

**Exhibit 31: Specification Section 01 57 15 – Temporary  
Construction Noise And Vibration Control**



**SECTION 01 57 15**

**TEMPORARY CONSTRUCTION NOISE AND VIBRATION CONTROL**

**PART 1 - GENERAL**

1.01 SUMMARY

- A. This Section specifies requirements for complying with applicable noise regulations, and noise and vibration limits

1.02 REFERENCES

- A. Reference Standards: This Section incorporates by reference the latest revisions of the following documents.

- 1. American National Standards Institute (ANSI) / Acoustical Society of America (ASA)
  - a. ANSI/ASA S1.4 American National Standard Specification for Sound Level Meters
  - b. ANSI/ASA S2.4 American National Standard Method for Specifying the Characteristics of Auxiliary Analog Equipment for Shock and Vibration Measurements

B. Definitions

- 1. Construction Site: For purpose of noise and vibration control requirements, the Construction Work Area limits. This includes Right-of-Way, property, and construction easements, used expressly for construction.
- 2. Noise Level Measurements: A-weighted and "slow" response readings from instruments complying with TYPE 1 or TYPE 2 requirements of the ANSI/ASA S1.4.
- 3. A-Weighted Noise Levels: Decibels (referenced to 20 micro-Pascal) as measured with A-weighting network of standard sound level meter, abbreviated dBA.
- 4. Vibration Measurements: The use of a vibration transducer, amplifier, peak detector, and frequency band filters complying with ANSI/ASA S2.4.
- 5. Vibration: For vibration annoyance, velocity in micro-inches per second. Vibration levels are expressed as velocity levels in decibels referenced to one micro-inch per second, abbreviated VdB. For vibration induced cosmetic structural damage peak particle velocity (PPV) in inches per second.
- 6. Noise Sensitive Locations: Residential areas, hospitals, parks, and other locations so named herein.
- 7. Maximum Sound Level Lmax: The maximum recorded root mean square (RMS) A-weighted sound level for a given time interval or event.
- 8. Equivalent Sound Level Leq: The A-weighted level of a constant sound having the same energy content as the actual time-varying level during a specified interval.

The Leq is used to characterize complex, fluctuating sound levels with a single number. Typical intervals for Leq are hourly and daily.

- 9. Vibration Monitoring: Monitoring used to determine if the equipment and methods used to complete the work cause vibrations that equal or exceed threshold values. The data gathered provide onsite feedback of the effects of specific operations and procedures.

1.03 SUBMITTALS AND TRANSMITTALS

A. Submittals

- 1. Noise and Vibration Control Plan (including Monitoring Plan)
- 2. Noise and Vibration Control Plan (including Monitoring Plan) Updates, as necessary
- 3. Qualifications of the Acoustic Specialist

B. Transmittals

- 1. Certificates of calibration for monitoring instruments, prior to use and yearly recalibrations.
- 2. Updated certificates to monitoring instruments after repairs.
- 3. Vibration Measurement Reports: When Required Submit weekly, the measurements taken during the previous week. Use approved Contractor-generated vibration-monitoring form. Note the type of measurement (for example, baseline, on-going construction) on the form. Reports shall indicate if vibration limits were exceeded and describe mitigation measures.
- 4. Noise Measurement Reports: submit weekly, the measurements taken during the previous week. Use Noise Measurements Report Form provided in Exhibit C. Note the type of measurement (for example, baseline, on-going construction) on the form. Reports shall indicate if noise limits were exceeded and describe mitigation measures.

1.04 QUALITY ASSURANCE

A. Qualifications of the Acoustic Specialist:

- 1. Membership in at least one of the following recognized acoustical organizations:
  - a. Institute of Noise Control Engineering (INCE): INCE Member. INCE Associate membership is insufficient.
  - b. Acoustical Society of America (ASA): Member. Student and Associate Memberships are insufficient.
  - c. National Council of Acoustical Consultants (NCAC): Employee of an NCAC Member Firm.
- 2. Minimum 10 years of experience performing similar work.

