-quality work does not need a high price tag. We are diligent in keeping our costs low in order to offer rates that

provide maximum value to our clients. We also collaborate with our clients to offer cost-effective solutions to their acoustical problems.

CSA has a total staff of 15 employees including 11 technical consultants. Our staff includes five registered Professional Engineers, three Institute of Noise Control Engineering (INCE) board certified members, and one PhD.

CSA has experience on a wide variety of community noise projects having analyzed noise from a variety of community noise sources including from summer camps, performance venues, gun ranges, motorsports, sports fields and other recreational sources. CSA staff also have experience analysis noise from urban sources such as rooftop HVAC equipment, construction, industrial processes, and commercial facilities. We have performed short-term and long-term outdoor measurements under a variety of conditions to accurately characterize noise levels in a project area.



Our firm has extensive measurement and modeling capabilities. We use off-the-shelf and customized computer models and reference literature to predict future sound levels and to recommend appropriate mitigation measures. We can conduct noise and vibration measurements of community noise sources to determine their impact on residences, learning spaces, office environments, and medical facilities. We can assess sleep disturbance, speech intelligibility, sound isolation between spaces, and structure-borne noise caused by MEP sources. We can measure acoustical parameters such as reverberation time (T60), field sound transmission class (STC) and speech transmission index (STI) to help resolve interior acoustical problems. We use the industry-standard EASE and

INSUL computer models as well as reference literature to assess the performance of structural elements, to model interior noise levels and to recommend appropriate mitigation measures.

Finally, CSA conducts transportation noise evaluations of all types including screening assessments, noise impact studies, preliminary and final noise barrier design, and special studies. Services provided by CSA include rail and roadway noise measurements, transportation noise modeling using Federal Highway Administration (FHWA) Traffic Noise Model (TNM) or Federal Transit Administration (FTA) Guidance Manual processes, noise abatement design, National Environmental Policy Act and state-specific documentation, and public outreach. CSA staff members have performed transportation noise studies of all levels of complexity throughout the United States for clients in Florida, California, Texas, Massachusetts, New York, Minnesota, Oklahoma, Arizona, Georgia, Washington, Nevada, Utah, and many other states. CSA staff are authors of the FTA and Federal Railroad Administration (FRA) Guidance Manuals and the FHWA Noise Measurement Handbook.



**Herbert L. Singleton Jr., INCE Bd. Cert** will serve as Project Manager. Mr. Singleton has over 25 years of acoustical engineering experience, is INCE Board Certified, and is President and a co-founder at CSA. His specialties include acoustical measurements and modeling. He has applied these skills to sound and vibration analyses for community, transportation, construction, entertainment and architectural projects. He will be supported by **Timothy Johnson** and **David Towers, P.E., INCE Bd. Cert.** who bring noise mapping, transit, and construction noise expertise to the team. All three principals have experience

supporting government clients, including litigation support, code enforcement and code review.



CSA is a corporation headquartered in Massachusetts and with pending registration as a foreign corporation in Florida (application and fee submitted on August 19, 2023). We have offices in Massachusetts, Utah, and California and we offer our services nationwide. CSA has received Minority Business Enterprise (MBE) and Disadvantaged Business Enterprise (DBE) certifications from over 20 states including Florida.

CSA intends to conduct most of the scope of work from our Massachusetts offices with support from our California and Utah office as-needed. CSA uses Microsoft Teams for conference calls and meetings which allows for video conferencing and screen-sharing and has a corporate file transfer site to handle large files.

As President of CSA, Mr. Singleton is authorized to negotiate on behalf of the company for this work. This proposal represents a binding offer for 120 days from the submittal date of August 28, 2023.



**CSA Office Locations**

**Massachusetts:**

**Headquarters**

200 North Main Street, Suite 17  
 East Longmeadow, MA 01028  
 T (413) 315-5770  
 F (413) 315-5770  
 W: www.csacoustics.com

**Boston-area Branch**

1500 District Avenue, Suite 1048  
 Burlington, MA 01803  
 T (781) 591-3500

**Utah:**

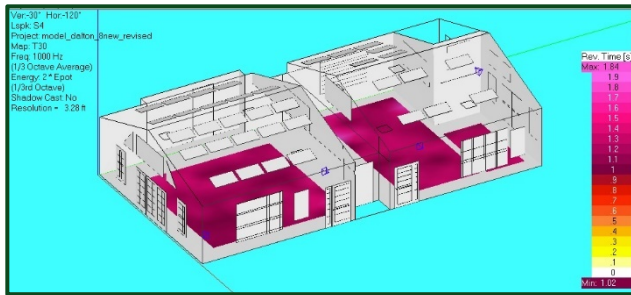
**Salt Lake City Branch**

699 E. South Temple, Suite 201B  
 Salt Lake City, UT 84102  
 T (801) 997-8600

**California:**

**Southern California Branch**

400 Corporate Pointe, Suite 300  
 Culver City, CA 90230  
 T (213) 330-0480



As described in this proposal, CSA is able to perform the tasks identified in the RFQ and provide quality services to the City of Fort Pierce. We have experience in reviewing, developing, and enforcing noise limits for entertainment, transportation, commercial and construction sources. We have experience with regulating and mitigating noise from entertainment venues and will apply those lessons to Fort Pierce. CSA has the technical capability to measure and model noise citywide or by neighborhood to assess existing noise, predict future levels and assess “hotspots”.

This proposal details tasks to conduct a citywide assessment of existing noise levels to develop noise contours for the downtown, Special Entertainment District, and other areas. This proposal includes the tasks for the full scope as provided in the RFP, as well as discussions to reduce scope and cost. The full scope includes:

- Travel to Fort Pierce to coordinate with City staff, assess existing noise sources, and collect data for use in noise contour mapping efforts.
- Develop a noise map of downtown area, the Special Entertainment District, and other areas for use in quantifying existing noise conditions.
- Develop recommendations to eliminate ambiguity in enforcing sound level limits through discussion with City staff, research of efforts in Fort Pierce and other jurisdictions, and application of our experience.
- Develop objective processes for determining limit for overall sound level and low-frequency (bass) sound levels, again based on experience in the City and other jurisdictions, our own experience, and discussions with stakeholders.
- Develop recommendations for objective standards that account for ambient noise in Fort Pierce based on our experience developing relative noise standards (i.e., compared to ambient levels) for the Federal Transit Administration.
- Provide recommendations for sound insulation or other sound mitigation strategies for residential and commercial land-uses, based on precedents, experience, and acoustical best-practices.
- Additional services as requested by the City.

The total estimated cost for this study is **\$83,314**.



## 1. EXPERIENCE AND QUALIFICATIONS

Cross-Spectrum Acoustics, Inc. was formed in 2011 and has been providing acoustical consulting services for 12 years. In that time, CSA has worked with state and Federal agencies, local municipalities, businesses and communities to address noise control services from a variety of sources. Project work on municipal projects has included assessments of noise from breweries, live music venues, animal daycare/board-ing facilities, outdoor and indoor firing ranges, race tracks, outdoor sport facilities, equipment storage yards, small unmanned aerial vehicles and lakeside summer camps. We also have experience recom-mending and designing mitigation measures for vari-ous community noise projects including band sheds, sound insulation improvements, noise source time limits, barriers, mufflers, enclosures and shrouds.

