**Noise STATEMENT of WORK and**

**DELIVERY SCHEDULE**

**(11/13/2020, DB/LB)**

Project Name

[Text that is bracketed and highlighted in yellow provides instructions or guidance.]

[Areas with blue highlight should be reviewed and revised as necessary for the specific project.]

[The sow must be created within the scope of services identified in the PA/RFP. Define acronyms and terms in table below if there are many used throughout the document.]

[For A&E and Related Services, use [standardized task numbering](http://www.oregon.gov/ODOT/CS/OPO/docs/sow/aetasknos.xls) for the various disciplines.]

[All links provided, make sure they work in draft and final copies of this SOW]

#### **PROJECT DESCRIPTION and OVERVIEW of SERVICES**

Agency is contracting with Consultant for Services in connection with the following project (the “Project”):

[Insert a detailed description of the project with which Consultant’s Services are connected. State the purpose/scope of the services Consultant will be performing (not the specific tasks and deliverables) and project objectives. Include background information such as how the project came about, why it is needed, who is involved, and what is to be achieved through this project.]

**General Expectations** [Include this section if scope of service (“SOS”) includes preparation of project designs. IF Exhibit A of the PA includes this language, it does not need to be repeated in the WOC.]

Consultant commits to oversee and direct the design of the Project to obtain the greatest long-term value for the State of Oregon, which reflects the prudent expenditure of public funds within the constraints of the Project, program, context and budget. In pursuing this goal, Consultant shall:

* Develop a design that is appropriate for the context of the Project and the nature of its function, both present and future
* Avoid expenditures for aesthetic effect which are disproportionate to the Project as a whole
* Manage and facilitate all facets of the Project that are reasonably within Consultant’s control to ensure the Project is completed on or ahead of time and within budget
* Strive to reduce the construction cost of the Project while keeping life-cycle costs low
* Use recycled/recyclable products to the maximum extent economically feasible in the performance of the Contract
* Apprise Agency throughout the Project concerning the economic impact of all design decisions; and embody sound and cost-effective sustainability principles in the Services performed under the Contract in accordance with the Department of Administrative Services Sustainable State Facilities Standards and Guidelines.

**Project Phasing [**Revise as necessary or delete if not applicable.]

This Project is divided into 3 phases:

* …
* …
* …

This statement of work (“SOW”) addresses the \_\_\_\_\_ phase of the Project. Following completion of a given phase, Agency may, at its discretion:

* Amend this Contract to add the next phase (or various elements), or
* Elect to complete subsequent phase tasks with in-house staff, or
* Assign subsequent phase tasks to another consulting firm.

Agency and Consultant shall negotiate the detailed tasks, deliverables, schedule and costs for each phase Agency elects to add. Each added phase will be authorized only by written contract amendment with all required approvals and signatures.

**Agency Responsibilities**

[Enter items provided or completed by Agency, if any. Delete if none. Note Agency: may be responsible for providing traffic and design data to consultant]

**Acronyms and Definitions**

[Include table of definitions for acronyms and technical terms if used throughout SOW.]

 **Noise Acronyms**

|  |  |
| --- | --- |
| Acronym | Meaning |
| ANSI | American National Standards Institute  |
| APL | Agency Project Leader  |
| APM | Agency Project Manager |
| dBA | Decibel |
| FHWA | Federal Highway Administration  |
| NAAC | Noise Abatement Approach Criteria  |
| NTE | Not to Exceed |
| NTM | Noise Technical Memorandum |
| NTP | Notice to Proceed  |
| NTR | Noise Technical Report |
| ODOT or Agency | Oregon Department of Transportation |
| PE | Professional Engineer  |
| QA/QC | Quality Assurance/Quality Control |
| SOW | Statement of Work |
| TNM | Traffic Noise Model |

**STANDARDS and GENERAL REQUIREMENTS**

[Use the following subsections to list any requirements specific to this SOW.

**Option 1** Reference the standards in PA: If all applicable standards are already stated in the PA they may be referenced as follows: The standards and general requirements applicable to this Work order Contract (WOC) are stated in the parent PA.

**Option 2** List all standards in SOW: The following standards and general requirements apply to this SOW:

**1. Standards (when applicable)**

**2. Software Requirements: current version of Traffic Noise Model (“TNM”).**

Current version is 2.5. Microstation or Agency-acceptable roadway design software.

**3. Licenses, Registrations and Qualifications;**

Consultant Noise Analyst must have 5 years of experience with Federal Highway Administration (“FHWA’s”) TNM (version 2.5 or later) and in particular, traffic noise technical work including noise abatement and noise abatement design. A Professional Engineer (“PE”) stamping a Noise Technical Report or Noise Barrier Design Memorandum must be registered as a PE with the state of Oregon and must work in the same firm as the Consultant Noise Analyst. This PE must demonstrate proficiency in TNM, the *ODOT Noise Manual* including the interim update (July 2011 and Mar 2020), and the Federal guidance, *Highway Traffic Noise Analysis and Abatement Guidance* (January, 2011) to the extent necessary to provide a thorough quality control review of the Consultant Noise Analyst’s work. If the Consultant Noise Analyst will be the PE stamping the noise deliverables, there must be a second qualified individual to perform the quality control review. This person must either meet the qualifications of a Consultant Noise Analyst or a PE who can stamp noise deliverables as described in this section.

**4. General Requirements**

* The Agency Project Manager (“APM”) (or another individual identified in specific tasks or as designated in writing to Consultant) is the primary contact on behalf of Agency for this Project.
* To the extent possible, all transmittals from Consultant to Agency must include as applicable the Contract#, PA#, WOC#, Project name and the Project key number.
* Consultant shall represent the Project and Agency in an appropriate and professional manner in public.

**5. Compliance with Applicable Law**

**[**Include the following ADA language, three paragraphs, in all WOCs.]

**6. ADA Compliance: Assessment, Design, Inspection.** When the Services under this WOC include **assessment or design (or both)** for curb ramps, sidewalks or pedestrian-activated signals (new, modifications or upgrades), Consultant shall:

1. Utilize Agency standards to assess and ensure Project compliance with the Americans with Disabilities Act of 1990 (“ADA”), including ensuring that all sidewalks, curb ramps, and pedestrian-activated signals  meet current ODOT Highway Design Manual standards; and shall Follow Agency’s processes for design, modification, upgrade, or construction of sidewalks, curb ramps, and pedestrian-activated signals, including using the ODOT Highway Design Manual, ODOT Design Exception process, ODOT Standard Drawings, ODOT Construction Specifications, providing a temporary pedestrian accessible route plan and current ODOT Curb Ramp Inspection form.