**PART 2 - PRODUCTS**

**2.01 NOISE CONTROL MATERIALS**

- A. Noise control materials may be new or used. Used materials must be sound and free of damage and defects and of a quality and condition to perform their designed function for the duration of construction of this Contract.

**2.02 NOISE MEASUREMENT EQUIPMENT**

- A. Installed sound monitoring stations approved by the local jurisdiction, which are equipped with the following measurement and documentation devices:
  - 1. Sound level analyzer with the following capabilities:
    - a. Capable of measuring on both the A-Weighted and C-Weighted scales required by regulatory criteria and Noise Level Limits.
    - b. Complies with the criteria for a TYPE 1 (Precision) or TYPE 2 (General Purpose) Sound Level Meter as defined in the ANSI/ASA S1.4.
    - c. Continuous broadband logging on 1-second LAeq, LAmax and LAmin.
    - d. Continuous 1/3 octave band spectral logging of 1-second LAeq, LAmax and LAmin.
    - e. Sound recording and external equipment trigger capabilities in the event of a variance exceedance.
    - f. Sufficient internal memory for one (1) week of logged data and sound recordings.
  - 2. Free-field microphone housed in an environmental shroud providing protection from rain and wind conditions. The environmental shroud is capable of outdoor measurements for at least one (1) year without service or replacement.
- B. Portable sound monitoring equipment with the following measurement and documentation capability:
  - a. Capable of measuring on both the A-Weighted and C-Weighted scales required by regulatory criteria and Noise Level Limits.
  - b. Complies with the criteria for a TYPE 1 (Precision) or TYPE 2 (General Purpose) Sound Level Meter as defined in the ANSI/ASA S1.4.
  - c. Continuous 1/3 octave band spectral logging of 1-second LAeq, LAmax and LAmin.
- C. Calibrate sound level analyzer, microphones, and calibrators for certified laboratory conformance a maximum of three months prior to commencement of work at the Site, and thereafter, at least once per year until Acceptance.

**2.03 VIBRATION MONITORING EQUIPMENT**

- A. Provide portable seismographs for monitoring the velocities of ground vibrations resulting from construction activities. The seismograph has the following minimum features:
  - 1. Seismic Velocity range: 0.005 to 10 inches per second with an accuracy of within 3 percent of the measured peak particle velocity or better at frequencies between 1 Hertz and 250 Hertz, and with a resolution of 0.005 inch per second or less.

2. Frequency response (within 3 dB): 1 to 250 Hertz.
  3. Multi-channel (triaxial) for vibration monitoring.
  4. Two power sources: internal rechargeable battery and charger and 115 volts AC. Battery must be capable of supplying power to monitor vibration continuously for up to 30 days.
  5. Capable of internal dynamic verification of sensor functionality.
  6. Direct writing to printer and capability to transfer data from memory to a laptop computer, portable USB storage device, or compact disc (CD). Instruments must be capable of producing strip chart recordings of readings on site within one (1) hour of obtaining the readings. Provide computer software to perform analysis, produce reports of continuous monitoring and to perform zero-crossing frequency analyses of waveform data. Ensure that all reports and analyses are capable of output to a laptop computer, portable USB storage device, or CD.
  7. Self-triggering wave form capture mode that provides the following information: plot of wave forms, peak particle velocities and frequencies of peaks.
  8. Continuous monitoring mode must be capable of recording single-component peak particle velocities, and frequency of peaks with an interval of 1 minute or less.
- B. Provide all recommended ancillary equipment as recommended by the manufacturer for a complete and functional vibration monitoring system.

**PART 3 - EXECUTION**

3.01 PLAN REQUIREMENTS

- A. Noise and Vibration Control Plan
1. Prepared and signed by the Acoustic Specialist.
  2. Include the following for construction activities that may occur at the construction site:
    - a. Site Drawing - Prepare a scaled drawing of the construction site indicating the following:
      - 1) Contract name and number
      - 2) Contractor's name
      - 3) Date and hours of work operation
      - 4) Scale
      - 5) Direction of North
      - 6) Identify noise and vibration sensitive locations near the construction site.
      - 7) Construction equipment locations used, designated by the code letter used in Column (a) in Part A of the Noise and Vibration Control Plan Form, Exhibit A.