CSA has performed analyses of speech intelligibly, sound isolation between spaces, and structure-borne noise caused by mechanical and loudspeaker sources. We can measure acoustical parameters such as rever-beration time (T60), field sound transmission class (STC) and speech transmission index (STI) to help resolve interior acoustical problems. We use custom-ized computer models such as SoundPLAN (outdoor sound level prediction software) and INSUL (sound-proofing prediction software) and reference literature to predict future sound levels and to recommend ap-propriate mitigation measures.

CSA staff have a wealth of experience measuring and modeling noise levels from a variety of urban sources. City-wide and community noise modeling efforts have been undertaken on numerous projects. Three-dimensional acoustical models are typically devel-oped to predict noise levels from new sources, show noise contours through neighborhoods, and develop mitigation measures.

Cross-Spectrum Acoustics, Inc. is a small business with 15 professionals working across all of our loca-tions. The firm workforce is made up of 12 consulting professionals (including the two owners), two admin-istrative staff and one technician. Our technical staff include three Principals holding Board Certification from the Institute of Noise Control Engineering (INCE), five staff holding Professional Engineering licenses across 11 states (including one Principal with a Florida PE), and four staff holding advance degrees

(including one doctorate). Staff experiences encom-pass assessments, acoustical design, training, expert witness testimony, and public presentations.

Because we work to keep our costs low, our rates are extremely competitive with peer firms. We work closely with clients to ensure that project objectives are met on time, and on budget with cost-effective so-lutions.

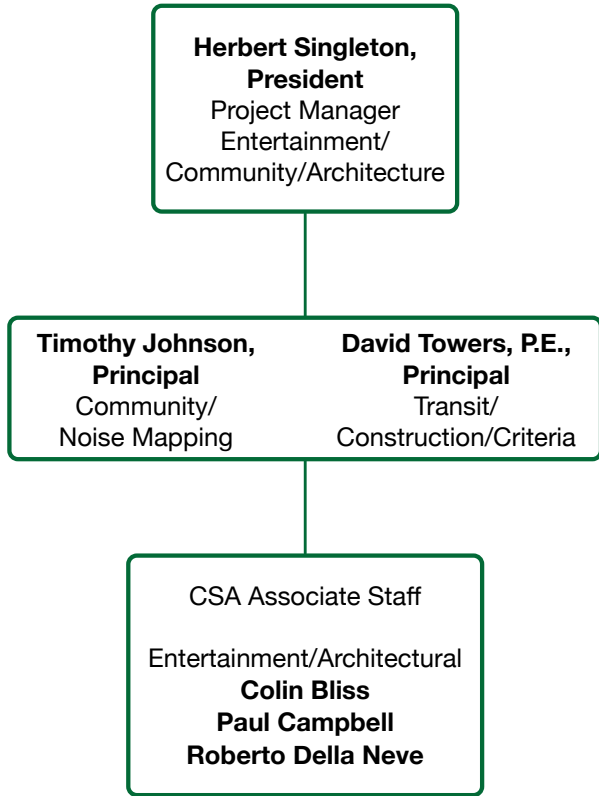


CSA works to make our business sustainable. When possible, we adopt paperless workflows and recycle to reduce paper waste. Outdated electronic equipment is repurposed, and batteries are recycled to reduce e-waste. Staff use public transit on work trips or car-pool if tasks allow.

We propose three highly qualified individuals to man-age and support this effort. **Herbert L. Singleton Jr., INCE Bd. Cert** will serve as Project Manager. He will be supported by **Timothy Johnson** and **David Towers, P.E., INCE Bd. Cert.** who bring noise map-ping, transit, and construction noise expertise to the team. All three principals have experience supporting government clients, including litigation support, code enforcement and code review.

The majority of the work will be conducted from our Massachusetts offices. This section includes sample projects with references for each key staff member. Full resumes including education and licensure are provided at the end of this section. Key members will not be removed or reassigned from this contract with-out prior approval of the City.

We do not anticipate the use of subcontractors for this work. Key staff for this effort are shown in the organ-izational chart below. Qualifications for the three Principals that will lead this effort are provide in Sec-tion 1.1.



**1.1. CSA KEY STAFF RESUMES**

**Herbert L. Singleton Jr, INCE Bd. Cert. – President**

Mr. Singleton will serve as Project Manager for this contract as well as community noise, entertainment noise, architectural acoustics expert.

As co-founder of Cross-Spectrum Acoustics Inc., Mr. Singleton has over 25 years of acoustical engineering experience. His specialties include acoustical measurements and modeling of a variety of noise sources. He has applied these skills to sound and vibration analyses for community, transportation, construction, and architectural projects. Mr. Singleton conducts field survey measurements and environmental assessments for private firms and public agencies across the United States.

Mr. Singleton is familiar with a broad range of sound and vibration measurement tools as well as noise modeling software and algorithms. He has a wealth of experience with a broad range of sound and vibration measurement tools including sound level meters, unattended monitoring hardware and digital acquisition

systems. His expertise lies in the measurement of acoustical conditions and the prediction of future sound and vibration levels in outdoor and indoor environments. He applies his knowledge of signal processing tools and data analysis techniques to solve problems at minimal cost.

Mr. Singleton has instructed clients from public and private firms in the use of sound and vibration measurement tools for environmental assessments. He has worked with agencies and municipalities to develop, implement and enforce noise standards. Furthermore, he has presented project results to the lay public via public meetings and workshops. Mr. Singleton has also testified as an expert in civil and criminal proceedings in six states.

Mr. Singleton actively participates in professional organizations. He is currently a member of the Institute of Noise Control Engineering Certification Board. He contributes to working groups in the development of acoustical standards and guidelines and has held organizational roles in acoustical associations and conferences.

**Employment History:**

**Cross-Spectrum Acoustics, Inc.**

2011 to Present, Principal

**Cross-Spectrum Labs**

2003 to 2011, Principal

**Harris Miller Miller & Hanson Inc.**

1995 to 2003 Consultant/Senior Consultant

**Education:**

B.S. Mechanical Engineering, Massachusetts Institute of Technology, Cambridge, MA – 1995

MSc coursework, Audio Acoustics, University of Salford, Salford, U.K. – 2001-2004

**Registrations and Affiliations:**

Professional Engineer, GA #PE037731;

MA #46867;

CO #PE.0056123;

MN #56348

Board Certified Member, Institute of Noise Control Engineering

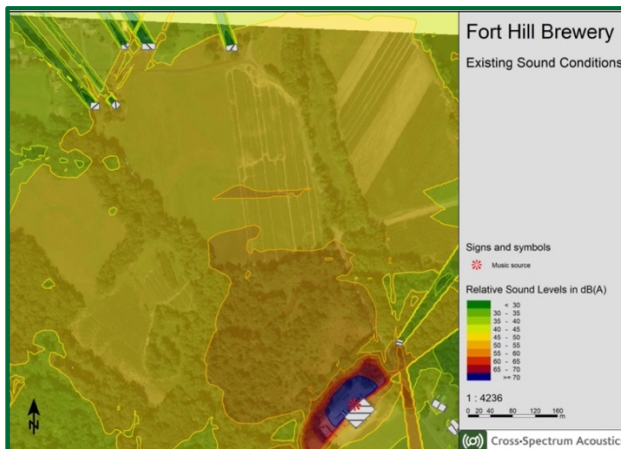
Member, Acoustical Society of America

Member, National Council of Acoustical Consultants

## Mr. Singleton Featured Projects

### Fort Hill Brewery Noise Assessment, Easthampton, MA

Mr. Singleton assessed noise levels from an existing outdoor live music stage. Live music from evening events were generating complaints from neighbors up to a half mile away from the stage. Mr. Singleton worked with the brewery to design a band shell to redirect live music emissions away from sensitive receptors, which would result in a noise reduction of up to 20 decibels at certain locations. Noise contours of future noise levels were presented to Town representatives as part of the permitting process. Mr. Singleton also designed and oversaw a live demonstration of the predicted noise reduction so that town officials and residents could experience the reductions first-hand.



