

Final Noise Technical Report

ODOT | K19786 I-205: Stafford Rd to OR 213 Corridor Widening & Abernethy Bridge Seismic Retrofit / Widening

ODOT EA: C6035200 HDR Project #10063137

Clackamas County, Oregon

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Professional Engineer's Stamp



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Acronyms and Initialisms

Consultant	HDR Engineering, Inc. and subconsultant partners
County	Clackamas County, Oregon
dB	Decibel
dB(A)	A-weighted decibels
DD	doubling of distance
FHWA	Federal Highway Administration
I-205	Interstate 205
L _{eq}	equivalent sound level
L _{eq(h)}	hourly equivalent sound level
LT-	Long-term measurement location
mph	miles per hour
NAC	noise abatement criteria
NAAC	Noise Abatement Approach Criteria
NB	Northbound
NCHRP	National Cooperative Highway Research Program
NEPA	National Environmental Policy Act
ODOT	Oregon Department of Transportation
OR	Oregon Route
OSMRE	Office of Surface Mining Reclamation and Enforcement
Project	I-205: Stafford Road to OR 99E Corridor Widening & Abernethy Bridge Seismic Retrofit / Widening
SB	Southbound
ST-	Short-term measurement location
TNM	Traffic Noise Model

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Executive Summary

The Interstate 205 (I-205): Stafford Road to Oregon Route (OR) 213 (Project) proposes to widen I-205 from the Stafford Road interchange to just north of the Abernethy Bridge crossing and tie into the existing roadway near the OR 213 interchange. Two new travel lanes would be added, generally to the middle of the facility where a grass median currently exists. Where there is no grass median, such as where the facility approaches the Abernethy Bridge from the west, the roadways would be widened to the south where a rock cut and blasting would be required. North of the Abernethy Bridge only, an auxiliary lane will be added to the facility. The Project also proposes to retrofit several structures including the Abernethy Bridge to accommodate the additional travel lanes.

Noise and vibration levels associated with the construction and operation of the Project Build Alternative (2045) were calculated and where appropriate compared to the Existing Conditions (2017). The No Build Alternative (2045) was also analyzed for the environmental assessment being prepared for the Project pursuant to the National Environmental Policy Act (NEPA).

Existing Condition (2017) noise levels range from 43 A-weighted decibels (dB(A)) hourly equivalent sound level (L_{eq}) to 74 dB(A) L_{eq} and exceed the Oregon Department of Transportation (ODOT) noise abatement approach criteria (NAAC) at 238 residences, the South Lake Church/Pre-School/Daycare, Jon Storm Park, and the Atlas Immersion Academy School.

No Build Alternative (2045) noise levels would range from 45 dB(A) L_{eq} to 74 dB(A) L_{eq} and are predicted to exceed the NAAC at 281 residences, the South Lake Church/Pre-School/Daycare, Jon Storm Park, and the Atlas Immersion Academy School. No Build Alternative noise levels are predicted to increase on average by 1 decibel (dB) over the Existing Conditions and would be due to increases in traffic volumes. Build Alternative (2045) noise levels would range from 45 dB(A) L_{eq} to 75 dB(A) L_{eq} and impacts would occur at 351 residences, the South Lake Church/Pre-School/Daycare, a pool at the Jamestown Apartments, Jon Storm Park, and the Atlas Immersion Academy School. Changes in noise levels predicted under the Build Alternative when compared to the Existing Condition would increase up to 5 dB(A) due to increase traffic and reduced setback distances to the widened roadway.

The Build Alternative noise impacts are predicted throughout the study area and noise abatement measures in the form of noise walls were evaluated in 13 locations for feasibleness and reasonableness. Three of the 13 noise walls (Noise Walls 5, 8, and 9) cannot feasibly reduce noise levels per ODOT policy and five of the 13 noise walls (Noise Walls 1, 3, 6b, and 11) could feasibly reduce noise levels but are unreasonably expensive per ODOT policy. The remaining noise walls (Noise Walls 2, 4, 6a, 7, and 12) are feasible and reasonable per ODOT policy and are recommended for further consideration and inclusion in the Project, specifically:

- Noise Wall 2: North of Blankenship Road located parallel to the southbound (SB) I-205 lanes.
- Noise Wall 4: South of Blankenship Road located parallel to the SB I-205 lanes.
- Noise Wall 6a: 3,697 feet south of the 10th Street interchange and located on a ridge at the SB I-205 right-of-way.
- Noise Wall 7: North of the Sunset Avenue overcrossing and west of the I-205 SB lanes.
- Noise Wall 12: North of the I-205 SB lanes near the Main Street overcrossing in Oregon City.

These noise walls would provide sufficient noise reduction to be classified as "benefitted" (i.e., 5 dB reduction or greater) per ODOT noise regulations at 136 impacted residences. An additional 100 residences would also benefit from the noise abatement that would not be impacted by the project. Preliminary costs for the noise walls would total \$2,854,020¹. Noise impacts are unavoidable at the remaining 223 impacted receptors.

The distance to the 65 dB(A) noise abatement approach criteria (NAAC) on undeveloped lands in the vicinity of I-205 ranges from 420 feet in the western portion of the Project to 480 feet in the eastern portion of the Project. The distance to the 70 dB(A) NAAC would range from 150 feet in the western portion of the Project to 170 feet in the eastern portion of the Project.

The findings of this report will be shared with local governments, such as the cities of West Linn and Oregon City as well as Clackamas County, for their consideration of these sound levels in approving residential land use development in the future.

¹ ODOT Noise Policy (ODOT 2011) calculates barrier costs to the nearest \$10 increment.

1 Introduction

This Noise and Vibration Technical Report has been prepared as a part of the environmental review for the I-205: Stafford Road to Oregon Route 213 (OR 213) (the Project). The section of I-205 from Stafford Road to OR 99E is the last remaining bottleneck on the I-205 corridor and also does not meet seismic resiliency goals. With just two through lanes in each direction, this section of the I-205 freeway currently experiences significant traffic delay. Regional growth is expected to expand the congested peak periods, further reducing the hours that vehicles can move on the system without major delays. The purpose of the project is to reduce congestion in the I-205 corridor by adding additional through-lanes in the northbound (NB) and southbound (SB) directions between Stafford Road and OR 99E, as well as to ensure seismic resiliency of the entire corridor. The Project is also considering an auxiliary lane on I-205 northbound from OR 99E to OR 213. The Project is anticipated to improve mobility and travel time reliability within the corridor, with corridor peak hour travel speeds estimated to increase up to 25 percent over today's speeds.