When the Services under this WOC include **inspection** of curb ramps, sidewalks or pedestrian-activated signals (new, modifications or upgrades), all such inspections must include inspection for compliance with the standards and requirements in a. and b. above.  In addition, at Project completion, Consultant shall send an ODOT Curb Ramp Inspection Form 734-5020 to the address on the form as well as to APM for each curb ramp constructed, modified, upgraded, or improved as part of the Project. The completed form is the documentation required to show that each curb ramp meets Agency standards and is ADA compliant. Agency’s fillable Curb Ramp Inspection Form and instructions are available at the following address: <http://www.oregon.gov/ODOT/Forms/Pages/default.aspx>

Above references to curb ramps, sidewalks or pedestrian-activated signals also include, when applicable, shared use paths, transit stops, park-and-rides and on-street parking.

**7. Design Criteria and Project Assumptions/Conditions** [Typically applies to A&E design contracts/WOCs.]

**REVIEW, COMMENT and SCHEDULE OVERVIEW**

* Consultant shall submit all deliverables to APM or designee unless otherwise noted in specific tasks.
* Consultant shall make revisions to address Agency review comments and submit revised deliverable(s) to APM within 10 business days of receipt of Agency review comments, unless a different timeframe is specified for specific tasks or otherwise agreed to in writing by Agency.

#### **FORMAT REQUIREMENTS**

* Consultant shall submit draft deliverables in electronic format via email or other acceptable file transfer method (and hard copy if requested). Drafts shall be submitted in MS Word format without figures and appendices and in PDF format with all figures, tables and complete appendices so that the complete report can be printed as one document. The MS Word version without figures and appendices shall be used for Agency comment.
* Final, PE-stamped documents shall be submitted in PDF format as one file.
* Each draft and final text-based or spreadsheet-based deliverable must be provided in MS Office file formats (i.e., MS Word, Excel, etc.) and must be fully compatible with version used by Agency.
* Additional format requirements may be listed with specific tasks/deliverables throughout the SOW or in the PA/Contract.

#### **E. TASKS, DELIVERABLES and SCHEDULE**

Consultant shall complete all tasks and provide all deliverables (collectively, the “Services”) included in this SOW, unless specifically stated otherwise in a particular task. Consultant shall provide all labor, equipment and materials to manage, coordinate, and complete the work in accordance with the performance and delivery schedules identified in this SOW.

**Task Numbering:** For purposes of standardization, task numbers in this SOW may be non-sequential and do not necessarily begin with “1” on the first task.

[The delivery schedule for each deliverable may either be listed under each task or consolidated in table at the end of the task section. Generally, it is helpful for contract administration purposes to have one consolidated delivery schedule that can be used as a checklist, especially if the SOW is more than 5 or 10 pages long.]

[For large multi-disciplined contracts, Tasks 1-3 could be eliminated since these tasks might be covered separately and include all disciplines involved in the Project]

### TASK 1.0 Administration and Record Keeping

Consultant shall:

* Provide quality control
* Provide monthly progress reports
* Develop and maintain a Project file for all documentation related to this Contract
* Close out the Project and provide documentation

Monthly progress reports (hard copy) must:

* + - Include a brief description of the previous month’s activities and the planned activities for the next month
		- Identify the percentage completed of each Task/Deliverable
		- Reconcile the budget with the actual amount billed to date
		- Identify unresolved issues and concerns that may affect the SOW, schedule and budget for Services

**Note:** A copy of the Monthly Progress Report must be attached to Consultant’s invoice

Closeout Documentation (in electronic format) must include all Project file documentation including, but not limited to:

* + - Record of all pertinent contacts with Agency, other agency, and other Consultant staff
		- Documentation of all research, field notes, photos, maps, analysis, etc.
		- Documentation of important information, decisions, and guidance received
		- Meeting minutes and all Services/Project related correspondence (email, invoices and progress reports)

Closeout Documentation must be submitted to Agency in electronic format in a \*.pdf searchable format by type of document (invoices in an “Invoice” directory)

**Deliverables and Schedule**

* Consultant shall submit monthly progress reports, along with the monthly invoice, in electronic format within 5 business days following reporting period.
* Consultant shall submit closeout documentation in electronic format upon completion of the final Noise Technical Report (“NTR”) in Task 8 or final report for other tasks within 10 business days of request by Agency

**TASK 2.0 Coordination**

Consultant shall coordinate with APM or other Agency staff assigned to carry out this duty, to determine what information and documentation is required for Project services. Project-related information and documentation includes, but is not limited to:

* Traffic information (EIS Type Format)
* Project maps, build alternatives, and design information
* Appropriate traffic engineering report/data
* Coordinating work with other disciplines working on the Project (i.e., attending scoping and planning meetings).
* Information on specific noise complaints or concerns

**[Note:** Consultants’ primary contact is the APM; however, Consultant may contact other Agency staff and other Consultants as necessary throughout the Services to gather additional information needed for the Project, Project site, regulations and guidance]

Information and communication may include, but is not limited to:

* Direct communication via phone, email, post, office visits
* Arranging and attending joint field visits
* Arranging right of entry for access to private property
* Responding to FHWA and Agency questions as needed throughout the Services
* Contacting Agency’s Noise Specialist for questions regarding methodology

**Deliverables and Schedule**

* Communications, field visits, and responses to Agency and regulatory agency questions to be submitted in electronic format with Closeout Documentation

**TASK 3.0 Project Meetings**

Consultant shall attend and participate in up to X Project meetings as scheduled by Agency’s Project Leader (“APL”) or APM. Consultant shall prepare meeting notes as they relate to Project noise analyses and distribute via email. Other Agency team members, as directed by the APM or the APL, will summarize other non-noise discussions.

Meeting notes must include:

* Discussion summary of issues related to noise
* Notes of any relevant written material related to noise on meeting room white board
* Decisions made related to, but not limited to, analysis methodology, abatement or site specific issues concerning the noise environment
* Next Steps/Action Items

**Deliverables and Schedule**

* Consultant shall attend Project meetings once Notice-to-Proceed (“NTP”) is issued by the APM.
* Consultant shall prepare meeting notes for each Project Meeting, which is due within 3 business days after each meeting.

**TASK 4.0 Screening Analysis for Traffic Noise Impacts**

**[Note:** The screening analysis is a simple procedure used to predict traffic noise levels and to make a reasonable but conservative determination of noise impacts and feasible abatement. A straight line model is used to predict a worst-case scenario with higher noise levels than would be expected in detailed modeling. There are limitations to the screening procedures, and the screening analysis is not applicable to all projects; Consultant shall consult with the ODOT Noise Specialist to determine if the screening analysis is appropriate before use.]

Consultant shall obtain approval in writing from the ODOT Noise Specialist indicating the screening analysis appropriate for the Project.

Consultant shall use a straight line model design using the FHWA Traffic Noise Model 2.5.