### Run and Gun Ranch Noise Assessment, Norfolk, MA

Cross-Spectrum Acoustics was retained by a community group to assess noise from a Cowboy Mounted Shooting range that was disrupting a residential neighborhood. Mr. Singleton supervised measurements of shooting range activities, documented noise ordinance exceedances, and provided expert witness testimony in support of the community group in litigation.

### Aviation Cooperative Research Project 02-51, Boston, MA

Mr. Singleton worked with a team of architects, engineers and consultants, examined various methods for determining the sound insulation performance of residential structures. The purpose of ACRP 02-51 was

to assess various sound insulation measurement methods to compare the effectiveness of each method and establish inaccuracies that might be inherent to a specific technique. Mr. Singleton contributed to a guidance manual that aids residential sound insulation programs in selecting efficient and accurate measurement procedures.



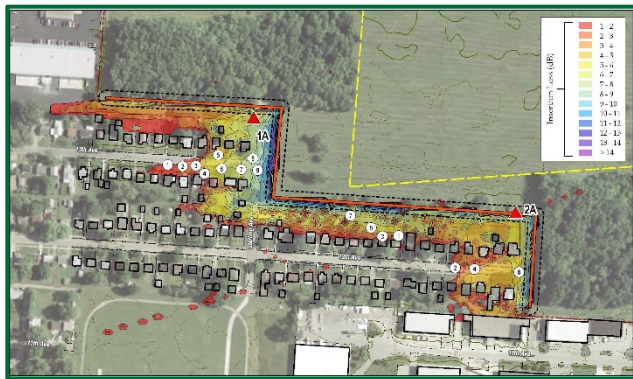
## Representative Projects

- Turn it Down!, Branford MA, Brewery Live Event Noise Assessment
- Palmer Motorsports Park, Palmer MA, Race Track Noise Compliance Measurements and Expert Witness Testimony,
- Milestone Estates Condominium Association, Chelmsford, MA, Dog Kennel Noise Review and Public Meeting Testimony,
- Vermont Department of Public Safety, Deerfield VT, Deerfield Wind Farm Noise Compliance Measurements
- RB Enterprises, Palmer, MA, Gravel Pit Noise Assessment and Expert Witness Testimony
- Attorney Greil Roberts, Newington CT, Cyclone Dust Collector Noise Assessment,
- No Asphalt Defense Fund, Sheffield, CT, Gravel Pit Noise Assessment and Expert Witness Testimony
- Outdoor Shooting Range Noise Measurements and Expert Witness Testimony, Whispering Pines Campground, Newton NH
- F.L. Roberts Inc., Springfield, MA, Noise Measurements and Analyses for Proposed Car Washes,
- Chelmsford Housing Authority, Chelmsford, MA, Public Housing Chiller Noise Analysis and Mitigation Design

**Timothy M. Johnson – Principal Associate**

Timothy Johnson has 21 years of experience in environmental and community noise and vibration. His experience includes extensive acoustical measurements and noise and vibration modeling. He has managed studies for all types of acoustical projects throughout the country including transportation sources, wind and solar projects, racetracks, industrial and commercial facilities, architectural, and performance spaces. He is well versed in all the procedures and methodology for assessing and modeling noise and vibration from rail transit systems used by the U.S. Federal Transit Administration and Federal Railroad Administration. He has presented at numerous public meetings and conferences across the country.

Mr. Johnson specializes in noise measurements, analyses, and modeling. He has developed 3-dimensional models in urban and rural environments to predict noise levels, map noise propagation, and design mitigation measures.



Mr. Johnson’s acoustical modeling and computer program experience includes: SoundPLAN computer modeling for numerous types of environmental noise mapping projects; Noise and vibration modeling methodology in FTA “Transit Noise and Vibration Impact Assessment” and FRA “High-Speed Ground Transportation Noise and Vibration Impact Assessment” guidance manuals; FHWA Traffic Noise Model (TNM) highway noise modeling and noise barrier design; Building floor vibration modeling using FloorVibe program and AISC Steel Design Guide 11: Vibrations of Steel-Framed Structural Systems Due to Human Activity (2nd Ed.); EASE room acoustics modeling; and INSUL modeling to predict the sound insulation performance of building walls, floors, and ceilings. Drafting and mapping software experience includes AutoCAD and ESRI ArcGIS.

**Employment History:**

- Cross-Spectrum Acoustics, Inc.**  
2021 to Present, Principal Associate
- Wilson Ihrig**  
2015 to 2021, Senior Consultant
- Harris Miller Miller & Hanson Inc.**  
2005 to 2015, Consultant/Senior Consultant
- Boyce Nemece Designs**  
2002 to 2005, Audiovisual Consultant

**Education:**

B.S. Mechanical Engineering with Acoustics Concentration, University of Hartford, CT – 2002

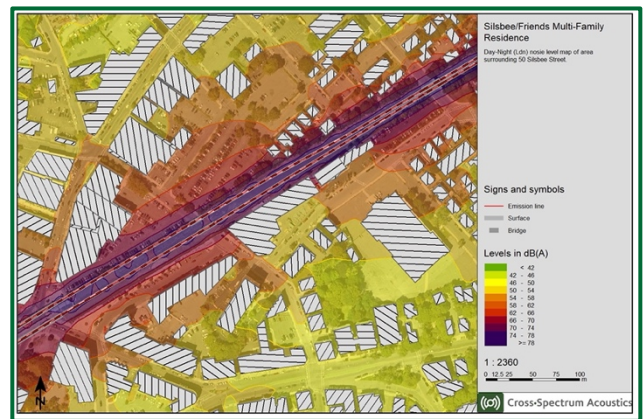
**Registrations and Affiliations:**

- Registered Engineer in Training, MA
- Institute of Noise Control Engineering
- Acoustical Society of America, Member

**Mr. Johnson Featured Projects**

**CMH Airport 13<sup>th</sup> Avenue Noise Wall/Berm Design Study, Columbus, OH**

Mr. Johnson conducted an acoustical study and community noise mapping for CMH airport for the design of noise mitigation due to relocating a runway. The model incorporated aircraft takeoff noise on the relocated runway as it propagated through the adjacent neighborhood. A noise wall/berm combination modeled and designed to provide significant noise reduction in the neighborhood.



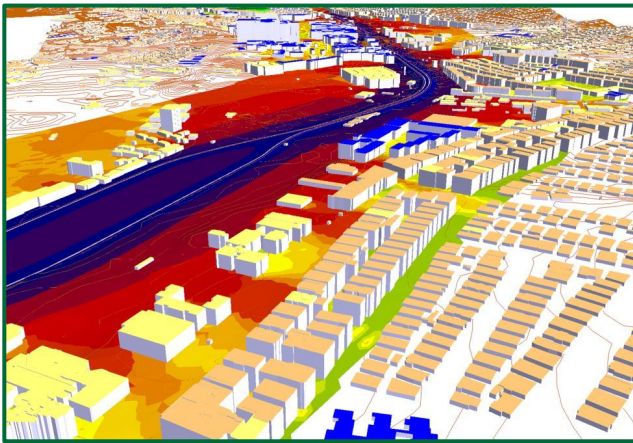
**Cooper Park Race Track Noise Study, Columbus, OH**

Mr. Johnson conducted a noise study and acoustical modeling for a planned race track in the city of Columbus, OH. An acoustical model was constructed

which incorporated the planned track and associated buildings, city roads and highways, surrounding neighborhoods, and terrain features. Noise mitigation measures were analyzed and modeled to show compliance with relevant criteria.