2 Project Description

The Project area consists of an urban freeway segment that generally includes two travel lanes in each direction with auxiliary lanes at the Abernethy Bridge. The existing third general purpose lane stops at the north end of the Project at the OR 99E interchange area. The Project would add a third through-travel lane in each direction and would minimally adjust affected interchanges to conform to the third lane. It is not the Project's intent to significantly reconfigure any interchange. The Project would also widen and seismically upgrade twelve structures, reconstruct four structures, and remove one structure. Details of the Project are listed below:

- Adding a third through-lane in each direction form Stafford Road to OR 99E.
- Adding a NB auxiliary lane from OR 99E to OR 213.
- Widening with seismic upgrades to the following bridges:
 - o I-205 SB over Borland Road
 - o I-205 NB over Borland Road
 - o I-205 SB over 10th Street (West Linn)
 - o I-205 NB over 10th Street (West Linn)
 - o I-205 over Willamette River (Abernethy)
 - o I-205 SB Connection #2 to Highway 3 (West Linn interchanges)

- I-205 over Main Street (Oregon City)
- Removal and reconstruction of the following bridges:
 - Sunset Avenue (West Linn) over I-205
 - West A Street (West Linn) over I-205
 - o Tualatin River, I-205 SB
 - o Tualatin River, I-205 NB
 - o I-205 SB over Woodbine Road (removal and reconstruction)
 - o I-205 NB over Woodbine Road (removal and reconstruction)
 - o I-205 SB over Blankenship Road (removal and reconstruction)
 - o I-205 NB over Blankenship Road (removal and reconstruction)
- Removal of the following bridges:
 - o Broadway (West Linn) over I-205 & OR 43
 - o I-205 NB Connection #1 to OR 99E (Oregon City interchange)

3 Methodology

This section describes the methodology used in the Project's noise and vibration analysis to identify impact conditions consistent with federal, state, and local regulations.

3.1 Noise Standards and Criteria

The noise impact of the Project was assessed in accordance with Federal Highway Administration (FHWA) and ODOT noise assessment regulations and guidelines. The FHWA regulations are set forth in 23 CFR Part 772.² On July 13, 2010, FHWA published revised noise regulations that became effective on July 13, 2011. ODOT prepared revisions to its noise policy in accordance with FHWA's requirements and revised policy which became effective July 13, 2011³.

² 23 CFR Part 772, as amended 75 FR 39820, July 13, 2010; Effective date July 13, 2011 – "Procedures for Abatement of Highway Traffic Noise and Construction Noise," Federal Highway Administration, U.S. Department of Transportation. <u>http://www.fhwa.dot.gov/environment/noise/regulations_and_guidance/</u>

³ "Oregon Department of Transportation Noise Manual," July 13, 2011. <u>http://www.oregon.gov/ODOT/GeoEnvironmental/Docs_Environmental/Noise-Manual.pdf</u>

3.1.1 Noise Abatement Criteria

To assess the degree of traffic noise impact on human activity, the FHWA established a noise abatement criteria (NAC) for different categories of land use (see Table 1). Per the aforementioned FHWA regulations, these levels "represent the upper limit of acceptable traffic noise conditions" and the NAC "represent a balancing of that which may be desirable with that which may be achievable." According to ODOT regulations, traffic noise impact occurs when the predicted traffic noise levels approach or exceed the NAC, or when the predicted traffic noise levels substantially exceed the existing noise levels. ODOT defines the word "approach" in "approach or exceed" as 2 decibels (dB) less than the FHWA NAC and defines this as the Noise Abatement Approach Criteria (NAAC) and identifies a substantial increase as having occurred if the increase is 10 dB or greater above existing conditions. The regulations further state that noise impact should be assessed for the loudest traffic conditions, which are either the peak vehicular hour or the peak truck hour for the design year. The peak truck hour is used in this analysis because the project corridor operates below posted speed limits during peak hour, therefore lower noise levels persist during the peak hour when compared to the peak truck hour. This approach was agreed to with ODOT noise staff during a project meeting held in October of 2017. (ODOT 2017)

The NAAC are expressed in terms of the hourly equivalent A-weighted sound levels. The A-weighted sound level, designated dB(A), is a measure of sound intensity with weighted frequency characteristics that corresponds to human subjective response to noise. Most environmental noise (and the A-weighted sound level) fluctuates from moment to moment, and it is common practice to characterize the fluctuating level by a single number called the equivalent sound level (L_{eq}). The L_{eq} is the value or level of a steady, non-fluctuating sound that represents the same sound energy as the actual time-varying sound evaluated over the same time period. For traffic noise assessment, L_{eq} is typically evaluated over a one-hour period, and may be denoted as $L_{eq}(h)$.

This study evaluated residential (Category B), park/school/recreation areas (Category C), one interior use only retirement home (Category D), and a hotel outdoor use areas (Category E). For Categories B and C, noise impact is assumed to occur when predicted exterior noise levels, due to the Project, approach or exceed 67 dB(A) $L_{eq}(h)$ during the loudest hour of the day. Therefore, the ODOT-defined threshold for noise impact is where exterior noise levels would be 2 dB less than 67 dB(A) $L_{eq}(h)$, or 65 dB(A) $L_{eq}(h)$ for NAAC B and C uses. For commercial properties, noise impact is assumed to occur when predicted exterior noise levels, due to the Project, would approach or exceed 72 dB(A) $L_{eq}(h)$ during the loudest hour of the day. Therefore, the threshold for noise impact is where exterior noise levels would be 2 dB less than 67 dB(A) $L_{eq}(h)$, or 70 dB(A) $L_{eq}(h)$ during the loudest hour of the day. Therefore, the threshold for noise impact is where exterior noise levels would be 2 dB less than 67 dB(A) $L_{eq}(h)$ during the loudest hour of the day. Therefore, the threshold for noise impact is where exterior noise levels would be 2 dB less than 72 dB(A) $L_{eq}(h)$, or 70 dB(A) $L_{eq}(h)$. Noise impact also would occur wherever Project noise causes a substantial increase over existing noise levels. ODOT defines a substantial increase as an increase of 10 dB or more above existing noise levels.

Activity Category	NAC L _{eq} (h) ¹	ODOT NAAC L _{eq} (h) ¹	Description of Activity Category		
A	57 (Exterior)	55 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose		
B ²	67 (Exterior)	65 (Exterior)	Residential		
C ²	67 (Exterior)	65 (Exterior)	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings		
D	52 (Interior)	50 (Interior)	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios		
E ²	72 (Exterior)	70 (Exterior)	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D or F		
F	-	_	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing		
G	_	-	Undeveloped lands that are not permitted (without building permits)		
¹ Hourly Equivalent A-weighted Sound Level (dB(A))					

Table 1. FHWA	Noise A	Abatement	Criteria and	ODOT	Approach	Criteria
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² Includes undeveloped lands permitted for this activity category

Source: 23 CFR Part 772.