Consultant shall set up the straight line model in the following manner:

* The model must incorporate the Project Existing, No Build, and the Build condition traffic information, posted speeds, and Project receptor distances from the closest pavement fog line to determine Agency noise abatement approach criteria (“NAAC”) impacts in the Build Condition and compare noise levels for the Existing condition to the Build condition to determine whether substantial increase impacts (at least a decibel (“dBA”) increase) are expected.
* Project receptor locations must be utilized, at a minimum, to include receptor(s) closest to the nearest pavement fog line and receivers placed at 50 foot increments from the fog line to determine the distance from the fog line to which Agency noise abatement approach criteria (NAAC) impacts extend. If the closest receptor to the fog line is a NAAC Category E, then the closest NAAC Category B or C receptor within 400 feet of the fog line must also be examined.
* Roadways must extend at least 1500 feet beyond the final receiver(s) perpendicular to the fog line,

either side of the Project.

* Any relevant non-traffic noise sources (such as rail or airport noise) must be considered and discussed qualitatively in the Existing Conditions section of the Noise Technical Memorandum (“NTM”).

Consultant shall, in coordination with ODOT Noise Specialist, determine if noise level measurements are required.

**[Note:** If noise monitoring is conducted, noise measurements and supporting documentation must meet requirements as described in Task 5 and the ODOT Noise Manual]

Analysis assumptions, results of modeling, mapping of location(s) modeled, monitoring (if conducted), and all other reporting requirements as detailed in the *ODOT Noise Manual* must be included in a draft and final NTM.

If the screening analysis results indicate that noise impacts are likely and the placement of typical abatement devices appears to be feasible, a detailed analysis is required that meets the requirements of 23 CFR 772 and the *ODOT Noise Manual*, therefore the Consultant shall consult with the ODOT Noise Specialist to determine next steps.

If the screening analysis results indicate that noise impacts are likely and abatement is clearly NOT feasible, the screening procedure is sufficient and a detailed noise analysis is not required. Consultant shall document the rationale for the feasible determination in the NTM with all supporting documentation attached. All requirements, including reporting requirements, of 23 CFR 772 must be met. Final NTM must be reviewed and stamped by an Oregon-licensed PE.

**Deliverables and Schedule**

* Electronic input and output data files must be included as a deliverable in the NTM.
* If noise levels were monitored, monitoring results must be included in the draft and final NTM.

**TASK 5.0 Field Investigation, Data Gathering for NTR**

Consultant shall conduct field investigations and data gathering as required for impact and abatement analyses and inclusion in the NTR. Traffic noise measurements will be conducted at up to X locations throughout the analysis area.

Consultant shall;

* Follow the measurement requirements in the updated Federal traffic noise rule found in [23 CFR 772](http://www.gpo.gov/fdsys/pkg/FR-2010-07-13/pdf/2010-15848.pdf) and *ODOT Noise Manual* (July, 2011).
* Prior to the on-site visit, consult with Agency and ODOT Noise Specialist to determine if there are any specific noise sensitive locations that need to be addressed (e.g., locations of noise complaints, locations that might become noise impacted because of vegetation removal in the right of way, or locations subject to high non-traffic background noise levels).
* Coordinate measurement locations with the ODOT Noise Specialist before proceeding with field work.
* Identify existing land uses within the area to be studied prior to on-site visit and confirm noise sensitive land uses during site visit;
* Identify local topographical conditions (naturally occurring or man-made) that may affect the transmission of noise (e.g., berms or existing sound walls)
* Identify noise-sensitive properties as identified in Table 1 of the *ODOT Noise Manual*. Noise sensitive properties include properties used for schools, offices, retail, public, and residential use. Noise sensitive properties also include properties for which development is permitted;
* Measure traffic noise in accordance with procedures in Federal Highway Administration’s [*Measurement of Highway Related Noise*](http://www.fhwa.dot.gov/environment/noise/measurement/measure.pdf) (<http://www.fhwa.dot.gov/environment/noise/measure/toc.htm>) and Appendix D of the *ODOT Noise Manual* (July 2011*)*.
* Perform concurrent directional traffic counts by vehicle classification and determine speeds of all major roads during on-site short term noise monitoring. The counts must be recorded on the Noise Measurement Record form found in Appendix D of the *ODOT Noise Manual* or similar;
* Provide photographic and written documentation of each measurement site;
* Provide noise measurement sites on mapping or aerial photography with a scale of either 1″=100′ or 1″=200′.
* Provide current calibration certificates for noise meter(s) used in field investigation. Include in appendix material for draft and final NTR.

**Deliverables and Schedule**

* Results from the field investigation and information gathering to be included in Task 8.
* Retain copies in Project files (Task 1) of the field investigation and data collected for the NTR, including noise measurement site forms, photographs, and mapping, that are to be submitted with the draft and final NTR as appendix material.

**TASK 6.0 Noise Model Verification: Compare Measured-to-Predicted (Modeled) Noise Values**

Consultant shall:

* Use the most recent version of the FHWA Traffic Noise Model (currently TNM 2.5) to construct an existing conditions noise model with the locations used during field measurements (Task 5) as receiver locations and the traffic counted at time of measurement as inputs to the model. The results of this modeling must be compared to the noise levels measured in the field. Pursuant to guidance found in the FHWA Traffic Noise Model Version 1.0 Users Guide[[1]](#footnote-1), agreement of up to +/- 3 decibels, between the measured noise values and modeled noise values, is generally considered satisfactory. If the modeled noise level disagrees by more than 3 decibels, Consultant shall conduct additional review and follow-up of the modeled results to determine the likelihood of input error or the need for topographical inputs to the model.
* Review and follow-up measurement analysis to eliminate correlation errors.
* Model verification results, along with the traffic data used, and document in the noise studies.

*Note(s)*

* *No adjustment need be made for disparities of 3 dBA or less.*
* *No adjustments to model output to account for errors in verification are allowed without concurrence from the ODOT Noise Specialist.*

If correction factors are used, then they must be justified and discussed in the NTR. Additional or unusual shielding must be approved, in advance, by Agency noise specialists. Additional or unusual shielding must be accounted for by measurement at site location and discussed in the NTR. Shielding that is not warranted for model validation must not be included in the noise impact modeling.

**Deliverables and Schedule**

* Results must be discussed and reported in draft and final NTR (Task 8). The electronic modeling files for model verification must be submitted with the draft and final NTR.
* Retain copies of all modeled comparisons (including electronic input/output data files used for modeling) for inclusion in the Project files (Task 1), to be submitted to Agency with the final NTR.

**TASK 7.0 Traffic Noise Impact Analysis and Mitigation Consideration**

Consultant shall provide a comparison between the Peak Traffic Hour and the Peak Truck Hour to determine which of those 2 conditions result in the worst-case noise hour. Consultant shall submit reports detailing the outcome of all modeling runs, including the modeling runs used to determine worst case condition, to Agency with the draft and final NTR. Consultant shall use the worst-case noise condition (either Peak Hour or Peak Truck Hour) for all modeled scenarios to arrive at the worst-case traffic noise condition.

Consultant shall select modeling receivers based on FHWA and Agency guidance and professional judgement. Consultant shall identify via mapping the noise sensitive receptors represented by individual modeling receivers. Mapping to be included in draft and final NTR.