**Solar Station Noise Studies, Warren/Turner/Buxton, ME**

Mr. Johnson conducted noise studies and 3-dimensional noise modeling for multiple planned solar stations in Maine. Noise maps and noise contours were produced that showed predicted sound levels throughout large community areas from the development of the projects.



**Representative Projects**

- Witham Field Airport, Stuart, FL, Community Noise Measurements
- Tweed New Haven Airport Noise Barrier Feasibility Study, New Haven, CT, City Acoustical Modeling & Noise Contours
- General Mitchell International Airport Noise Barrier Study, Milwaukee, WI, City Acoustical Modeling & Noise Contours
- Los Angeles International Airport Ground Run-up Enclosure EA, Los Angeles, CA, City Acoustical Modeling & Noise Contours
- Orange County Tactical Training Range Noise Study, Orange County, NY, Community Noise Mapping
- Weymouth High School Wind Turbine Feasibility Noise Study, Weymouth, MA, Community Noise Mapping
- Calcium Carbonate Plant Noise Control, Florence, VT, Acoustical Modeling & Community Noise Contours

- Playa Grande Noise Barrier Study, Playa Grande, Dominican Republic, Acoustical Modeling & Noise Contours
- Baltimore Grand Prix Noise Study, Baltimore, MD, Acoustical Modeling & City Noise Contours
- Shenandoah Speedway Noise Study and Abatement Analysis, Shenandoah, VA, Acoustical Modeling & Community Noise Contours
- The Perelman at World Trade Center, New York, NY, Ground-borne Noise Assessment & Design
- South Florida Regional Transportation Authority (SFRTA) Tri-Rail Northern Layover/Maintenance Facility Environmental Assessment, West Palm Beach, FL, Noise & Vibration Assessment
- South Florida Regional Transportation Authority (SFRTA) Tri-Rail Existing Layover Facility Noise Study, West Palm Beach, FL, Noise Study
- Central Broward East-West Transit Study, Fort Lauderdale, FL, Noise & Vibration Assessment
- Miami Performing Arts Center (PAC), Miami, Florida, Audiovisual Design
- Schermerhorn Symphony Center, Nashville, TN, Audiovisual Design



**David A. Towers, P.E., INCE Bd. Cert. – Principal Associate**

Mr. Towers will serve as our Transit and Construction Noise Expert.

With over 45 years of experience as an acoustical consultant, David Towers has worked on projects in a variety of areas including environmental, industrial, and architectural noise and vibration control. He specializes in noise and vibration control for rail transportation systems and for construction projects. His activities in these fields have included measurements, acoustical design and specification, environmental assessments, and noise and vibration control development.

Mr. Towers has participated in a wide range of construction noise and vibration control projects in the U.S. including noise and vibration monitoring, environmental assessments, specification development and mitigation design. In these activities, he has provided consulting services to engineers, developers and planners, and to transportation agencies and public works agencies.



In addition, Mr. Towers has a wide range of rail transportation experience in the U.S. and abroad including noise control for vehicles and facilities, compliance tests, environmental assessments, construction noise and vibration control and community measurement programs. He is a co-author of two U.S. transportation agency guidance documents on noise and vibration impact assessment, including the Federal Transit Administration manual for transit projects and the Federal Railroad Administration manual for high-speed ground transportation projects.

**Employment History:****Cross-Spectrum Acoustics, Inc.**

2015 to Present, Principal

**Harris Miller Miller & Hanson Inc.**

1986 to 2015 Senior Consultant/Principal Consultant/Principal Engineer

**Bolt Beranek and Newman Inc**

1974-1986 Consultant/Senior Consultant

**Bechtel Power Corporation**

1973-1974 Assistant Engineer

**Education:**

M.S. Mechanical Engineering, Purdue University, West Lafayette, IN – 1973

B.S. Mechanical Engineering, Columbia University, New York, NY – 1972

B.A., Queens College (City University of New York), New York, NY – 1972

**Registrations and Affiliations:**

Professional Engineer, CA #M18912;

FL #PE26696;

MA #29317;

NY #067116-01;

NC #043050;

Fellow and Board Certified Member, Institute of Noise Control Engineering

Member, International Committee for the International Workshop on Railway Noise (IWRN)

**Mr. Towers Featured Projects****DART Cotton Belt Corridor**

Detailed noise and vibration analyses were conducted as part of an environmental impact assessment for a commuter rail project in the Dallas, TX area. The project's primary purpose is to provide passenger rail connections and service along a 26-mile corridor traversing seven cities in the northern part of the Dallas Area Rapid Transit (DART) service area. Tasks for this project have included noise and vibration measurement surveys, development of noise and vibration prediction models for diesel multiple unit (DMU) trains, noise and vibration impact assessment, development of noise and vibration mitigation recommendations, preparation of technical reports and participation at public meetings and workshops.

### Metra UP North Rebuild: Fullerton to Addison

A noise and vibration impact assessment was conducted for this project which consists of shifting the commuter rail track alignment and replacing retaining walls and eleven bridges over roadways along the Metra Union Pacific (UP) North Line in Chicago, IL. The project corridor passes through densely populated single-family and multi-family residential neighborhoods, and the proposed shift in the track alignment and new construction have the potential to result in both long-term operational and short-term construction noise and vibration effects. Therefore, a noise and vibration impact assessment was conducted in accordance with U.S. Federal Transit Administration (FTA) methodology and criteria guidelines as part of an environmental study leading to the preparation of a Documented Categorical Exclusion (DCE).



### San Joaquin Joint Powers Authority ACE Forward Improvements Project

CSA is the noise and vibration consultant on the ACE Forward Improvements project, a complex project with multiple alternatives and options to improve and expand ACE commuter rail services from the Central Valley into the San Jose area. The work has included extensive noise and measurements and a detailed noise assessment for the project, including additional trains, new service options and connections with other transit operators in the area, an expanded operating area, grade-crossing noise and an assessment of maintenance facility operations. The current work on the project is focused on extensions of ACE service to Sacramento and to Modesto.



### Representative Projects

- Noise and Vibration Assessment for FRA Tier 1 EIS, Washington, DC to Boston, MA, NEC FUTURE Project
- Noise and Vibration Study, MARTA, Decatur, GA, MARTA East Line Sycamore Street
- Noise and Vibration Assessment, Pinellas County, FL, Pinellas Alternatives Analysis
- Noise and Vibration Impact Assessment, Fort Worth Transportation Authority TX, TEX Rail EIS
- Acoustical Design Review, Hong Kong, Hong Kong Mass Transit Railway Kowloon Southern Link Extension
- Construction noise monitoring, South Boston, MA, Massport Conley Terminal Improvements
- Construction noise and vibration control services, Washington, DC, DC Water Cross-Town Tunnel Rehabilitation Project,
- Construction noise control review services, Boston, MA, MWRA East Boston Combined Sewer Outfall Project
- On-call construction noise and vibration control services, Boston, MA, Central Artery/Third Harbor Tunnel ("Big Dig") Project

## 2. APPROACH TO SCOPE OF WORK

The RFP identifies an overall scope of work to aid the City in developing standards for measuring and enforcement sound limits. The sound standard is to be based, in part, on existing sound levels which will be characterized using noise contours. We interpret this to mean that the city wants to develop noise control standards that are compatible with City activities but also reflect residents' desire for peaceful enjoyment of their property.