When the predicted design-year Build case noise levels would approach or exceed the NAC during the loudest hour of the day or would cause a substantial increase in existing noise, consideration of traffic noise reduction measures is necessary. If it is found that such mitigation measures would cause adverse social, economic or environmental effects outweighing the benefits received, they may be dismissed from consideration. For this study, noise levels throughout the study area were estimated for Existing (2017) conditions and for the 2045 No Build and Build alternatives.

3.1.2 Local Noise Regulations

Portions of the Project are within the three local jurisdictions of Clackamas County, West Linn, and Oregon City.

3.1.2.1 Clackamas County

Clackamas County prescribes noise regulations via Title 6-10 of the County Code (Clackamas County, 2000). The applicable portions include those relating to construction noise, which the County restricts to daytime hours. Specifically, construction noise is restricted to the hours from 6:00 a.m. to 10:00 p.m. Construction noise associated with blasting is restricted to the hours from 9:00 a.m. to 10:00 p.m., excluding the weekends. Nighttime construction requires a noise variance from the County.

3.1.2.2 West Linn

West Linn prescribes noise regulations via Title 5, section 5.487 of the Municipal Code (City of West Linn, 2004). As with the County, the applicable portions include those relating to construction noise. Construction noise is exempted from the City's noise level limits from 7:00 a.m. to 7:00 p.m. during weekdays and from 9:00 a.m. to 5:00 p.m. on Saturdays. Construction noise may occur outside of these hours provided that it complies with the City's noise level limits which are provided in Table 2. If compliance is not possible, a noise variance is required. Noise-sensitive land uses are defined by the City as "Any use which is adversely affected by ambient sound or noise, as in the use of real property for residential occupancy, schools, churches, public libraries, or hospitals. This definition includes any place where people normally sleep. Impulse sounds include air overpressure associated with blasting." Examples of impulse sounds include noise from pile driving as well as blasting.

Type of Sound	7:00 a.m. to 7:00 p.m.	7:00 p.m. to 7:00 a.m.
Steady Sound ¹	L ₅₀ = 55 dB(A)	L ₅₀ = 45 dB(A)
	L ₁₀ = 60 dB(A)	L ₁₀ = 50 dB(A)
	L ₁ = 70 dB(A)	L1 = 55 dB(A)
Impulse Sound ²	95 dB	80 dB
1		··· ·· · · -

 Table 2. West Linn Noise-Sensitive Use Property Line Sound Level Limits

 1 Statistical sound levels represent the percentage of time a sound level is exceeded. For example, the L_{50} is the sound level exceeded 50 percent of the time and the L_{10} is the sound level exceeded 10% of the time.

² Impulse sound is typically evaluated in linear decibels (dB). Source: West Linn Municipal Code, 2004.

3.1.2.3 Oregon City

Oregon City's Public Works Department has published nighttime construction noise restrictions on their website (City of Oregon City, 2018). Specifically, construction is restricted to daytime from 7:00 a.m. to 6:00 p.m. weekdays and from 9:00 a.m. to 6:00 p.m. Saturdays. Construction outside of these time periods requires a variance.

3.2 Noise Prediction Model

HDR partnered with HMMH who used the latest version of the FHWA's Traffic Noise Model (TNM), Version 2.5, to compute existing and future Build case loudest-hour noise levels and develop the preliminary heights, lengths and locations for all potential noise barriers along the project corridor. TNM incorporates state-of-the-art sound emissions and sound propagation algorithms, based on well-established theory or on accepted international standards. The acoustical algorithms contained within the FHWA TNM have been validated with respect to carefully conducted noise measurement programs, and show agreement in most cases for sites with and without noise barriers (Federal Highway Administration, 1998, and US Department of Transportation, 2004).

Available aerial photography from Metro, topographic information from the Project survey effort, tree zones identified visually, and geographic information system (GIS) building information from Metro were used to create a three-dimensional model in the TNM of the geometry of the existing and future roadway configurations and the surrounding terrain and buildings. It should be noted there is considerable topographical change in the Project area, such as where I-205 approaches the Willamette River crossing from the south. These topographic effects and others were included in the modeling to increase the accuracy of TNM's predictions. The noise modeling also accounts for such factors as propagation over different types of ground (acoustically soft and hard ground), elevated roadway sections, shielding effects from local terrain and structures, distance from the road, traffic speed, and hourly traffic volumes including the distribution of roadway traffic in terms of automobiles, medium and heavy trucks, motorcycles, and buses. In some areas, local roadways were included in the models without traffic to help account for topographic and ground effects (i.e., acoustically reflective). To fully characterize existing and future noise levels at all noise-sensitive land uses in the study area, 731 noise prediction receivers were included in the modeling. There is one instance of a receiver representing two noise sensitive properties/sites.

At approximately 11 miles, the Project corridor is relatively long for TNM prediction efforts. Therefore, the project was divided roughly at its midpoint, where there are no noise-sensitive land uses within 500 feet, to improve run times. The modelling was divided up in such a manner to ensure sufficient overlap, which is achieved by extending roadways with traffic on them approximately 1,000 to 2,000 feet beyond where noise-sensitive receptors of interest are located. Noise abatement modelling was also divided up to analyze each individual noise wall. Where noise abatement measures were analyzed in detail the reported noise levels, both abated and unabated, are obtained from those noise models.

Information on noise-sensitive residential land use in the study area (NAAC B, C, D, and E) includes the number of dwelling units, outdoor uses, and interior uses (where applicable) identified from existing mapping and field verification.

3.2.1 Abernethy Bridge Structure-Borne Noise

The Abernethy Bridge spans the Willamette River connecting the Oregon City side of the river to the east with the West Linn side of the river to the west. Clusters of noisesensitive receptors are located in these areas consisting of mainly residential uses on the West Linn side and a park on the Oregon City side of the river.

TNM does not directly account for noise emanating from aerial structures, such as noise from vehicle vibrations through the bridge's deck. Methodologies developed and documented in the National Cooperative Highway Research Program (NCHRP)

Report 791 were implemented to account for the structure-borne noise from the bridge. The process involved obtaining measurement data at the drip edge of the structure and simultaneously at distances further away from the structure to identify how much structure-borne noise influences sound levels in a given area of sensitive receptors. Studies have shown that structure-borne noise measured under free flow and relatively constant traffic conditions, such as what occurred during the measurement effort, does not vary greatly with increased traffic volumes. For this reason, the measured traffic noise level at drip edge, and as documented in the measurement section of this report, are applied to each of the conditions analyzed (e.g., Existing Conditions, No Build alternative, and Build alternative). Section 5 provides additional detail on these measurements and structure-borne noise.