Consultant shall conduct traffic noise modeling and analysis for existing and future year based on the build and no-build alternatives provided to Consultant for the Project. The alternatives analysis must include, at a minimum, the Existing Peak Noise Hour, the No-Build Future Peak Noise Hour, and the Build Future Peak Noise Hour. The analysis of alternatives must compare the number of times the noise exceeds/impacts standards by receiver and land use category. Traffic noise impacts must be identified for the future build scenario(s).

Consultant shall consider noise mitigation measures where traffic noise impacts occur.  The traffic noise impact criteria against which the Project traffic noise levels are evaluated are taken from Title 23 of the Code of Federal Regulations (CFR) Part 772, *Procedures for Abatement of Highway Traffic Noise and Construction Noise (July 13, 2010)* and the *ODOT Noise Manual* (July 2011).

Where noise mitigation is considered, Consultant shall analyze and evaluate abatement according to feasible and reasonable criteria described in 23 CFR 772 and the *ODOT Noise Manual*. The abatement evaluation must be discussed in the NTR. Consultant shall evaluate all reasonable criteria with the exception of the abatement approval survey.

*Note: Agency is responsible for survey/voting process unless specified under specific task authorization. The survey of the residents and owners for abatement approval will be conducted by the Agency if feasible and reasonable abatement is recommended. Abatement measures that are found to be reasonable and feasible would be recommended for inclusion with the Project*

Consultant shall include in draft and final NTR documentation of noise mitigation analysis and recommendations, mapping of location(s) for recommended mitigation, tables or spreadsheets showing the variations of barrier wall dimensions considered (along with the amount of noise reduction per benefitted receiver and the costs associated with the specific variation), and recommendation regarding build or no-build for mitigation.

Consultant shall utilize the Special Use worksheet in the *ODOT Noise Manual* Appendix F for noise abatement measures for schools, parks, place of worship, and other nonresidential developments.

If Project is in final design phase, Consultant shall provide Agency with location of properties that would benefit from the mitigation so that residents and owners can be surveyed as to their wishes concerning mitigation.

**Deliverables and Schedule**

* Electronic input and output data files used for impact analysis must be included as a deliverable in the NTR due in Task 8 table(s) showing comparison of alternatives to be included in NTR, Task 8
* Documentation of abatement cost factors for Category C, D or E if necessary (*ODOT Noise Manual*, Appendix F, Table 1), to be included in the NTR.
* Electronic input and output TNM data files used for mitigation evaluation to be submitted with Deliverables from Task 8.

**TASK 8.0 Prepare NTR**

Consultant shall prepare a draft and final NTR to adequately and accurately detail the findings of the noise study investigation, traffic noise analysis, and proposed noise mitigation efforts. The required documentation contained in the NTR is found in 23 C.F.R. § 772 and the *ODOT Noise Manual*. Appendix I of the *ODOT Noise Manual* provides an outline of the essential components of NTRs. The *ODOT Noise Manual* is the primary document to be followed in development of the noise study and the technical report. Consultant shall direct questions regarding alternative format to APM.

The NTR must incorporate all elements required in the *ODOT Noise Manual* and results of the tasks in this SOW including, but not limited to:

* Measured traffic noise level as well as a correlation to the modeled results for each of the noise measurement sites.
* Predicted Existing, No-Build Future and Future Build noise conditions for each alternative under study. Documentation of this information in the report must be furnished by use of text, tables, and mapping (graphics). As part of this documentation, existing roadway alignments and proposed future roadway alignments must be identified by mapping.
* Identification and discussion of any developed land use that is planned for displacement as a result of Project construction and a summary of the net effect on the number of traffic noise impacts through their removal. This may be accomplished through text, tables, and mapping that clearly identifies the subject land use.
* Table comparing the number of traffic noise impacts for each alternative. Traffic noise impacts must be clearly identifiable by means of mapping and through numbering of the noise prediction sites. Identification of traffic noise impacts must show the anticipated noise level at each receiver and the number of receptors each receiver represents.
* Summary of noise mitigation consideration or, if needed, the detailed noise mitigation analysis conducted for each noise impacted receiver or group of receptors.
* Discussion of unavoidable impacts.
* Discussion of noise compatible planning concepts and design year noise levels and distances to NAAC criteria or NAAC contours for undeveloped land.
* If the noise mitigation analysis includes a recommendation for noise barriers, Consultant shall include a statement in the NTR similar to the following for each barrier wall recommended:

“*Based on the noise technical report for this project, ODOT intends to install highway traffic noise abatement measures in the form of a barrier at (name location). The possibility of likely abatement measures are based upon preliminary design work for a barrier cost of approximately $ (indicate dollar amount) that will reduce the noise level by up to (state maximum level of reduction) dBA for (state number) of benefited residences. If during the ODOT’s final design process these conditions have substantially changed, the abatement measures might not be provided. A final decision of the installation of the abatement measure(s) will be made upon completion of the project’s final design, a cost estimating process, and the public involvement processes.”*

Consultant shall conduct quality assurance quality control (“QA/QC”) checks on all submittals to the Agency. This includes checking all modeling input and output, and tables and figures in report for errors. Submittals to the Agency must be reviewed by senior Consultant staff other than the analyst, who is proficient in TNM, traffic noise impact and abatement analyses. Submittals to the Agency must be edited to eliminate grammatical errors, and to ensure consistency and readability. QA/QC must follow the “Formal QC Process for Noise Deliverables”.

Consultant shall submit the draft NTR for review by Agency. Consultant shall respond to Agency review comments and incorporate responses into the final NTR.

Upon approval by Agency Noise Specialist, the final NTR must be stamped by Consultant’s Registered PE licensed to practice in the State of Oregon. Once the final NTR has been stamped, electronic and hard copies (if requested) of the finished product must be submitted to Agency.

*Note: Agency will distribute to FHWA, local jurisdictions, and others, as deemed appropriate.*

**Deliverables and Schedule**

|  |  |  |
| --- | --- | --- |
| Deliverable | Schedule | Copies/Format |
|  |  |  |
| I. Draft NTR including QC checklist and all supporting documentation, mapping, forms, traffic data, and other information used in the development of the report for review and comment. | Within \_\_ weeks of NTP. If Detailed Noise Mitigation Analysis is required, \_\_ business days will be added to schedule. Agency and Consultant shall agree upon schedule for this Task prior to NTP. | Submit draft electronically to APM, in \*.pdf (with figures and appendices) and MS Word formats (without figures and appendices). Modeling files to be submitted in electronic format as separate files. |
| II. Final NTR, including QC checklist and all supporting documentation, mapping, forms, traffic data, and other information used in the development of the report. | Within \_\_ business days from receipt of Agency comments on the draft NTR. \*Agency and Consultant shall agree upon schedule for this Task prior to NTP. | Submit       hard copies (only if directed) and electronically to APM. Electronic copy in PDF format so that complete report can be printed as one file, including appendices. \*APM will determine the number of hard copies prior to NTP. |
| III. Closeout Documentation File | Due upon completion of final NTR submittal, or within 10 business days of request by Agency, whichever is earlier. | Submit electronically on CD:* Modeling input and output files (TNM Traffic Noise Model 2.5 or later).