Our approach, based on the RFP scope of services and our experience, would be as follows:

- **Review City's Municipal Code:** this review would be used to acquaint ourselves with the current approach to noise control and zoning. This review would include coordination with City staff to determine past approaches, complaint tracking processes, stakeholder concerns, comprehension of current code, difficulties with the current ordinance, and desired outcomes.



- **Conduct Citywide Analysis of Sound Activity:** This task would include fieldwork to observe and measure noise levels at locations around the city. Part of this work is identifying all of the various sound sources in the downtown and Special Entertainment District, as well as other parts of the City. Potential sound sources include amplified and acoustic music, traffic, railways, mechanical equipment, crowds, and animals. These sources might be fixed in place, temporary, or moving. Some sources, such as music in restaurants, or church bells might be deemed more desirable than others. All sources would be noted and categorized by type and generalized location.

The observations and data from the visit would be used to generate a noise map of the city, with a focus on the downtown and entertainment districts. The noise map would use sound level contours to provide a graphical representation of existing conditions and existing noise levels. The noise map will include contributions from entertainment, transportation, commercial and industrial sources. The noise map can also be used to prioritize noise control efforts. This task assumes City staff can assist in identifying land use.

The noise map and noise contours would be generated using SoundPLAN noise prediction software. SoundPLAN implements outdoor acoustical prediction algorithms based on the ISO 9613-2 noise prediction standard and is in wide use by professionals around the world on a variety of acoustical assessments. Other noise prediction methodology based on Federal Highway Administration, Federal Transit Administration and other standards may be used to supplement SoundPLAN.



- **Recommendations to eliminate ambiguity in enforcing sound level limits:** This task would rely on CSA experience in developing and enforcing sound level limits. We would discuss current enforcement procedures and impediments with city staff. If possible, we would also research the effect of enforcement of stakeholders. We would also compare these findings with processes and outcomes in other jurisdictions. The output

of this task will likely include recommendations for equipment settings, documentation, measurement durations, measurement locations, and specific sound level metrics. There may also be recommendations regarding training for enforcement personnel.

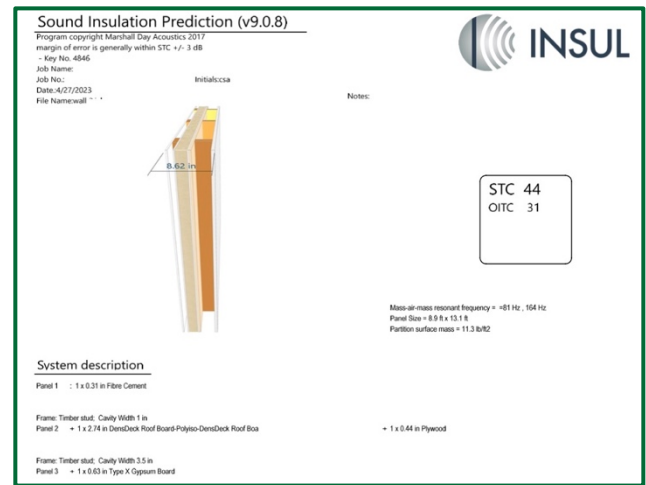
- Establishing an objective measure for overall sound and low-frequency sound limits:** This task would rely on CSA experience in setting sound limits. This would involve discussion with stakeholders and review of precedents. Our experience has shown that measuring sound levels using sound level meters is not always straightforward, especially when measuring low-frequency noise in the presence of background low-frequency noise sources (such as traffic or ocean waves). It is likely that a combination of appropriate limits and appropriate measurement procedures (or even the addition of a “plainly audible” standard) will be required to implement a useful process.

The results from this work will be used to recommend updates to the City noise ordinance. The current ordinance provides limits based on A-weighted, C-weighted and Z-weighted sound pressure levels – in addition to the sound level limits, a “plainly audible” standard might be useful for assessing transient sources.

- Recommending objective performance standards to account for existing noise conditions:** It is important that the City noise ordinance reflect the soundscape and character of the city and its neighborhoods. Residents generally want access to peace and quiet. An urban environment typically has multiple noise sources (traffic, mechanical equipment, entertainment venues, etc.) as part of everyday commerce. A noise ordinance should be flexible enough to permit the use of reasonable noise-generating sources (quiet air conditioning units for example). We intend to apply our experience in developing and refining relative noise limits (“relative” meaning a comparison to ambient noise levels, as opposed to absolute limits) for Federal Transit Administration and other jurisdictions.

- Provide mitigation recommendations:** CSA has a wealth of experience in recommending and designing noise mitigation measures, including

sound reduction measures at the source, path and receiver. We will apply this experience to recommend cost-effective mitigation measures as necessary. Mitigation recommendations can range from audio amplifier setting limits to sound insulation measures such as multi-pane windows and solid doors. Consideration will be made for planned conversions of commercial space to living space, and mixed-used buildings.



The approach described above is based upon the statement of work in the RFP and assumes that the statement of work reflects the desired outcome of the study. The list of services in the RFP identifies three tasks all related to measurement of and enforcement of sound levels in the city. Although the tasks are listed separately, there is overlap between the work and outcomes. As such, we would approach the tasks in coordination with one another.

The work would be completed over a period of approximately 4 months as detailed in Section 3.

### 3. PROJECT SCHEDULE

CSA staff projected workload through the fourth quarter of 2023 and into 2024 is approximately 50%. The budget assumes 476 total staff hours to be worked on this study. This fits comfortably into projected key staff availability of approximately 3,000 hours and total staff availability of approximately 11,000 hours.

The schedule of tasks, based on calendar days after receipt of Notice to Proceed (NTP), is presented in the table below. Note that the itemized tasks in the table differ slightly from the itemized tasks in section 2 due to the overlap and/or sequential nature of some of those tasks.

# of Calendar Days after NTP	Task
14 days (2 weeks)	<p>Begin review of municipal code and coordination with city staff</p> <p>Begin research into noise control issues faced by Fort Pierce</p> <p>Begin review of noise ordinances of other jurisdictions</p>
28 days (4 weeks)	<p>Travel to Fort Pierce to tour city, conduct spot measurements and communicate with City staff and stakeholders.</p> <p>Start developing acoustical model for city-wide noise map</p> <p>Start assessment of criteria for overall sound and low-frequency sound limits</p>
35 days (5 weeks)	<p>Complete noise code review and produce memorandum summarizing code, issues, and future objectives, and approaches of other municipalities.</p> <p>Start analyzing measurement data and characterizing existing noise sources</p>

# of Calendar Days after NTP	Task
49 days (7 Weeks)	<p>Produce preliminary noise maps, validate maps against measurement data</p> <p>Travel to Fort Pierce to collect additional data and observations needed to complete noise map</p>
56 days (8 weeks)	Based on preliminary noise maps, develop processes to reduce ambiguity in sound level enforcement, to produce objective limits for overall sound and low-frequency sound limits, and
70 days (10 weeks)	<p>Finalize noise maps.</p> <p>Submit draft memorandum of recommendations to eliminate ambiguity in enforcing sound level limits, setting sound and low-frequency sound limits and setting objective performance standards to account for ambient noise in sound level limits.</p>
14 days after receipt of comments from draft memo	Finalize memorandum of recommendations that incorporate City comments and final noise maps.
84 days (12 weeks)	Assess sound mitigation recommendations in coordination with City Staff.
91 days (13 weeks)	Submit draft mitigation recommendations memorandum for comment
14 days after receipt of comments from draft mitigation memo	Finalize memorandum of mitigation recommendations that incorporate City comments and final noise maps.
TBD	Present findings to City and/or Public at in-person meeting
Ongoing	Submit progress reports, meet with City officials and/or stakeholders via video conference, additional services requested by City.