3.3 Traffic Data for Noise Prediction

The traffic data used in the noise analysis is representative of the loudest hour of the day, which ODOT noise policy identifies as being the louder of either the peak vehicular hour or peak truck hour. Traffic modeling data for the project were derived using ODOT-provided counts combined with traffic predictions made by HDR for the 2016 Existing Conditions and the 2045 No Build and Build Alternatives. Existing traffic was counted on May 3, 2017 to obtain existing volumes (HDR 2017). Hourly volumes, truck percentages and posted speeds were provided for other major intersecting roadways in the local network.

HMMH worked with HDR to compare the peak vehicular hour against the peak truck hour to identify which case yields the higher traffic noise levels. While the peak vehicular hour has higher overall volumes of traffic on the analysis area roadways, traffic under these conditions are traveling well below posted speeds, at 25 miles per hour (mph) or less, along many portions of I-205. Lower traffic speeds, characteristic of the peak vehicular hour, produce considerably lower noise levels than under free flow conditions. Conversely, the peak truck hour conditions occur in the middle of the day, where volumes are lower, but traffic is moving under free flow conditions. Additionally, heavy trucks account for higher single passby noise levels in comparison to automobiles or light trucks. Therefore, the combination of vehicular traffic moving at free flow conditions and the highest percentage of heavy truck traffic on area roadways makes the peak truck hour the worst case traffic noise hour for the project area. This approach was agreed to during a conference call between ODOT noise staff and the HDR/HMMH consulting team. (ODOT 2017)

4 Existing Conditions

Existing noise levels were established using a combination of noise monitoring and modeling efforts. Additionally, existing structure-borne noise from the Abernethy Bridge was measured to identify the amount of structure-related noise that currently exists in areas near the bridge. Existing noise levels were identified at noise sensitive land uses in the analysis area.

4.1 Land Use

The study area, i.e., the area of potential impact, of noise-sensitive land uses for this report extends approximately 500 feet from Project improvements. The southwestern end of the study area from the Stafford Road interchange to the intersection of Johnson Road and Grapevine Road includes lower density development and could be considered more rural than the portion of the study area to the northeast. From approximately 2,000 feet west of the intersection of Johnson Road and Blankenship Road near I-205 to the eastern terminus of the Project at OR 213, the study area has higher density development and would be characterized as being more urban.

Table 3 provides the quantities of land uses by NAAC. Figure 1 and Figure 2, in Section 11 of this report, are zoning and comprehensive plan designation maps, respectively, for the areas analyzed. No noise-sensitive receptors would be displaced as part of the Project. Research was conducted to identify new developments in the noise study area that could be impacted by the Project. The only such development, the Grand Cove Project multi-family complex, is currently under construction in Oregon City. According to the Grand Cove Project Land Use Application with the City of Oregon City (Oregon City, 2015) it will be constructed over a number of years in multiple phases and will comply with all federal, state, and local noise regulations. The first phase of this new development includes 132 multi-family residences and outdoor pool.

The McLean House, and other historic resources on Willamette Drive, are included in the analysis as a NAAC B uses and are located near the West Linn landing of the Abernethy Bridge.

Noise Abatement Activity Category and Land Use	Total Number of Uses
B (65)	713
Multi-Family Residential	294 ¹
Single-Family Residential	419
C (65)	10
Church, Daycare, School	1
Jon Storm Park	5
Play Structure at Apts.	1
Pool at Apts.	2
School (Atlas Immersion Academy)	1
D (50) ²	71
Retirement Home (no outdoor use)	71
E (70)	120
Best Western	118 ³
Best Western (Outdoor Seating)	1

Table 3. Existing Land Uses



Noise Abatement Activity Category and Land Use	Total Number of Uses
Best Western (Pool)	1
Notes:1.Includes Grand Cove Project future sensitive receptors.2.Is an interior noise level limit.3.The hotel has 118 rooms.	

4.2 Measurements

A noise measurement program, consisting of long-term (LT) and short-term (ST) measurements, was conducted to document existing ambient sound levels and to assist in validating the modeling results Photographs were collected of each measurement location and each measurement was completed with a sound level meter that is classified as an American National Standards Institute (ANSI) Type 1 (precision) sound level meter. The monitoring locations are shown in the figures in Section 11 of this report. Appendix A provides the noise measurement data sheets and photographs for each measurement location. The monitoring equipment was laboratory calibrated within the previous year. Appendix B provides the laboratory calibration sheets for the equipment used in this monitoring effort. Traffic data used in all of the prediction efforts, including the validation efforts, are provided in Appendix C.

The LT and ST measurements are described in the following subsections.

4.2.1 Long-Term (24-hour) Measurements

Two long-term (24-hour) measurements were conducted during weekdays to document existing conditions and diurnal variation. Long-term measurement location 1 (LT-1) was located at a place of worship (South Lake Foursquare Church) and preschool approximately 140 feet south of the I-205 SB lanes and approximately 650 feet east of the crossover of I-205 and SW Borland Road. LT-1 was situated approximately 100 feet east of the play structure at the same perpendicular distance from the highway as the play structure. During deployment of the LT-1 monitoring equipment field engineers anecdotally noted that traffic noise at this location dominated the noise of children on the play structure. Sound levels at LT-1 were measured from 12:19 p.m. on August 29, 2017 to 1:16 p.m. on August 30, 2017.

LT-2 was located at a duplex at 4329 Imperial Drive. This residential structure is located approximately 215 feet north of the I-205 NB lanes and is on top of a bluff with the highway approximately 25 to 35 feet below. Sound levels were measured at LT-2 from 2:14 p.m. on August 30, 2017 to 2:45 p.m. on August 31, 2017. Table 4 provides a summary of the long-term measurement results.