Submit electronically on CD:* Mapping sized appropriately to clearly show lane configuration and alignment that analysis was based on.
* Documentation of modeling and other analysis.
* All other Project file documentation, including monthly progress reports, record of contacts, research and field notes, photos, etc..
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**TASK 9.0 Public Meeting Attendance**

Consultant shall attend public meeting(s) as a technical resource to support Agency. Consultant shall respond to questions regarding noise and noise mitigation issues related to the Project.

After consulting with Agency, Consultant shall provide the following items for each public meeting as appropriate and requested by Agency PL or Community Affairs staff:

* Meeting flyer/agenda
* Informational handouts or tables
* Graphics/flip-charts sized appropriately for the venue of where the meeting is being held.
* PowerPoint presentation
* Meeting summary
* Attendance roster

Consultant shall present information at the meeting as overhead electronic projection if requested by Agency. Consultant shall submit any materials produced electronically on CD at conclusion of Services or send them electronically to APM.

**Deliverables and Schedule**

Consultant shall provide:

* Hard copies or electronic copies of all required meeting materials due within 5 business days after a public meeting:
* Meeting flyer/agenda
* Informational handouts or tables
* Graphics/flip-charts sized appropriately for the venue of where the meeting is being held.
* PowerPoint presentation
* Meeting summary attendance roster or individual attendee’s comments as well as attendee’s contact information
* Attendance roster

**TASK 10.0 Public Involvement Technical Resource**

Consultant shall serve as a Technical Resource, providing support for noise issues related to the Project.

Consultant shall:

* Attend up to X meetings with Agency’s Region Community Affairs staff.
* Meet with up to X impacted residents or property owners/managers as requested by Region Community Affairs staff.
* Document decisions and any action items assigned during meetings with Agency’s Region Community Affairs staff and impacted residents or property owners/managers.
* Document names of residents/property owners, dates and times of meetings, and their comments.
* Prepare a meeting summary

**Deliverables and Schedule**

Consultant shall provide:

* Written meeting summary documenting decisions and action items assigned. Submit within 3 business days of meeting.
* Written list of residents/property owners contacted with summary of comments. Submit within 3 business days following conclusion of meetings.

**TASK 11.0 Analyses of Noise Walls for Final Design**

**Task 11.1 Review previous NTR to Confirm Findings**

Based on Agency-prepared NTR, Consultant shall complete the following to confirm the earlier noise impact analysis and mitigation recommendations are still applicable to the project:

* Review project Noise Technical Report to determine where and what noise mitigation was recommended.
* Review Project design and traffic data for significant changes that have occurred since the date of the original Noise Technical Report and noise mitigation recommendation.
* If significant design changes have occurred, Consultant shall discuss with Agency’s Noise Specialist and prepare a *Noise Wall Analysis of Change Memorandum* to document whether or not those changes have the capacity to affect the originally recommended noise mitigation (i.e. render it ineffective or unnecessary.)
* If the design has significantly changed, Consultant shall re-analyze (via TNM modeling) the area in question to determine if the number and location of the traffic noise impacts have changed, and the wall(s) proposed is still feasible and reasonable (Task 11.2). Consultant shall include in the *Final Noise Wall Analysis* *of Change Memorandum* any design revision recommendations to Agency.

Depending on the outcome of this subtask, Agency could authorize Contingency Task 11.2.

**Deliverables and Schedule**

* *Noise Wall Analysis of Change Memorandum* summarizing the findings of the review due to Agency 10 business days after NTP or as directed by the APM.
* Consultant shall include in the *Final Noise Wall Analysis* *of Change Memorandum* any design revision recommendations to Agency

**Contingency TASK 11.2 Updates to Build Scenario due to Significant Project Design or Traffic Changes**

**[Note: this task is not necessary for all projects with recommended abatement – may not be needed or could be a contingency task, depending on Project timing. Results from Task 11.1 will determine need for Task 11.2]**

If Project design or traffic data have significantly changed (refer to results from Task 11.1), Consultant shall re-analyze (via TNM modeling) the Build (or Preferred) Alternative to determine if the number and locations of the traffic noise impacts have changed. The findings from this task will determine if noise walls previously proposed are still feasible and reasonable. Work in Task 11.3 determines final noise barrier design. Noise impact analysis work under this task is defined in Task 7.

Consultant shall confer with APM and Project Team if noise impact locations and numbers of receivers previously analyzed have changed. Using TNM, Consultant shall re-create the Build Scenario using the updated design and traffic data as appropriate. The Consultant shall report modeling results in Status of Proposed Mitigation Memorandum. Consultant shall provide preliminary noise wall design revision recommendations to Agency if necessary.

**Deliverables and Schedule**

* Status of Proposed Mitigation Memorandum (if warranted by design changes) due three (3) weeks after NTP or as directed by the APM.
* All TNM modeling files to be submitted with Memorandum

**Task 11.3 Final Noise Wall Height/Location Analysis**

[This task is intended to cover the work required to analyze the various wall iterations that may be required for decision-making purposes by the Agency Project Team for final location and height of noise barrier(s) and for incorporation into the Project’s final design. Task 11.3 may follow Tasks 11.1 and 11.2; it may also be a stand-alone task.}

*Note: The original noise impact analysis and proposed mitigation for noise impacted properties where it was determined to be both reasonable and feasible. The product of that work (the NTR) was then summarized in the environmental document. Task 11.3 may require that the Consultant work with the roadway designer to finalize dimensions and footprint for the noise barrier(s).*

Consultant shall:

* Add more modeling receivers as appropriate to TNM barrier modeling so that noise reduction at each receptor, including in the location of wall termini is well defined and can be defended. Coordinate new receivers with ODOT Noise Specialist as necessary.
* Model up to 3 iterations of wall location changes. Each iteration will be authorized by the APM and reviewed by Agency Noise Specialist. Iteration means one wall alignment with multiple heights analyzed. Each iteration must be summarized in spreadsheets that show insertion loss at each receiver for each wall height analyzed, number of receptors benefited by the representative receiver, impacted receivers that meet feasibility requirements, impacted receivers that do not benefit from the proposed wall, benefited receivers that meet ODOT’s noise reduction design goal, and cost per benefited receptor so that each wall height demonstrates how it meets or fails ODOT feasible and reasonable criteria. (APM to provide sample spreadsheet if necessary.) Wrap around features added to wall termini shall be considered a separate iteration. Final wall height for each location shall be optimized if necessary and as directed by the APM.
* Provide Agency with a draft Barrier Design Technical Memorandum after final wall analyses are complete. Draft and final Memorandum, at a minimum, shall include:
* Wall dimensions
* Wall coordinates
* Top-of-wall elevations for all final walls;
* Data from each wall height analyzed for each wall iteration must be summarized in tables or spreadsheets showing receiver, build noise level, insertion loss, dimension of subject wall, cost, number of benefited properties, benefited properties meeting ODOT noise reduction design goal, impacted properties meeting feasibility goal
* Final wall locations shown on mapping with wall alignment stationing or roadway stationing as directed by APM or Highway Designer. Final location of wall(s) must be presented and discussed in draft and final Memorandum, other wall iterations and heights analyzed must be included in appendix material;
* Benefitted properties shown on mapping and tabular form with street addresses. Consultant shall provide Agency with location of properties that would benefit from the mitigation so that residents and owners can be surveyed as to their wishes concerning mitigation. The number of benefited receptors may vary depending on the barrier scenario. Consultant shall determine number of benefited properties for each wall scenario. Agency is responsible for survey/voting process unless specified under specific task authorization.
* If a receiver represents more than 1 receptor, Consultant shall indicate graphically receptors represented by each receiver so that benefited properties and associated noise reduction can be determined for each iteration.
* Submit the final Analyses of Noise Walls for Final Design Memorandum to APM after Agency’s comments have been satisfied on the draft Analyses of Noise Walls for Final Design Memorandum.