The project assumes three trips to the city of Fort Pierce:

- One one-week trip for two CSA staff within 28 days of NTP to meet with officials, tour the city, note sound sources, and measure sound levels from various sources.
- One two-day trip for a single CSA consultant at 57 days after NTP to collect data to refine noise map.
- One two-day trip for a single CSA consultant to present findings to City staff and/or to the public.

This proposal assumes that other communications with City staff will occur via email, telephone or video conferencing. CSA utilizes Microsoft Teams for telephone and video conferencing, and we can setup meetings if desired.



### 3.1. QUALITY ASSURANCE

CSA has developed a quality assurance/quality control (QA/QC) policy to ensure that work product developed, produced and disseminated by CSA staff meet the accuracy and precision requirements of our clients and the public. The CSA QA/QC policy is consistent with ISO 9001 requirements and is recorded in a 15-page document available to CSA staff and clients. This document is updated as needed. The CSA QA/QC policy has been submitted to multiple state agencies as part of project on-boarding requirements and has been accepted by all.

We understand that the work for this study is important to the City and its residents. As such it is vital

that the work be completed efficiently and on schedule. CSA has qualities and processes that will enable us to meet project goals in an efficient manner:

- All work products are reviewed by Principals prior to dissemination to ensure the consistency of our analysis and the accuracy of modeling.
- CSA has multiple qualified associates that can be brought in as needed to substitute or supplement staff to keep projects on schedule. CSA internal practices require that Project Manager, Principals and staff have an understanding of the overall project to limit disruptions if personnel are unavailable. Note that Key staff will not be substituted without approval from the City.
- CSA has an extensive array of in-house equipment and software to conduct detailed analysis without having to rent equipment which reduces project costs and delays.
- Our billing system is manual with strict oversight of employee timesheets and expense billing to provide accurate accounting of project costs. This allows us to more carefully manage budget and send accurate invoices in a timely fashion.
- If requested, CSA can submit progress reports and fieldwork plans for City approval to ensure the project is proceeding as planned.



Fieldwork will be conducted in accordance with appropriate technical standards, engineering best practices, and the CSA QA/QC policy. Field measurement planning will include the assignment of a fieldwork manager as a point-of-contact and to plan the work. CSA will work with the City to obtain right-of-entry letters or other documentation required to conduct the

work. Our instrumentation meets American National Standards Institute standards for precision measurement equipment and our instruments are calibrateded by a laboratory traceable to the National Institute of Standards and Technology (NIST).

Data analysis is conducted in the CSA laboratory using off-the-shelf computer programs such as SoundPLAN and MATLAB or using custom CSA software. In-house software has undergone rigorous review to ensure that results meet the requirements of applicable standards. Abnormal results are confirmed using alternate methods.



Project deliverables will be reviewed internally in accordance with the CSA QA/QC policy prior to distribution. Internal reviews will include checks for technical content, technical calculations, comprehension, project objectives, and outcomes.

CSA is a member of the National Council of Acoustical Consultants (NCAC) and as such we are bound by the NCAC Canon of Ethics to uphold the objectivity of our analysis, to hold the health and welfare of the public and client in the performance of our duties, to perform services in the areas of our expertise, to act professionally, and to represent our projects and clients in an objective manner. CSA carries General Liability, Professional Liability (Errors and Omissions), Automobile Liability, and Workers' Compensation Insurance policies in accordance with standard practice and individual contract requirements. Proof of insurance is provided upon request.



#### 4. PROJECT BUDGET

The overall project budget for this study is **\$83,314**. This budget is based upon CSA’s fully-burdened labor rates (\$135/hour for Associates, \$160 for Senior Associates and \$185/hour for Principal Associates), U.S. General Services Administration (GSA) Fiscal Year 2024 rates for per diem and lodging, and actual travel costs.

The breakdown by task as itemized in Section 2 is presented in the table below.

The budget in this proposal is based upon the tasks outlined in the RFP. The budget does not include costs for “additional services” as listed in the RFP. A supplemental budget for those services can be submitted once those tasks are detailed. We can also bill for those services on a Time and Materials (T&M) basis upon written request.



The budget can be expanded or reduced to accommodate City resources and scope. For example, eliminating or greatly reducing the noise mapping scope would reduce the overall budget by almost 50 percent. Alternatively, generating noise contours for certain areas of the city or specific neighborhoods (as opposed to citywide efforts) could also significantly reduce costs. Reducing the precision of noise contour to only account for the most significant sources (most likely to be transportation and fixed amplified music sources) would also reduce costs. We are willing to revisit the scope with the City to provide an appropriate budget estimate.

We have found that the best way to keep projects on track is to have smooth collaboration with client. CSA will keep client up to date with progress or nonconformities. CSA will be available during eastern time zone working periods to respond to client concerns.

Task	Associate, \$135/hr.	Principal, \$185/hr.	Cost
<b>Labor</b>			
Review Municipal Code	--	4 hours	\$740
Citywide sound analysis, incl. travel	84 hours	56 hours	\$21,700
Noise mapping, incl. travel	40 hours	120 hours	\$27,600
Recommendations to eliminate enforcement ambiguities	16 hours	16 hours	\$5,120
Establish objective measures for sound limits	8 hours	16 hours	\$4,040
Recommend objective performance standards based on ambient noise	8 hours	16 hours	\$4,040
Provide mitigation recommendations	24 hours	16 hours	\$6,200
Meetings (in-person and video conference)	--	40 hours	\$7,400
<b>Expenses</b>			
Airfare for Trip 1		\$700	\$700
Lodging for Trip 1	\$535	\$535	\$1,070
Rental car for Trip 1	\$300	\$300	\$600
Per diem for Trip 1	\$295	\$295	\$590
Parking, shipping & misc.			\$1,000
Airfare for Trip 1		\$400	\$400
Lodging for Trip 1		\$214	\$214
Rental car for Trip 1		\$200	\$200
Per diem for Trip 1		\$118	\$118
Parking & misc.			\$500
Airfare for Trip 1		\$400	\$400
Lodging for Trip 1		\$214	\$214
Rental car for Trip 1		\$200	\$200
Per diem for Trip 1		\$118	\$118
Parking & misc.			\$150
<b>Total</b>			<b>\$83,314</b>

## 5. REFERENCES

In addition to the experience described in Section 1.1, we have listed a sampling of CSA projects below to show the breadth of projects that CSA has worked on.