Monitoring Location	L _{eq} 1 dB(A) (day)	L _{eq} 1 dB(A) (night)	L _{dn} 1 dB(A)	L _{min} dB(A)	L _{max} dB(A)	L ₁₀ dB(A)	L₅₀ dB(A)	L ₉₀ dB(A)
LT-1	71.6	68.9	75.6	42.8	88.2	73.0	68.6	63.0
LT-2	59.7	58.8	65.2	48.8	81.2	60.4	58.4	56.4

Table 4. Long-Term 24-Hour Measurement Results

 1 L_{eq} (day) represents the energy averaged sound level for the hours of 7:00 a.m. to 10:00 p.m., L_{eq} (night) is the energy averaged sound level for the hours of 10:00 p.m. to 7:00 a.m., and the L_{dn} is the Day-Night Average Sound Level which is the energy averaged sound level for the 24-hour monitoring period with 10 dB added to nighttime sound levels.

4.2.2 Short-term Validation Measurements

The short-term measurements were used to validate the TNM results for the existing conditions scenario. Section 6.3 of the ODOT Noise Manual states a traffic noise model is considered a valid predictor of traffic noise if measured and modeled noise levels agree within ±3 dB(A). The short-term measurements were at least 15 minutes in duration at each of 13 locations throughout the study area. Also, vehicle traffic classification counts were conducted for 10-minutes during each measurement and speeds documented concurrent with each of the short-term noise measurements as shown in Appendix C. Two of these measurements were conducted at the same location as long-term measurements, specifically Short-Term measurement location 1 (ST-1) was collected at the same location as LT-1 and ST-10 was collected at LT-2. Speeds at ST-10 were slower than posted speeds during the validation effort due to unknown causes⁴. Speeds were also slower than posted speeds on I-205 during the ST-7, ST-8, ST-9, and ST-13 validation measurements for unknown reasons. Observed traffic speeds were used in the model validation effort. The remaining short-term validation measurements were completed at the following locations:

- ST-2: This measurement was conducted in the yard of a residence on the side closest to I-205 at 22400 Johnson Road. The measurement was approximately 240 feet south of I-205 SB lanes and 165 feet east of SW Johnson Road.
- ST-3: This measurement was conducted in the yard of a residence on the side closest to I-205 at 22601 Grapevine Road. The measurement was approximately 233 feet northeast of I-205 NB lanes and 80 feet west of S Grapevine Road.
- ST-4: This measurement site was in the yard of a residence on the side closest to I-205 at 23400 Johnson Road. The measurement was approximately 180 feet west of I-205 SB lanes and 525 feet east of Johnson Road.
- ST-5a: This measurement was conducted in the yard of a residence on the side closest to I-205 at 2384 Margery Street. The measurement was approximately 140 feet east of I-205 NB lanes and 84 feet west of Margery Street. This measurement was representative of front row residences in that neighborhood.

⁴ There may have been an accident located further down I 205 out of sight.

- ST-5b: This measurement was conducted at the second row of residences in the same neighborhood as ST-5a and in the yard of a residence on the side closest to I-205 at 2383 Margery Street. The measurement was approximately 275 feet east of I-205 NB lanes and 40 feet east of Margery Street. This measurement was representative of front row residences in that neighborhood.
- ST-6: This measurement site was at the portion of a play structure/swing at the Willamette Terrace Apartments closest to I-205 at 1709 Blankenship Rd. The measurement was approximately 260 feet northeast of I-205 SB lanes and 240 feet south of Blankenship Road.
- ST-7: This measurement was conducted in the yard of a residence on the side closest to I-205 at 1788 Jamie Circle. The measurement was approximately 260 feet southwest of I-205 NB lanes and 100 feet northeast of Jamie Circle.
- ST-8: This measurement site was in the yard of a residence on the side closest to I-205 at 2318 8th Street. The measurement was approximately 455 feet south of the I-205 NB onramp from 10th Street and 90 feet south of Willamette Falls Drive. At this location, noise from I-205 is dominant; however, when traffic is present on Willamette Falls Drive it is audible over the more consistent noise source from I-205.
- ST-9: This measurement was conducted in the yard of a residence on the side closest to I-205 at 4701 Imperial Drive. The measurement was approximately 315 feet north of the I-205 SB lanes and 110 feet south of Imperial Drive.
- ST-11: This measurement site was in the yard of a residence on the side closest to I-205 at 4835 Willamette Falls Drive. The measurement was approximately 380 feet south of the I-205 NB lanes and 70 feet south of Willamette Falls Drive. Due to topography, I-205 is about 35 feet higher in elevation than where the measurement was completed and Willamette Falls Drive is about 10 feet higher in elevation. As a result, line of sight to traffic on I-205 is mostly blocked, its noise is lower in intensity than traffic noise from Willamette Falls Drive.
- ST-12: This measurement was conducted in the yard of a residence on the side closest to I-205 at 5345 Grove Street. The measurement was approximately 90 feet north of the I-205 SB lanes and 90 feet south of Grove Street. I-205 is on structure in this part of the project area at the south end of the Abernethy Bridge crossing of the Willamette River. The main lanes and the exit ramp to OR 43 are both approximately 40 feet above the neighborhood and where the measurement was conducted.
- ST-13: This measurement site was at a picnic table in Jon Storm Park at 1801 Clackamette Drive. The measurement was approximately 118 feet north of the I-205 SB lanes and 260 feet west of highway 99E. I-205 is on-structure in this part of the project area at the north end of the Abernethy Bridge crossing of the Willamette River. The main lanes and the exit ramp to 99E are both approximately 40 feet above where the measurement was conducted.

Observed traffic volumes during each of the short-term measurements were scaled to be hourly equivalents and applied to the roadways in the modeling and run for each measurement location. These traffic volumes are provided in Appendix C.

As Table 5 demonstrates, the measured and modeled noise levels agree within 3 dB(A); therefore, the TNM (and its data inputs) are valid predictors of traffic noise for the Project.

The validation included shielding effects from topographic features, large tree stands, buildings and rows of houses, and reflective surfaces such as water bodies (i.e., the Willamette River).

Upon completion of the validation effort, the TNM implementation of the study area was expanded to include all of the identified noise-sensitive land uses in the study area. This area extended out from the I-205 corridor widening project by about 500 feet, and included all of the noise-sensitive land uses listed in Table 3. The measurement locations are provided on Figures 1 through 32 in Section 11.