Consultant shall:

* Conduct quality assurance (“QA”), quality control (“QC)” checks on all submittals to the Agency in accordance with the “Formal QC Process for Noise Deliverables”. This includes checking all modeling input and output, and tables and figures in draft and final Memorandum for errors. These checks will be performed by someone other than the Consultant noise analyst. Submittals to the Agency will be reviewed by senior Consultant staff other than the analyst, who is proficient in TNM, traffic noise impact and abatement analyses. Submittals to the Agency shall be edited to eliminate grammatical errors, and to ensure consistency and readability. Each draft of the Barrier Design Technical Memorandum must be accompanied by a QC checklist for that draft.
* Upon approval by Agency Noise Specialist, the final Memo must be stamped by a Registered PE, employed full-time by the Consultant, licensed to practice in the State of Oregon with sufficient knowledge to review the Memo. Once the final Memo has been stamped, electronic and hard copies (if requested) of the finished product will be submitted to Agency.

**Deliverables and Schedule**

Consultant shall provide;

* *Noise Wall Analysis of Change Memorandum* due one week after notice to proceed
* Draft *Analyses of Noise Walls for Final Design Memorandum* due within 21 business days of NTP or as directed by APM.
* Final *Analyses of Noise Walls for Final Design Memorandum* is due within 7 business days of receipt of draft review comments from Agency.
* Data from each wall iteration to be summarized in table(s) showing receiver, build noise level, insertion loss, dimension of subject wall, cost, number of benefited properties, benefited properties meeting Agency noise reduction design goal, impacted properties meeting feasibility goal. Final location of wall(s) to be presented and discussed in draft and final Memorandum, other wall iterations and heights analyzed to be included in appendix material.
* Location of properties that would benefit from noise mitigation due with draft and final Noise Wall Analysis Memo. Street addresses for benefited properties must be provided as well as shown on mapping.
* Draft Noise Wall Analysis memo is due within 21 business days of NTP or as directed by APM.
* Final Noise Wall Analysis Memo within 7 business days of receipt of draft review comments from Agency. Final Noise Wall Analysis Memorandum must be reviewed and stamped by an Oregon-licensed PE.

**TASK 12a. Variance Applications for Construction Work (Local Jurisdictions except the City of Portland**

[For R1 local jurisdictions except the City of Portland, this should be a CONTINGENCY Task- Before authorizing this task for R1 projects, consult with ODOT Region 1 Noise Coordinator. This work can likely be done in-house by R1 Noise Coordinator]

[Note: For Region 1, all variances must be approved by local jurisdictions by the date of Advanced Plans. Include this requirement in the deliverables for this task]

Consultant shall provide submittal-ready applications for variances to local jurisdictions noise regulations for nighttime construction work. Note that the Project may cross a number of city and county jurisdictions. Local requirements vary; it is anticipated that a letter application satisfies requirements for work covered by this task (see Task 12b. for City of Portland variance applications).

After responding to Agency comments, Consultant shall submit application(s) to the local jurisdiction(s) and be responsible for responding to comments or as directed by the APM. The applications will meet all requirements of the local jurisdictions and be in complete submittal format. Depending on the local jurisdiction’s requirements, work under this task includes:

* Participate in 3 meetings remotely with Agency staff and serve as a Technical Resource in the preparation of noise variance permit application and supporting materials.
* Prepare noise variance permit applications and supporting material (e.g., public outreach information).

**Deliverables and Schedule**

* Draft applications for variances and submit to Agency 15 business days from NTP.
* Final application to local jurisdictions or as directed by the APM, within 10 business days from receipt of comments from Agency.

**Contingency TASK 12b. Variance Application for Nighttime Construction Work within the City of Portland**

[CONTINGENCY- Before authorizing this task, consult with ODOT Region 1 Noise Coordinator. This work could likely be done in-house depending on work load and Project schedule]

[Note: For Region 1, all variances must be approved by City of Portland by the date of Advanced Plans. Include this requirement in the deliverables for this task]

Consultant shall provide one draft submittal-ready noise variance application for nighttime construction work to the Agency. After Consultant responds to Agency comments, Agency will be responsible for submitting application to the City of Portland (“City”) and paying the associated fees unless otherwise directed by APM. Consultant shall be responsible for responding to City comments concerning the variance application. The application must meet all City requirements and be in complete submittal format. Work under this task includes:

* Participate in 1 meeting with Agency staff and serve as a Technical Resource in the preparation of noise analysis, noise variance permit application and supporting materials.
* Conduct 1 field site visit and perform long-term noise monitoring as needed to document noise levels for noise variance permit application. Coordinate with Agency to determine if there are existing monitoring data that could be used as surrogates. If appropriate, Task 5 short term monitoring can be combined with this task in order to conduct all Project noise monitoring as one effort.
* Prepare draft noise variance permit application and supporting material (e.g., monitoring data, construction noise levels) for variance permit application for Agency review. Construction noise levels will be determined using FHWA Roadway Construction Noise Model. After satisfying Agency comments, Consultant shall submit variance application to City and schedule Pre-Application Meeting with the City upon submission if appropriate.
* Participate in 1 pre-application meeting with the City of Portland to discuss draft application, construction noise impacts on closest receptors to construction activities, and potential mitigation for impacted receptors.
* If not covered under Task 9, attend 1 City of Portland Noise Review Board meeting in-person as required by Agency’s staff serving as a Technical Resource to Agency’s presentation of the Project’s anticipated nighttime construction noise activities. Services may include assisting in the presentation of materials and providing additional information to the Noise Review Board.

**Deliverables and Schedule**

Consultant shall:

* Draft application for variances to Agency 15 business days from NTP. [Include date of Advanced Plans if appropriate here.]
* Draft application to City and request for Pre-Application Meeting after reconciling Agency comments.
* Final application to City 10 business days from receipt of comments from Pre-Application Meeting with the City and Agency.