### East Greenwich Noise Ordinance Update

CSA worked with the Town of East Greenwich to update the town noise ordinance. The water front area of the Town is an active entertainment district with multiple restaurants offering outdoor live music during warm weather months. These establishments have been subject to noise complaints from nearby residents. The Town implemented a noise ordinance that applied exclusively to the entertainment district. This new ordinance set limits based on A-Weighted and C-Weighted sound metrics. The limits proved difficult to enforce due to low-frequency background limits. In addition, one establishment challenged the ordinance based on constitutional grounds because it only applied to a section of the Town. Mr. Singleton provided guidance to the town on revisions to the ordinance that reduced the enforcement burden on the Town while providing the flexibility to enforce low-frequency sound limits and overall sound limits.

<b>Client Name</b>	Town of East Greenwich, RI
<b>Client Contact</b>	Andrew M. Teitz, Esq
<b>Contact Information</b>	zoning@utrllaw.com (401) 331-2222
<b>Year</b>	2021-2023
<b>Budget/Cost</b>	Time & Materials / \$3,513



### Dartmouth Indoor Practice Facility Compliance Measurements

CSA was retained by the Town of Hanover, NH to aid in the assessment of noise from the Dartmouth Indoor Practice Facility (IPF) during the pre-construction permitting process and then after the facility was constructed. CSA conducted a series of measurements before the facility was built and used the data to help the Town develop noise limits for the project. CSA later performed measurements after the facility was built to characterize noise from the HVAC and sound reinforcement systems, and to determine compliance with the Town limits. CSA coordinated with the IPF designers to identify situations where the facility was not in compliance with limits. The designers were able to correct deficiencies and bring the IPF into compliance with Town requirements.

<b>Client Name</b>	Town of Hanover, NH
<b>Client Contact</b>	Vicki Smith
<b>Contact Information</b>	Vicki.smith@hanovernh.org (603) 640-3214
<b>Year</b>	2016-2020
<b>Budget/Cost</b>	\$22,045 / \$11,063

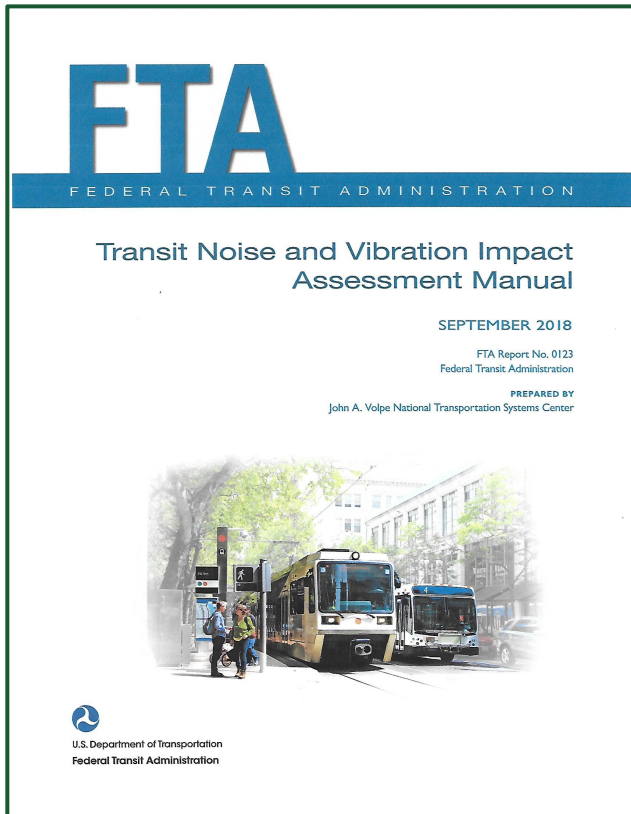
### New Haven HVDC Converter Station

CSA was retained by the Town of New Haven, VT to assess existing noise conditions at residences near the location of a proposed High-Voltage Direct Current (HVDC) converter station. CSA conducted long-term noise and meteorological measurements at six locations over a 10-day period to characterize noise levels at residences. The measurement results were used to recommend noise limits and compliance goals for the project. The results were presented at a public meeting to residences and a computerized audibility demonstration was provided to help contextualize noise levels from the project.

<b>Client Name</b>	Town of New Haven, VT
<b>Client Contact</b>	Cindy Hill, Hill Attorney PLLC
<b>Contact Information</b>	lawyerhill@yahoo.com (802) 388-1664
<b>Years</b>	2016-2017
<b>Budget/Cost</b>	\$10,000 + T&M / \$22,503

### FTA Guidance Manual

Cross-Spectrum Acoustics Inc. (CSA) staff has been working with the FTA on their noise and vibration guidance for decades. Lance Meister and Dave Towers of CSA are authors of the 2006 version of the Federal Transit Administration’s (FTA) guidance manual “Transit Noise and Vibration Impact Assessment,” which is used by consultants in preparing environmental assessments for transit projects and by agency staff for evaluating the impacts of projects.



Cross-Spectrum Acoustics Inc. (CSA) staff has been working with the FTA on their noise and vibration guidance for decades. Mr. Herb Singleton in one of the authors on the 2018 update of the manual, which includes new noise sources, revised guidance and policy on mitigation, and clarifications to assessment methodologies for combined highway/transit projects.

CSA staff have utilized the methodology in the FTA’s guidance manual on over 500 projects throughout the country, including: light rail transit (LRT), bus rapid transit (BRT), streetcar, heavy rail, commuter rail, inter-city and high-speed rail, and freight rail systems.

<b>Client Name</b>	Federal Transit Administration
<b>Client Contact</b>	Antoinette Quagliata, Manager Sustainability Services, Dewberry (formerly FTA)
<b>Contact Information</b>	aquagliata@dewberry.com (973) 576-9653
<b>Years</b>	2006, Guidance Manual 2018 Update
<b>Budget/Cost</b>	\$12,000 / \$12,000

### National Transit Institute Training Course

CSA teaches the National Transit Institute/Federal Transit Administration noise and vibration impact assessment training courses at locations around the country. Our staff has been teaching these courses for over 12 years, with the most recent courses in Phoenix AZ and New York NY in fall 2019, Chicago IL in winter 2019, and Washington D.C. in spring 2017. The three-day course, sponsored by the National Transit Institute, covers the entire noise and vibration guidance manual, including screening, general and detailed assessments for noise and vibration, along with information on mitigation measures and construction noise and vibration. CSA staff have taught over 400 students, including consultants, state DOT, transit agency, and FTA regional and headquarters staff.

<b>Client Name</b>	Federal Transit Administration
<b>Client Contact</b>	Dee Phan
<b>Contact Information</b>	Dee.phan@dot.gov (202) 366-1799
<b>Years</b>	2014-Present
<b>Budget/Cost</b>	Time & Materials / ~\$15,000 per course

### Walk Bridge Replacement Program

The Connecticut Department of Transportation (CTDOT) initiated the Walk Bridge Program to replace the 122-year-old deteriorating railroad bridge that crosses the Norwalk River in Norwalk, CT.