Monitoring Location	Date/Time of Measurement	Distance to Edge of Roadway (feet)	Measured L _{eq} dB(A)	Modeled L _{eq} dB(A)	Difference (Modeled minus Measured)
ST-01	8/29/2017 12:35 - 12:50	140	72.6	70.1	-2.5
ST-02	8/29/2017 13:24 - 13:52	240	64.5	63.5	-1.0
ST-03	8/30/2017 9:38 - 9:53	233	63.1	65.9	2.8
ST-04	8/30/2017 10:16 - 10:31	180	63.9	66.6	2.7
ST-05a	8/30/2017 10:49 - 11:04	140	69.4	72.2	2.8
ST-05b	8/30/2017 11:06 - 11:21	275	64.9	65.4	0.5
ST-06	8/30/2017 12:36 - 13:01	240	58.0	60.2	2.2
ST-07	8/30/2017 15:06 - 15:21	260	58.1	60.9	2.8
ST-08	8/31/2017 9:38 – 9:57	455	63.2	62.6	-0.6
ST-09	8/31/2017 10:25 – 10:40	315	56.0	58.0	2.0
ST-10	8/30/2017 14:35 – 14:50	215	57.4	58.3	0.9
ST-11	8/31/2017 13:07 – 13:22	380	57.6	57.2	-0.4
ST-12	8/31/2017 13:39 - 14:00	90	59.9	57.0	-2.9
ST-13	8/31/2017 14:14 – 14:32	118	63.4	62.8	-0.6

Table 5. Short-Term Measurement Validation Results

Note: Traffic counts and speeds for each measurement are provided in Appendix C.

4.2.3 Abernethy Bridge Structure-Borne Noise Measurements

Structure-born noise was measured using the same type of equipment as was used for the long-term measurements. TNM does not calculate structure-borne noise. For this reason, quantifying the structure-borne noise is necessary to properly analyze potential noise mitigation (i.e., a noise wall) that could be needed on the bridge. Specifically, short-term monitoring near the bridge validated within the tolerance of TNM per the ODOT noise manual; however, these measurements were completed at locations away from the structure where noise from vehicular traffic on the bridge alone currently dominates structure-borne noise. If the vehicular traffic noise source

was blocked by a noise wall, structure-borne noise would remain and the noise wall would not be as effective as TNM predicts. To identify the contribution of structureborne noise from the Abernethy Bridge, structure-borne noise measurements were completed implementing the procedures documented in NCHRP Report 791 (NCHRP 2014), specifically Chapter 2 and Appendix A of that report.. The general measurement process and application of the resulting structure-borne noise levels for the project was as follows:

- 1. Noise measurements were completed at the drip edge of the structure and at least two other locations further away from the structure.
- 2. Traffic volumes of vehicles using the structure were collected.
- 3. Drop-off rates of structure-borne noise were calculated using the worksheet provided in Appendix A of the NCHRP 791 report with noise reducing by 3 dB per doubling of distance (dB/DD), 4.5 dB/DD, and 6 dB/DD.
- 4. The sound level at the two measurement locations that are not the drip edge measurement were calculated using TNM.
- 5. The calculated sound levels obtained via steps #3 and #4 were logarithmically added.
- 6. Results of Step #5 was compared to the measured sound levels collected in step #1 to identify what drop-off rate was most appropriate to apply to the structureborne noise from the structure being analyzed.
- 7. Using the measured drip edge sound level and the identified drop-off rate, the structure-borne noise level occurring at the noise sensitive receptors of interest was identified by adjusting for distance and using the worksheet from NCHRP 791 (See Table 6 and Appendix A).
- 8. The resultant levels from step #7 were logarithmically added to the TNM predictions for the existing conditions, No Build Alternative, and Build Alternative.

Amounts of structure-borne noise is present at all receptors near (i.e., within approximately 500 feet) the Abernethy Bridge analyzed as part of the Project. The amount of structure-borne noise varies with distance from the structure with those closest to the structure experiencing higher structure-borne noise than those further away. For example, for receptors along OR 43, noise from OR 43 dominates, but there is also some structure radiated noise. For these receptors the noise from OR 43 is of such significance that the structure-radiated noise only has a negligible effect (less than 1 dB). For receptors closer to the river that are also close to the bridge, such as those on River Street, structure-radiated noise is more significant.

The measurement effort involved three sound level meters. The locations of the measurements are shown on Figure 33. Structure-borne sound levels were measured on the Oregon City side of the crossing in John Storm Park and near the McLean House on River Street on the West Linn side of the crossing. For the Oregon City measurements, one sound level meter was set up at the drip edge of the structure and two other sound level meters were set up at 50 feet and 100 feet,

respectively. The Oregon City measurements were completed on June 13, 2018 and the West Linn measurements were completed on June 13, 2018 and June 19, 2018. On the West Linn side of the crossing, two sets of measurements were completed on different days to obtain a second data set under a different traffic condition. The West Linn measurements were completed at the drip edge and at varying distances from the structure, specifically 50 feet, 85 feet, and 120 feet. Traffic conditions (i.e., vehicle counts and speeds) on I-205 were simultaneously collected during each of the measurements and are contained in Appendix C. Traffic volumes were entered into the validated existing conditions TNM run and the differences between measured and modeled sound levels tabulated.

As mentioned earlier in this section, three drop-off rates were analyzed to identify which drop-off rate was most appropriate for a given structure, specifically 3 dB/DD, 4.5 dB/DD, and 6 dB/DD. Equations are provided in NCHRP Report 791 to accomplish these calculations and spreadsheets were used to complete these calculations. Specifically, the following equation was employed for 4.5 dB/DD calculations:

 $L_{Ax} = L_{DE} - 15 \times Log_{10}$ (D_{AP}/D_{Ref}), where

- L_{DE} = measured L_{eq} in dB(A) at 5 feet above the ground under the structure drip edge
- L_{Ax =} Calculated structure-related noise level at analysis point A_x, located x feet from the drip edge, in dB(A)
- D_{AP} = Distance from point S to the analysis point A_x, in feet
- D_{Ref} = Distance from point S to point A_{ref}, in feet
 - o 56 feet on the Oregon City side
 - o 82 feet on the West Linn side
- S = Length to the midpoint of the structure, or the width divided in half, in feet.
 - o 50 feet on the Oregon City side
 - o 70 feet on the West Linn side

See Table 6 for an example of the calculation worksheet where these values were implemented for the Oregon City side of the crossing. Figure 34 provides a schematic drawing of how these variables are used to assess structure related noise.