- 8) Locations of the noise and vibration levels calculated to the nearest residential, commercial and industrial areas as specified herein.
  - 9) Locations and types of noise and vibration abatement measures that may be required to meet codes and regulations as indicated by the calculations.
- b. Equipment Inventory - Prepare an inventory of equipment used by providing the following information in the indicated columns of the Noise and Vibration Control Plan Form, Exhibit A.
- 1) Column (a) - Code letter in sketch to indicate position of equipment on site
  - 2) Column (b) – Category or type of equipment
  - 3) Column (c) - Equipment manufacturer and model, if known at the time of the Plan's preparation
  - 4) Column (d) - Unique identifier (ID), such as registration number, if known at the time of the Plans preparation.
  - 5) Column (e) - Equipment horsepower
  - 6) Column (f) - Estimated noise level at 50 feet, as obtained from either the manufacturer or from approved field noise measurements of same equipment
  - 7) Column (g) - Estimated date of first use on site
  - 8) Column (h) Estimated date of last use on site
  - 9) Noise Calculations: Prepare calculations of Lmax noise levels expected at the nearest residential and commercial property lines and identified noise-sensitive locations near the construction site, based on the equipment noise levels given in Part A of the Noise and Vibration Control Plan Form. Determine the nearest property lines from noise-sensitive locations. Make the calculations for locations where noise emitted by applicable equipment causes the greatest noise level for each type of land use, if necessary. Provide results on Part B of the Noise and Vibration Control Plan Form, Exhibit B, with calculations included below the results, and with the locations for the calculations indicated on the site sketch.
- c. Summary of Required Abatement Measures, as necessary.
- 1) Noise Abatement Measures - If the results of the noise calculations indicate that noise levels are exceeded, identify proposed noise abatement measures, their anticipated effects (dBA reductions), and a schedule for their implementation. Re-calculate the noise levels at the nearest sensitive receptor location property lines that include the anticipated noise reduction effects and submit the results on Part B of the Noise and Vibration Control Plan Form. Include, as backup documentation to Part B of the Noise and Vibration Control Plan, drawings, sketches, and suitable calculations that demonstrate anticipated noise reduction benefits and that proposed structures or facilities comply with applicable building code requirements.

- 2) Noise Reduction Methods - To the extent required to meet the noise limits specified, indicate noise reduction measures to minimize construction noise emission levels.
  - 3) Vibration Control – Provide measures that can be used to reduce vibrations in the event that level limits are exceeded. The measures may include changes in construction techniques.
  - d. Shop and Working Drawings, computations, material data and other criteria for all noise abatement measures identified in the Noise and Vibration Control Plan.
3. Update and re-submit upon all major changes in work schedule, construction methods or equipment operations not included in the most recent Plan.
- B. Monitoring Plan:
- 1. Prepared and signed by the Acoustic Specialist.
  - 2. Include the following:
    - a. Monitoring Locations
      - 1) A scaled plan indicating noise and vibration measurement monitoring locations on a scaled plan. If the noise and vibration monitoring locations are not shown in the Contract Documents, propose monitoring locations that represent the closest points to noise and vibration sensitive land uses to the construction equipment being operated. If the monitoring locations are shown in the Contract Documents, they may change during the construction period. If changes are necessary, the Resident Engineer will provide the revised locations to the Contractor.
      - 2) Noise measurements are to be taken at construction site boundaries, at nearby residential and commercial property lines, and at the nearest sensitive noise receptor that can be reasonably and safely accessed. Show these locations on the plan.
    - b. Frequency of noise and vibration monitoring, including special circumstances that require monitoring at irregular intervals.
    - c. Description of the methodology and procedure to use for the equipment being utilized to perform the monitoring, when making noise and vibration measurements.
    - d. Proposed Contractor-generated vibration-monitoring report form, including at least the following:
      - 1) Date, start time and duration of monitoring
      - 2) Name of individual performing the monitoring
      - 3) Type of equipment used
      - 4) Type of measurement (for example, baseline, on- going construction).
      - 5) Clearly identified monitoring locations including a sketch on the back of or attached to the vibration report form.