**Task 13.0 Background Noise Monitoring**

[This task can be used for standalone monitoring, background construction monitoring, other situations where day and night noise levels may be needed. Consultant to discuss with ODOT Noise Specialist as necessary]

Consultant shall perform on-site background construction noise monitoring prior to the start of construction. The methodology for the measurements is divided into four sections:

* Background Monitoring
* Data Collection
* Data Analysis
* Quality Control

**Background Monitoring**

Consultant shall measure background sound levels at specific noise sensitive or roadside locations as determined by the APM.

[Note: Monitoring Selection locations must be based on sites most likely to be impacted by construction noise]

Measurements must be conducted for a 24 hour period to capture nighttime hours when traffic noise is quieter. Consultant shall provide background nighttime measurements if a variance is required for nighttime work. If specific parameters need to be collected, Consultant shall verify with the local jurisdiction and noise ordinance or codes, in order to satisfy specific noise regulations. Consultant shall monitor at up to X sites.

**Data Collection**:

Consultant shall take all noise measurements in accordance with American National Standards Institute (“ANSI”) procedures for community noise measurements. The measurement location will be at least 5 meters (16.5 feet) from any solid structure to prevent acoustical reflections and at a height of 1.5 meters (5 feet). The equipment used for noise monitoring must be Type 1 sound level meters equipped with a statistical analysis module or sound level meters with statistical analysis capabilities.

Consultant shall complete system calibration on an annual basis. System calibration must be traceable to the National Institute of Standards and Testing. The system must meet or exceed the requirements for an ANSI Type 1 noise measurement system. At a minimum, the following noise metrics must be recorded, using Fast response: Lmin, Lmax, MaxP, Leq, L01, L05, L10, L50 and L90. The Consultant shall directly compare these noise metrics to Project construction-related noise levels permitted within the conditions of the approved noise variance.

**Data Analysis**

Consultant shall tabulate the data and compare it to the permitted noise levels established in the conditions of the noise variance.

**Quality Control**

Consultant shall maintain QC through pre/post monitoring calibration, transfer of data via computer interface, and using a spreadsheet for data presentation and analysis.

##### Deliverables and Schedule

* Maps showing monitoring locations to Agency staff with report within 10 business days of NTP or date
* Technical memoranda summarizing results of the monitoring within 10 business days of NTP or date

**TASK 14.0 Construction Noise Monitoring**

Consultant shall conduct a noise-monitoring program for Project construction. The methodology for the program is divided into 5 sections:

* Develop Monitoring Plan
* Monitoring
* Data Collection
* Data Analysis
* Quality Control

[**NOTE:** Noise-monitoring program’s start and completion date will be determined by Agency at time of NTP.]

**Develop Quality Assurance/Quality Control Monitoring Plan**

Consultant shall develop a monitoring plan for Agency approval before commencement of monitoring. Plan must describe at a minimum: purpose, locations, parameters being collected, data reduction and reporting, QA/QC

**Monitoring**

Consultant shall set up sound level meters within the Project area. The monitoring locations are subject to change during the monitoring period based on changing work area locations and noise complaints. APM must approve all changes. Consultant shall monitor construction noise during all nights as determined by the APM. Consultant shall monitor up to 4 sites along the corridor, depending on the location and type of construction activities.

[Note: Agency anticipates that nighttime construction will occur throughout the duration of the Project].

**Data Collection**

Consultant must take all noise measurements in accordance with ANSI procedures for community noise measurements. The measurement location will be at least 5 meters (16.5 feet) from any solid structure to prevent acoustical reflections and at a height of 1.5 meters (5 feet). The equipment used for noise monitoring must be Type 1 sound level meters equipped with a statistical analysis module or sound level meters with statistical analysis capabilities.

Consultant shall calibrate meters on a weekly basis using a sound level calibrator. Consultant shall complete system calibration on an annual basis. System calibration must be traceable to the NIST. The system must meet or exceed the requirements for an ANSI Type noise measurement system. The system must be battery operated with the ability to record data for up to 20 business days without recharge. Consultant shall install freshly charged batteries at the weekly system check and calibration. Data collected for the previous week must be retrieved by Consultant with a portable computer. At a minimum, the following noise metrics must be recorded, using Fast response: Lmin, Lmax, MaxP, Leq, L01, L05, L10, L50 and L90. The Consultant shall directly compare these noise metrics to Project construction-related noise levels permitted within the conditions of the approved noise variance.

Consultant shall submit monthly data reports to APM in tabular and graphical format including maps showing monitoring locations. Consultant shall submit technical memoranda summarizing results of the monitoring either monthly or within twenty-four (24) hours of receiving a noise complaint report.

**Data Analysis**

Consultant shall tabulate the data and compare to the permitted noise levels established in the conditions of the noise variance.

**Quality Control**

Consultant shall maintain QC through weekly calibration, transfer of data via computer interface, and using a spreadsheet for data presentation and analysis and include:

* On-site construction noise monitoring at locations designated by the Agency per the schedule identified above.
* Provide monthly data reports to the Agency staff in tabular and graphical format.
* Provide maps showing monitoring locations to Agency staff with each data report.
* Provide technical memoranda summarizing results of the monitoring monthly or within 24 hours of receiving a noise complaint report.

**Deliverables and Schedule**

Deliverables and Schedule must be provided.

**Task 15.0 Respond to Noise Complaints during Construction**

Consultant shall:

* Perform on-site short-term noise monitoring at specific locations as directed by the APM within 24 hours of NTP for this task.
* Compare collected data under this Task to previous noise level data collected or modeled for the Project (pre-construction or ambient data).

[Note: The monitoring locations for complaints are subject to change during the monitoring period based on changing work area locations and noise complaints]

**Data Collection**

Consultant shall provide all noise measurements taken in accordance with ANSI procedures for community noise measurements. The measurement location must be at least 5 meters (16.5 feet) from any solid structure to prevent acoustical reflections and at a height of 1.5 meters (5 feet). The equipment used for noise monitoring must be Type 1 sound level meters. At a minimum, Lmax, and Leq must be recorded, using Fast response. The Consultant shall consider also Lmin, Lmax, MaxP, Leq, L01, L05, L10, L50 and L90 if usedin previous measurements for the Project.

**Data Analysis**

Consultant shall tabulate the data and compare to the pre-construction (ambient) noise levels (conducted under Task 13).

**Quality Control**

Consultant shall maintain QC through required calibration, transfer of data via computer interface, and using a spreadsheet for data presentation and analysis.

##### Deliverables and Schedule

Consultant shall provide:

* On-site construction noise monitoring at locations designated by the Agency within 10 business
* Technical data report/memorandum to the Agency staff in response to noise complaints within 1 business day
* Maps showing monitoring locations and results to Agency staff with each data report. Other required documentation includes site photos, sketches, field observations and data sheets, distances from the sound level meter to the noise source.
* Technical memorandum for each complaint response event to discuss and compare the pre-construction noise levels (if performed, see Task 13) and the noise levels measured in response to the complaint and recommendations for abating the noise levels.