Table 6. Structure Related Noise Calculation Worksheet for Oregon City

K19786: I-205 Widening and Seismic Improve	ements										
Oregon City Side of Crossing											
Input Data:											
h: Height of structure, from ground to underside of	of deck, in fee	et		50							
Aref: Center point between ground and undersid	e of structure	e (h/2), in fee	et	25							
w: Width of Structure (feet)											
Mw: Midpoint of structure (w/2) in feet. The underside of the deck at this point is the assumed source of structure noise (S)											
Dref: Reference distance - from S to Aref, in feet											
Measured Noise Level at Drip Edge, dB(A)											
Set-back Calculations:				-							
Analysis Point	Distance from Drip Edge (feet)	Distance from Analysis Point (feet)	Measured Noise Level at Drip Edge L _{eq} in dB(A)	Calculated Noise Level with Drop-off Rate = 3.0 dB/DD							
Aref	n/a										
A50	50	105.9	n/a	70							
A100	100	155.9	n/a	68							
Analysis Point	Distance from Drip Edge (feet)	Distance from Analysis Point (feet)	Measured Noise Level at Drip Edge L _{eq} in dB(A)	Calculated Noise Level with Drop-off Rate = 4.5 dB/DD							
Aref	0	55.9	72.3	n/a							
A50	50	105.9	n/a	68.1							
A100	100	155.9	n/a	65.6							
Analysis Point	Distance from Drip Edge (feet)	Distance from Analysis Point (feet)	Measured Noise Level at Drip Edge L _{eq} in dB(A)	Calculated Noise Level with Drop-off Rate = 6.0 dB/DD							
Aref	0	55.9	72.3	n/a							
A50	50	105.9	n/a	67							
A100	100	155.9	n/a	63							

Source: NCHRP 2014, HMMH 2018

Table 7 presents the results of the structure-borne measurement and analysis effort and demonstrates that structure-borne noise most closely aligns with a drop-off rate of 4.5 dB/DD. Figure 35 is a chart that shows how these sound levels drop off with distance and how they relate to the corresponding measured noise levels. The structure-borne noise levels identified are applied to noise-sensitive land uses near the Abernethy Bridge to properly account for the structure-related noise. As an example, measurement ST-12, on Figure 14, was conducted in the backyard of a residence 90 feet from the edge of the Abernethy Bridge with a level of 59.9 dB(A) L_{eq} . The TNM-modeled sound level for validation purposes with no adjustments made for structure-borne noise was 57.0 dB(A) L_{eq} , a sound level 2.9 dB less than what was measured. Based on the structure-borne noise analysis, the noise emanating from the structure deck for this location was 60.2 dB(A) L_{eq} . Therefore, adding the structure-borne noise to the TNM-modeled level results in an adjusted sound level of 61.9 dB(A), a level 2 dB higher than what was measured. This is a level that would be considered "valid" for prediction purposes and shows better agreement with the original validation measurement.

Ultimately, the reason why it is necessary to include structure-borne noise in this analysis is because it affects how well potential noise mitigation is estimated to perform on the bridge, as documented in Section 6 of this report. Specifically, if a noise wall is installed on the Abernethy Bridge, the sound emanating from vehicular traffic on the roadway would be blocked; however, the sound from vehicles causing structure-born noise to radiate from below the structure would remain. Accounting for the amount of structure-borne noise that cannot be abated affects how well noise abatement measures perform per ODOT policy. Appendix A provides the measurement results and NCHRP Report 791 analysis sheets.

	Measu Per	rement riod	Location of Measurem ent in Relation to	Measured L _{eq} Noise	FHWA TNM Modeled L _{eq(h)} Noise Level [dB(A)] due	Assumed Effect of Structure -Related	Modeled [dB(Sprea Adjustm Related No Droj	L _{eq(h)} Noise A)] Assumi adsheet Va ent for Stru bise and As b-Off Rate o	e Level ng lue ucture- ssuming of:	Measured Minus Modeled Leq Noise Level [dB(A)] Assuming Drop-Off Rate of:			
Measurement From T Location		То	Drip Edge (feet)	Level [dB(A)]	to Highway Traffic Only	Noise (dB)	3 dB/DD	4.5 dB/DD	6 dB/DD	3 dB/DD	4.5 dB/DD	6 dB/DD	
Oregon City Side of Crossing	6/13/2	6/13/2 018 12:23	Drip Edge	72.3	62.2	10.1	N/A	N/A	N/A	N/A	N/A	N/A	
(Jon Storm Park	018		50	69	63.7	4.8	70.5	69.5	68.5	2.0	1.0	0.0	
(Jon Storm Park/Near SB Lanes)	11:00		100	68	62.6	5.7	69.0	67.4	66.0	0.7	-0.9	-2.3	
West Linn Side of	6/13/2	6/13/2	Drip Edge	67.1	57.4	9.7	N/A	N/A	N/A	N/A	N/A	N/A	
(SB Side of	018	018	50	65.2	56.8	8.4	65.6	64.8	63.9	0.4	-0.4	-1.3	
Structure)	14.14	14.51	85	62.5	58.2	4.3	65.0	63.8	62.8	2.5	1.3	0.3	
West Linn Side of	6/19/2	6/19/2	Drip Edge	66.0	57.4	8.6	N/A	N/A	N/A	N/A	N/A	N/A	
(SB Side of	018	018	50	63.7	57.1	6.6	64.8	63.9	63.1	1.1	0.3	-0.5	
Structure)	11:52	12.11	120	61.7	59	2.7	63.8	62.6	61.6	2.1	0.9	-0.1	

Table 7. Structure-Borne Noise Measurement and Analysis Results

4.3 Existing Conditions (2017)

Existing 2017 peak truck hour traffic data were entered into the Existing Conditions modeled scenario to enable loudest-hour prediction of noise levels at all noise-sensitive land uses. Under the existing 2017 conditions, traffic noise levels range from 43 dB(A) L_{eq} to 74 dB(A) L_{eq} and exceed the NAAC at 238 residences (NAAC B), the South Lake Church/Pre-School/Daycare (NAAC C), Jon Storm Park (NAAC C), and the Atlas Immersion Academy School (NAAC C). Exterior sound levels at the retirement home (NAAC D) are predicted to be 70 dB(A) L_{eq} at the façade closest to I-205. Visual inspections of the building identified that the building window type are what FHWA classifies as "storm windows" which result in an interior sound level 25 dB lower (FHWA 2011a), the interior sound level at the retirement home is predicted to be 45 dB(A) L_{eq} and is therefore not impacted. Traffic noise levels are highest for outdoor use areas located closest to the I-205 facility. Table 8 provides the summary of exceedances for the Existing Conditions, Table 9 provides a tabular list of existing traffic noise levels for the receptor sanalyzed, and Figures 3 through 17 show the location of each receptor listed in the table.

5 Future Noise Levels

Traffic noise levels were predicted for two future (2045) alternatives: the No Build Alternative and the Build Alternative (Table 10).