- 6) Identification of construction equipment operating during the monitoring period and the locations sketched on the back of the vibration report form.

3.02 RESPONSIBILITIES OF CONTRACTOR

- A. Perform Work within the permissible noise and vibration levels, work schedule limitations and procedures provided for in the Contract, project-specific local permits, the approved Noise Variance, if any, listed in Contract Documents, and applicable federal, state, county and local codes, regulations, and standards.
- B. Use equipment with effective noise-suppression devices and employ other noise control measures such as barriers and curtains necessary to protect the public.
- C. Schedule and conduct operations in a manner that minimizes to the greatest extent feasible, the disturbance to the public in areas adjacent to the construction activities and to occupants of buildings in the vicinity of the construction activities.
- D. Compliance with the requirements of the Contract may require the use of equipment with special exhaust silencers or enclosures, and construction of temporary enclosures or noise barriers around activities. Use approved haul routes and staging areas to minimize noise at residential and other sensitive receptor sites. Noise produced by elevated equipment, including crane pulleys and hoses, shall be minimized.

3.03 NOISE LEVEL LIMITS

- A. Do not operate noise generating construction equipment at the construction site outside of AHJ compliance requirements or approval of the Noise and Vibration Control Plan, and the Monitoring Plan. Do not operate noise generating construction equipment, which is subject to a noise variance, at the construction site prior to formal activation of the noise variance by the authority having jurisdiction.
- B. Do not exceed the maximum permissible sound levels as authorized by the local jurisdiction's noise code or noise variance for nighttime construction hours.
- C. Sound created by impact types of construction equipment, including but not limited to pavement breakers, jackhammers, sandblasting tools or other types of equipment, or devices that create impulse noise or impact noise or are used as impact equipment, may exceed the maximum permissible sound levels, as measured at the nearest property line or monitoring point, if approved by the local jurisdiction and Sound Transit.
- D. For operation of construction equipment that could exceed allowable noise limits during nighttime hours established by the local jurisdiction, the Contractor must obtain the appropriate noise variance from the local authority having jurisdiction. During these hours, meet the performance criteria as approved by Sound Transit and the local jurisdiction.
- E. The noise limits established in the Contract are for equipment on construction sites, including but not limited to crawlers, tractors, dozers, rotary drills, loaders, power shovels, cranes, derricks, graders, off-highway trucks, ditchers, trenchers, compactors, compressors, and pneumatic-powered equipment.

3.04 VIBRATION LEVEL LIMITS

- A. For all areas, conduct construction activities so that vibration levels at the nearest affected building monitoring points do not exceed peak particle velocity (PPV) in the vertical direction for the durations shown in Table 1. The equivalent root-mean-square (rms) unweighted vibration levels expressed as VdB are included and assume a crest factor of 4. These limits apply to the frequency range of one to 100 Hertz. For assessing the potential for cosmetic structural damage, Table 2 contains the maximum threshold vibration limits

for construction vibration monitoring by building type. Where appropriate, the lesser value from either Table 1 or Table 2 shall not be exceeded.

TABLE 1 - CONSTRUCTION VIBRATION LIMITS FOR ANNOYANCE

Vibration Type (Permissible Duration)	Peak Particle Velocity (in/sec)	VdB (re 1 μ-inch/sec rms)
Sustained (≥1 hr/day)	0.04	80
Transient (<1 hr/day)	0.12	90
Transient (<10 min/day)	0.4	100

TABLE 2: COSMETIC STRUCTURAL DAMAGE THRESHOLD VIBRATION LIMITS FOR CONSTRUCTION VIBRATION MONITORING

Building Category	Peak Particle Velocity (in/sec)
Reinforced-concrete, steel, or timber (no plaster)	0.50
Engineered concrete and masonry (no plaster)	0.30
Non-engineered timber and masonry buildings	0.20
Buildings extremely susceptible to vibration damage	0.12

- B. Vibration levels at buildings affected by construction operations refer to vertical direction vibration on ground surface or building floor.