**Task 16 – Special Noise Studies Task (Up to 800 hours may be authorized)**

[Special studies could involve non-traffic noise-generating activities that could occur on Agency right of way (“ROW”) or Agency controlled property. Noise studies may include rock quarries, haul roads, or any other transportation-related activity where resulting noise levels may be detected at nearby noise sensitive receptors. Such studies may not meet 23 CFR 772 compliance]

Consultant shall

* Conduct noise studies for projects that are not covered by the above tasks
* Provide noise studies as required, up to a total of 800 hours

##### Deliverables and Schedule

Noise Technical Memorandum within 10 days of NTP or date

[Tasks 17 and 18 require Consultant engineering staff (not Noise Specialist) to provide roadway design and traffic data for the noise technical work. Engineering work products must be stamped by an Oregon-registered PE]

## Task 17 - Roadway Design for Noise Analysis

For the Noise Technical Report, Consultant PE shall provide plan and profile drawings for existing and future years in Microstation format.  Plan view drawings shall be provided showing:

* Lane lines
* Existing sound walls and/or retaining walls
* Aerial photos referenced to the design files so that existing lanes and sensitive noise receptor locations can be identified
* Topographic contours at least 500 feet from the proposed alignment
* Notation of properties which will be “takes” (acquisitions)

**Deliverables and Schedule**

Consultant shall provide Roadway design elements for Noise Technical Report, submitted as part of Task 8 and shall be submitted within 10 business days from NTP or date.

## Task 18 - Traffic Data for Noise Analysis

Consultant PE shall prepare traffic data needed for noise analysis and noise technical report. This analysis shall include:

* + Existing, future build (design year), and future no-build traffic data for each roadway link in the project area, including collector and higher functionally classified cross streets, for the peak hour and the peak truck hour and in an MS Office-compatible spreadsheet in the form of:
* Link volumes for each traffic direction
* Percentages of the following vehicles on each link:
	+ - * + Automobiles (FHWA vehicle classes 1-3)
				+ Medium trucks (FHWA vehicle classes 4-5)
				+ Heavy trucks (FHWA vehicle classes 6-13)

[Note that the peak truck hour is typically not in the same period of the day as the peak hour, so longer duration vehicle classification counts (ideally 16+ hr) are necessary. Please refer to ODOT’s Analysis Procedures Manual Version 1 Chapter 11 for details on roadway link creation, vehicle classification, and required factors and their calculation].

If peak hour or the peak truck hour link volumes exceed the maximum LOS C volumes (LOS C/D threshold) then the link volumes shall be capped at the maximum LOS C volume. LOS C comparative volumes for can be obtained from current Highway Capacity Manual 6th Edition methods. LOS C volumes for intersection approaches also require an iterative process to obtain the target LOS C value.

* Existing and future posted speeds
* Existing 85th percentile speeds (if available)
* For each traffic signal in the project area, the percentage of vehicles affected (expected to come to a stop).
* Land use zoning information for properties within the project area in the form of:
	+ Existing zoning
	+ Future zoning or predicted changes in land use from existing use

The methodology for creating the noise traffic data shall be documented in a methods and assumptions memorandum to be reviewed and approved by Agency Transportation Planning Analysis Unit and Region Traffic Engineer before work on creating the noise traffic data starts.

The completed draft noise traffic data and related documentation (calculations, notes, etc.) shall be reviewed and approved by the Agency Transportation Planning Analysis Unit and Region **X** Traffic Engineer. The noise traffic data shall be provided as appendix material in the draft and final Noise Technical Report.

**Deliverables and Schedule**

Consultant shall provide:

* Draft Methodology for Noise Analysis Traffic Data Memo within 10 business days from NTP or date.
* Final Methodology for Noise Analysis Traffic Data Memo within 10 business days upon receipt of Agency comments
* Final Traffic Data for Noise Analysis Memo to be included in Draft Noise Technical Report due within 10 business days or date
* Final Traffic Data for Noise Analysis Memo to be included in Final Noise Technical Report within 10 business days of receipt of Agency comments

**F. CONTINGENCY TASKS**

[Projects may have work that can reasonably be anticipated but may or may not be needed, depending on conditions that arise or change during a project period. This condition dependent work is considered to be contingency work and must be planned for in the SOW and budget. Any contingency tasks or deliverables in the SOW must be within the scope of Services of the RFP. In the SOW, each contingency item must clearly be labeled as “Contingency” and must include a defined task, deliverable(s) and a schedule (normally listed as a number of business days from NTP for the contingency task).

If contingency tasks are used, they must be detailed in section E – Tasks, Deliverables and Schedule (normally listed as a number of business days from NTP for the contingency task) with each labeled as a “Contingency Task”. Also enter contingency task headings and dollar amounts in the table below. See “Contingency Task Costs” in WOC Attachment section.][If no Contingency Tasks, delete text and table below and mark Section F as “Reserved”.]

The table below is a summary of contingency tasks that Agency, at its discretion, may authorize Consultant to perform. Details of the contingency tasks and associated deliverables are stated in the Task section of the SOW. Consultant shall complete only the specific contingency task(s) identified and authorized via written (email acceptable) NTP issued by Agency's APM. If requested by Agency, Consultant shall submit a detailed cost estimate for the agreed-to contingency Services {within the not-to-exceed or “NTE” amount(s) in the Contingency Task Summary Table} within the scope of the contingency task.

If Agency chooses to authorize some or all of these tasks, Consultant shall complete the authorized tasks and deliverables per the schedule identified for each task. The NTP will include the contingency task name and number, agreed-to due date for completion and NTE for the authorized contingency task.

Each contingency task is only billable (up to the NTE amount identified for the task) if specifically authorized per NTP. In the example table below, the “NTE for Each” amount for a contingency task includes all labor, overhead, profit, and expenses for the task. The funds budgeted for contingency tasks may not be applied to non-contingency tasks without an amendment to the WOC/Contract. The total amount for all contingency tasks authorized must not exceed the maximum identified in the table below. Each authorized contingency task must be billed as a separate line item on Consultant’s invoice.

 **CONTINGENCY TASK SUMMARY**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Task # | Definition | NTE for each | Maximum Quantity | Total |
| 11.2 | Updates to Build Scenario due to Significant Project Design or Traffic Changes  | $ |   | $ |
| 12a. | Variance Applications for Construction Work Local Jurisdictions (except the City of Portland) | $ |   | $ |
| 12b. | Variance Application for Nighttime Construction Work within the City of Portland | $ |   | $ |

1. Anderson, Grant S., Cynthia S.Y. Lee, Gregg G. Fleming. FHWA Traffic Noise Model, ® Version 1.0: User's Guide. Report No. FHWA-PD-96-009 and DOT-VNTSC-FHWA-98-1. Cambridge, MA: John A. Volpe National Transportation Systems Center, Acoustics Facility, January 1998. [↑](#footnote-ref-1)