As part of this program, CSA has been providing a wide variety of construction noise and vibration services to CTDOT including:

- Pre-construction background noise and vibration monitoring at sensitive locations near the proposed construction sites
- Pre-construction noise and vibration measurements of test pile driving and sheet driving operations (see above photograph)
- Preparation of construction noise and vibration control specifications
- Preparation of construction noise and vibration control plans

<b>Client Name</b>	WSP USA
<b>Client Contact</b>	Marilee Beebe, P.E.
<b>Contact Information</b>	marilee.beebe@wsp.com (203) 785-0456
<b>Years</b>	2018-Present
<b>Budget/Cost</b>	\$314,500 / \$270,721

### Lumber Yard Housing Development

CSA conducted an assessment of existing noise and vibration levels at the site of the proposed Lumber Yard Development apartment complex in Northampton, Massachusetts to determine if the site meets Federal noise and vibration guidelines for residential use. The site abuts an existing freight right-of-way and there was concern that noise and vibration generated by freight and intercity trains might exceed applicable limits. Under Mr. Singleton's supervision, CSA conducted long-term noise and vibration measurements at the site to collect relevant metrics. CSA recommended specific changes to the architectural design to ensure that interior noise and vibration levels would be acceptable to future residents. The complex opened in 2019 and has received positive reviews from tenants.



<b>Client Name</b>	Valley Community Development Corporation
<b>Client Contact</b>	Joanne Campbell, Director
<b>Contact Information</b>	jc@valleycdc.com (413) 586-5855
<b>Years</b>	2016
<b>Budget/Cost</b>	\$3,535 / \$3,510



## 6. REQUIRED FORMS

Required forms attached:

- Signature/Title Page
- City of Fort Pierce Proposer's Checklist
- Drug-Free Workplace Form
- RFQ Addendum #1 & Signature Form
- Certificate of Insurance





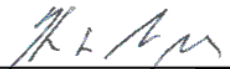


## DRUG~FREE WORKPLACE FORM

The undersigned vendor in accordance with Florida Statute 287.087 hereby certified that  
Cross-Spectrum Acoustics, Inc. does:  
*(Name of Business)*

1. Publish a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the workplace and specifying the actions that will be taken against employees for violations of such prohibition.
2. Inform employees about the dangers of drug abuse in the workplace, the business policy of maintaining a drug-free workplace, any available drug counseling, rehabilitation, and employee assistance programs, and the penalties that may be imposed upon employees for drug abuse violations.
3. Give each employee engaged in providing the commodities or contractual services that are proposed a copy of the statement specified in subsection (1).
4. In the statement specified in subsection (1), notify the employees that, as a condition of working on the commodities or contractual services that are under Bid, the employee will abide by the terms of the statement and will notify the employer of any conviction of, or plea of guilty or nolo contendere to, any violation of Chapter 893 or of any controlled substance law of the United States or any state, for a violation occurring in the workplace no later than five (5) days after such conviction.
5. Impose a sanction on, or require the satisfactory participation in a drug abuse assistance or rehabilitation program if such is available in the employees community, by any employee who is so convicted.
6. Make a good faith effort to continue to maintain a drug-free workplace through implementation of this section.

As the person authorized to sign the statement, I certify that this firm complies fully with the above requirements.

  
\_\_\_\_\_  
*Proposer's Signature*

August 28, 2023  
*Date*



**CITY FORT PIERCE**

**NOISE, ACOUSTIC, AND SOUND CONSULTING SERVICES**

**RFQ NO. 2023-055**

**ADDENDUM NO. 1**

The purpose of this addendum is to respond to questions submitted by potential proposers for clarification of the specifications.

1. **QUESTION:** “Conducting an analysis of sound activity citywide” implies the desire to perform sound measurements throughout the city. To that end, do you have a map showing the exact limits of where you want such a survey to take place?

**ANSWER:** **Map is attached.**

2. **QUESTION:** Note that for a sound survey to be most informative, it would be best to deploy instrumentation for a number of days, if not weeks. Such equipment would need to be mounted and secured to safe structures such that they are not damaged. Would the city take a role in identifying those locations as well as facilitating with deployment and retrieval of the equipment?

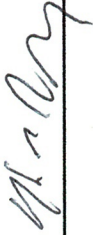
**ANSWER:** **Yes**

3. **QUESTION:** We could provide only general guidelines “regarding soundproofing or other noise-reducing solutions for residential and commercial establishments impacted by amplified sound or outdoor entertainment” as part of our deliverable for this project but specific recommendations would need to be made on a case-by-case basis. Given we do not know the specifics of each venue or residential property, specific recommendations could only be given as an additional service beyond the scope of our proposal. Is this amenable to the city?

**ANSWER:** **I cannot confirm or deny that the City will be agreeable. This proposal is configured as per the proposer’s discretion.**

All other conditions of this bid remain the same.

Please acknowledge receipt of this addendum and include it with your submittal.

Signature:  \_\_\_\_\_ Manual

Signature: Herbert Singleton Jr \_\_\_\_\_  
Typed or Printed

Company Name: Cross-Spectrum Acoustics, Inc. \_\_\_\_\_

Address: 200 North Main St, Suite 17 \_\_\_\_\_  
East Longmeadow, MA 01028 \_\_\_\_\_

Date: August 28, 2023 \_\_\_\_\_

/lh

Attachment: City Commissioner's District Map



# CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

07/13/2023

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

**IMPORTANT:** If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER BIS, Inc. 834 Bradshaw Road Lebanon, TN 37087	615-444-8859	615-444-8509	CONTACT NAME: BIS, Inc. PHONE (A/C, No, Ext): 615-444-8859 E-MAIL ADDRESS: a_bear@comcast.net	FAX (A/C, No): 615-444-8509
INSURED Cross Spectrum Acoustics, LLC 200 North Main Street Suite 17 East Longmeadow, Massachusetts 01028			INSURER(S) AFFORDING COVERAGE	
			INSURER A: Sentinel Insurance Company	NAIC # 11000
			INSURER B: Underwriters at Lloyds, London	22416
			INSURER C:	
			INSURER D:	
			INSURER E:	
			INSURER F:	

**COVERAGES****CERTIFICATE NUMBER:****REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR  GEN'L AGGREGATE LIMIT APPLIES PER: <input checked="" type="checkbox"/> POLICY <input checked="" type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC OTHER:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	20 SBAAI6480 DV	09/29/2022	09/29/2023	EACH OCCURRENCE \$ 1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 1,000,000 MED EXP (Any one person) \$ 10,000 PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COMP/OP AGG \$ 2,000,000 \$
A	<input type="checkbox"/> AUTOMOBILE LIABILITY <input type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input checked="" type="checkbox"/> HIRED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input checked="" type="checkbox"/> NON-OWNED AUTOS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	20 SBAAI6480 DV	09/29/2022	09/29/2023	COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ \$
A	<input checked="" type="checkbox"/> UMBRELLA LIAB <input checked="" type="checkbox"/> OCCUR <input checked="" type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE DED <input checked="" type="checkbox"/> RETENTION \$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	20 SBAAI6480 DV	09/29/2022	09/29/2023	EACH OCCURRENCE \$ 5,000,000 AGGREGATE \$ 5,000,000 \$
A	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	<input type="checkbox"/>	<input type="checkbox"/>	20 WECAT0838	09/29/2022	09/29/2023	<input checked="" type="checkbox"/> PER STATUTE <input type="checkbox"/> OTH-ER E.L. EACH ACCIDENT \$ 1,000,000 E.L. DISEASE - EA EMPLOYEE \$ 1,000,000 E.L. DISEASE - POLICY LIMIT \$ 1,000,000
B	Professional liability			JUPL0105638821 121 XS 0212150-01	03/11/2023 03/11/2023	03/11/2024 03/11/2024	\$2,000,000 occ./ \$2,000,000 agg. \$1,000,000 occ./ \$2,000,000 agg.

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

Audio/Acoustic Consultants

**CERTIFICATE HOLDER****CANCELLATION**

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

*Sue Shrum*

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