3.05 CONSTRUCTION METHODS – EQUIPMENT

- A. Where possible, use concrete crushers or pavement saws rather than hoe rams for tasks such as concrete deck removal and retaining wall demolition.
- B. Ensure that pneumatic impact tools and equipment used at the construction site have intake and exhaust mufflers recommended by the manufacturers thereof, to meet relevant noise ordinance limitations.
- C. Construction equipment, both stationary and mobile, should be of recent manufacture and incorporate effective noise-suppression design, including features such as shrouds, baffles, and mufflers or as recommended by the manufacturers. Locate noise generating stationary equipment away from sensitive receptors and shield with a noise-attenuating barrier or shroud.
- D. Line or cover storage bins and chutes with sound-deadening material. Ensure all vehicles engaged in loading on-site have lined truck beds.
- E. Provide mufflers or shield paneling for other equipment, including internal combustion engines, recommended by manufacturers thereof.
- F. Blasting, impact pile driving, vibratory hammers for pile casing install, vibratory sheet installation and vibratory roller are prohibited from use during those hours established by the authority having jurisdiction.
- G. As required to meet the noise limits specified in the Contract, use alternative procedures of construction and selection of proper combination of techniques that generate least overall noise and vibration. Such alternative procedures may include, but not be limited to, the following:
  - 1. Use electric welders powered from utility main lines instead of internal combustion powered generators/welders.

- 2. Mix concrete off-site instead of on-site.
- 3. Employ prefabricated structures instead of assembling on-site.
- 4. Drilled shaft installation methods.
- H. Use construction equipment manufactured or modified to dampen noise and vibration emissions, unless waived by Resident Engineer, such as:
  - 1. Use electric instead of diesel-powered equipment.
  - 2. Use hydraulic tools instead of pneumatic impact tools.
  - 3. Use electric instead of air- or gasoline-driven saws.
- I. Minimize the use of generators or use “whisper-quiet” generators to power equipment where practical

3.06 CONSTRUCTION METHODS – OPERATIONS

- A. Operate equipment to minimize banging, clattering, buzzing, and other annoying types of noises, especially near residential areas.
- B. To the extent feasible, configure the construction site in a manner that keeps noisier equipment and activities as far as possible from noise sensitive locations and nearby buildings.
- C. In no case do the above restrictions limiting the responsibility for compliance with applicable federal, state and local safety ordinances and regulations, and other requirements of the Contract.
- D. As far as practicable, maximize physical separation between noise generators and noise receptors. Separation includes following measures:
  - 1. Provide enclosures for stationary items of equipment and barriers around particularly noisy areas on site.
  - 2. Locate stationary equipment to minimize noise and vibration impact on community, subject to verification by the Resident Engineer.
- E. Minimize noise-intrusive impacts during the most noise sensitive hours.
  - 1. Plan noisier operations during times of highest ambient noise levels.
  - 2. Keep noise levels relatively uniform; avoid excessive and impulse noises.
  - 3. Turn off idling equipment and vehicles.
  - 4. Phase in start-up and shut-down of site equipment.
  - 5. Avoid simultaneous activities that both generate high noise levels.
  - 6. Conduct truck loading, unloading and hauling operations to keep noise and vibration to a minimum.
  - 7. Whenever feasible, do not operate trucks on streets that pass by schools during school hours to the extent possible.
  - 8. Limit the time that steel decking or plates for street decking or covering excavated areas are in use.

- 9. Grade surface irregularities on construction sites to minimize the generation of impact noise and ground vibrations by passing vehicles.
- F. Use warning broadband backup alarms on all equipment in operation at the site at all times, unless waived by the Resident Engineer.
- G. Limit the use of annunciators or public-address systems, except for emergency notifications.
- H. Limit the use of jackhammers, hoe rams, and concrete saws to daytime hours as defined by the local AHJ.

3.07 CONSTRUCTION METHODS – NOISE ABATEMENT MEASURES

- A. Install noise abatement measures in locations specified in the Noise and Vibration Control Plan adjacent to equipment or receivers as required to meet the noise limits specified.
- B. If required by the AHJ, conduct noise measurements to confirm that installed noise abatement treatments, including modification of equipment and temporary noise walls perform as expected.

3.08 NOISE AND VIBRATION MEASUREMENT PROCEDURES

- A. Noise Measurement Procedure
  - 1. Field calibrate the sound level analyzer using an acoustic calibrator, according to the manufacturer’s specifications, before each measurement. If multiple measurements are to be performed in one day, calibrate prior to any measurements, and check calibration after measurements have been completed.
  - 2. Except as otherwise indicated, perform measurements using the A-weighting network and the SLOW response of the sound level meter.
  - 3. Measure impulsive or impact noises using the C-Weighting network and the FAST response of the sound level meter.
  - 4. Fit the measurement microphone with an appropriate windscreen at the nearest property line of the sensitive receptor at least four to six feet away from the nearest reflective surface.
  - 5. Take noise measurements at the nearest property line and agreed noise sensitive locations at least once each week and after a change in construction activity or construction location. Determine the duration of noise measurements based on the type of construction activity, the length of the activity and whether it is continuous or intermittent. Measurement periods: a minimum of 20 minutes.
  - 6. Ensure that construction noise measurements coincide with periods of maximum noise-generating construction activity. Take measurements during the construction phase or activity that has the greatest potential to create annoyance or to exceed applicable noise regulations and restrictions.
  - 7. If, in the estimation of the person performing the measurements, outside noise sources contribute significantly to the measured noise level, repeat the measurements with the same outside source contributions when construction is inactive to determine the background noise level.
  - 8. Clearly identify monitoring locations and sketch on the back of or included with the Noise Measurements Report Form, Exhibit C, along with the locations of and distances from any agreed sensitive noise receptor or location.

- 9. Identify construction equipment operating and characterize the sound being generated during the monitoring period and the locations sketched on the back of or included with the Noise Measurements Report Form, along with the locations and distances to any specified noise sensitive location.

B. Vibration Measurement Procedures

- 1. Installation of Vibration Monitors:
  - a. For monitoring in the vicinity of nearby structures or utilities, locate vibration sensors on the ground surface near the structures or utilities. Install geophones level and firmly mount onto the surface slab of concrete or asphalt, or firmly anchor in undisturbed soil. Orient geophones towards construction activity.
  - b. For monitoring on structures, install wall mount kit to attach geophones to structure face or columns. Mount geophones level and towards the construction activity.
- 2. All vibration monitoring equipment shall have been calibrated by the factory or with a NIST-traceable vibration signal within one year of use.
- 3. Take vibration measurements at sensitive locations as indicated in the Monitoring Plan at least once each week and after a change in construction activity or construction location. Measurement periods: a minimum of 20 minutes.
- 4. Conduct daily measurements of vibration during peak vibration generating construction activities. Any activities that may produce vibration levels above values shown in Table 2 whenever a structure is located nearby the construction activity are subject to vibration monitoring.

3.09 EXCEEDANCE OF NOISE OR VIBRATION LIMITS

- A. In the event that the measured noise levels exceed allowable limits as specified by the local jurisdiction, immediately notify the Resident Engineer and immediately implement additional Noise Abatement Measures. Where necessary terminate the construction activity responsible for the noise limits exceedance until the specified Abatement Measures can be implemented and compliance with the approved noise levels is achieved.
- B. In the event that the measured vibration levels exceed allowable limits as specified by the local jurisdiction or Contract, whichever is more stringent, immediately notify the Resident Engineer and immediately implement changes in construction techniques as specified in the Noise and Vibration Control Plan.

3.10 EXHIBITS

- A. Exhibit A: Noise and Vibration Control Plan – Part A
- B. Exhibit B: Noise and Vibration Control Plan – Part B
- C. Exhibit C: Noise Measurements Report Form

**END OF SECTION**

**SECTION 01 57 15 – EXHIBIT A**

**NOISE AND VIBRATION CONTROL PLAN FORM – PART A  
CONSTRUCTION ACTIVITIES AT EACH CONSTRUCTION SITE  
(DUPLICATE AS NEEDED)**

Contract No.: \_\_\_\_\_ Contract Name: \_\_\_\_\_  
 Contractor: \_\_\_\_\_ Site: \_\_\_\_\_  
 Date: \_\_\_\_\_ Land Use: \_\_\_\_\_

Resubmit every three months

(ATTACH SITE DRAWING)

**PART A: EQUIPMENT INVENTORY**

	Equipment				Noise Level	Date	Date
Code	Category	Model	ID No.	HP	At 50 Feet	Begin	End
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)

**SECTION 01 57 15 – EXHIBIT B**

**NOISE AND VIBRATION CONTROL PLAN FORM– PART B**

(DUPLICATE AS NEEDED)

Contract No.: \_\_\_\_\_ Contract Name: \_\_\_\_\_

Contractor: \_\_\_\_\_ Site: \_\_\_\_\_

Date: \_\_\_\_\_ Land Use: \_\_\_\_\_

**PART B: CALCULATED EXPECTED CONSTRUCTION NOISE LEVELS AT NEAREST RESIDENTIAL AND COMMERCIAL RECEIVERS FOR EACH CONSTRUCTION ACTIVITY**

Nearest Noise Sensitive Receivers	Calculated Sound Pressure Level [dBA Leq (h)]*	Calculated Peak Particle Velocity Vibration Level [in/sec]*

\* Equipment used for each construction activity is taken from Part A of the Noise and Vibration Control Plan. Leq (h) is assumed to be based on hourly noise levels, but the duration of noise level averaging could change based on the Noise and Vibration Control Plan.

**NOISE ABATEMENT MEASURES**

**ANTICIPATED EFFECTS**

CALCULATIONS - attach additional sheet(s) as needed.

SECTION 01 57 15 – EXHIBIT C

NOISE MEASUREMENTS REPORT FORM

(DUPLICATE AS NEEDED)

Contract No.: \_\_\_\_\_ Contract Name: \_\_\_\_\_

Contractor: \_\_\_\_\_ Site: \_\_\_\_\_

Date: \_\_\_\_\_ Land Use: \_\_\_\_\_

Measured By: \_\_\_\_\_ Of: \_\_\_\_\_ (Company)

Monitoring Address: \_\_\_\_\_ (Provide Sketch on Back)

Location No: \_\_\_\_\_ Wind Speed: \_\_\_\_\_ Km/Hr Direction: \_\_\_\_\_  
(MPH x 1.6)

Location of Sound Level Meter: (No closer than 15 meters from equipment and 3 meters from building)

Monitoring was Conducted: \_\_\_\_\_ Meters from Equipment (\_\_\_\_\_)  
(Type(s): Leave Blank for Baseline)

Land Use:  Residential/Institutional  Business/Recreational  Industrial

Sound Level Meter: Make and Model: \_\_\_\_\_  A - Weighted Sound Level (Slow)

Duration of Measurement: (20 minutes to 1 hour)

Calibration Level	
Leq	
L25	
L08	
L02	
Lmax	
Allowable Noise Limit	

Field Notes;

Check one of the following:

Ongoing Construction  Post-Construction: \_\_\_\_\_  Baseline Conditions

(Contract)

(Complete all that apply below)

Active Contract(s): \_\_\_\_\_  
(List all contracts that contribute to measured noise)

Complaint Response: \_\_\_\_\_  
(Describe: Include Log-In Number)

Abatement Follow-Up: \_\_\_\_\_  
(Describe)

END OF EXHIBITS



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