5.1 No Build Alternative (2045)

No Build Alternative 2045 traffic noise levels are provided in Table 11 and Figures 3 through 17 in Section 11 show the location of each receptor listed in the table. Under the No Build Alternative 2045 conditions, predicted traffic noise levels would range from 45 dB(A) L_{eq} to 74 dB(A) L_{eq} and would exceed the NAAC at 281 residences (NAAC B), the South Lake Church/Pre-School/Daycare (NAAC C), Jon Storm Park (NAAC C), and the Atlas Immersion Academy School (NAAC C). Traffic noise levels are predicted to increase up to 4 dB under the No Build Alternative due to increased traffic volumes on area roadways. On average, traffic noise would increase by 1 dB over existing conditions. Exterior sound levels at the retirement home (NAAC D) are predicted to be 70 dB(A) L_{eq} at the façade closest to I-205. Visual inspections of the building identified that the building window type are what FHWA classifies as "storm windows" which result in an interior sound level 25 dB(A) lwer; therefore, the interior sound level at the retirement home is predicted to be 45 dB(A) L_{eq} and therefore would not be impacted. As with the existing conditions, traffic noise levels would be highest for outdoor use areas located closest to the I-205 facility.

5.2 Build Alternative (2045)

Build Alternative 2045 traffic noise levels are provided in Table 11 and Figures 18 to 32 (Build alt) in Section 11 show the location of each receptor listed in the table.

Under the Build Alternative 2045 conditions, predicted traffic noise levels would range from 45 dB(A) Leq to 75 dB(A) Leq. Traffic noise impacts would occur at 351 residences (NAAC B), the South Lake Church/Pre-School/Daycare (NAAC C), a pool at the Jamestown Plaza Apartments (NAAC C), Jon Storm Park (NAAC C), and at the Atlas Immersion Academy School (NAAC C). No substantial increases in noise would result from the Build Alternative. Exterior sound levels at the retirement home (NAAC D) are predicted to be 70 dB(A) L_{eq} at the facade closest to I-205. Visual inspections of the building identified that the building window type are what FHWA classifies as "storm windows" which result in an interior sound level 25 dB(A) lower (FHWA, 2011); therefore, the interior sound level at the retirement home is predicted to be 45 dB(A) Leg at the closest point to the highway and would not be impacted. Compared to the existing conditions, traffic noise levels are predicted to increase by up to 5 dB(A), depending on the proximity of a receptor to the widened roadway. There are nine receptors where sound levels would be one to three dB lower under the Build Alternative 2045 conditions, specifically R183, R185, R349 to R350, R439, R444, and R445. The reductions in sound levels would occur because of changes in horizontal and/or vertical alignment resulting in increased shielding in some of these locations. Traffic noise levels would be highest for outdoor use areas located closest to the proposed I-205 facility. Traffic noise abatement measures were evaluated for each of the impacts and the results of this analysis are provided in Section 7 of this report.

Each receptor is shown in Figures 18 to 32 with a color-coded dot that indicates the status of each receptor according to its 2045 Build noise level, both with and without a noise barrier, if one is shown opposite the receptor. The color code and corresponding receptor status are as follows:

- Light blue impacted (without noise barrier) and 5 or 6 dB(A) of insertion loss (with noise barrier);
- Dark blue impacted (without noise barrier) and 7 dB(A) or more of insertion loss (with noise barrier);
- Red impacted (without noise barrier) and not benefited, i.e. less than 5 dB(A) of insertion loss (with noise barrier);
- Green not impacted (without noise barrier) and benefited (with noise barrier); and
- Yellow not impacted (without noise barrier) or benefited (with noise barrier).

A summary of exceedance conditions for the conditions/alternatives analyzed are provided in Table 8.

Table 8. Summary of Exceedance Conditions for the Existing Conditions and No Build and Build Alternatives

		Land Use and NAAC											
Condition/Alternative	Impact Type	Residential Exterior (B)	Recreational Exterior (C)*	Institutional Interior (D)	Commercial Exterior (E)								
Existing (2017)	NAAC	238	7	0	0								
No Build Alternative (2045)	NAAC	281	7	0	0								
Build Alternative (2045)	NAAC	351	8	0	0								

Notes: *Exceedances at NAAC C uses under the Existing and No Build Alternative include the South Lake Church/Pre-School/Daycare, five outdoor uses at Jon Storm Park, and at the Atlas Immersion Academy School and under the Build Alternative include the same uses in addition to a pool at the Jamestown Plaza Apartments.

Receptor ID	Land Use	ODOT Criteria NAAC	No. of Uses	Structure- Borne Leq dB(A)	Existing 2017 Leq TNM dB(A)	Existing 2017 TNM + Structure- Borne Leq dB(A)	No Build 2040 Alternative Leq dB(A)	No Build 2040 TNM + Structure- Borne Leq dB(A)	No Build 2040 Increase over Existing Noise Level dB	Build Alternative Leq dB(A)	Build 2040 TNM + Structure- Borne Leq dB(A)	Build 2040 Increase over Existing Noise Level dB
LT-1/ST-1	Church, Daycare, School	C (65)	1	N/A	69	69	70	70	1	69	69	0
ST-2	Residence	B (65)	1	N/A	63	63	63	63	0	66	66	3
ST-3	Residence	B (65)	1	N/A	67	67	68	68	1	70	70	3
ST-4	Residence	B (65)	1	N/A	67	67	68	68	1	69	69	2
ST-5a	Residence	B (65)	1	N/A	72	72	73	73	1	73	73	1
ST-5b	Residence	B (65)	1	N/A	66	66	66	66	0	68	68	2
ST-6	Play Structure at Apts.	C (65)	1	N/A	60	60	61	61	1	63	63	3
ST-7	Residence	B (65)	1	N/A	64	64	64	64	0	65	65	1
ST-8	Residence	B (65)	1	N/A	63	63	63	63	0	65	65	2
ST-9	Residence	B (65)	1	N/A	60	60	61	61	1	65	65	5
LT-2/ST- 10	Residence	B (65)	1	N/A	63	63	64	64	1	64	64	1
ST-11	Residence	B (65)	1	N/A	57	57	58	58	1	58	58	1
ST-12	Residence	B (65)	1	60	59	63	59	63	0	60	63	0
ST-13	Jon Storm Park	C (65)	1	64	66	68	66	68	0	66	68	0
R1	Residence	B (65)	1	N/A	70	70	71	71	1	70	70	0
R2	Residence	B (65)	1	N/A	64	64	64	64	0	65	65	1
R3	Residence	B (65)	2	N/A	60	60	61	61	1	62	62	2
R4	Residence	B (65)	1	N/A	60	60	61	61	1	61	61	1
R5	Residence	B (65)	1	N/A	70	70	71	71	1	71	71	1
R6	Residence	B (65)	1	N/A	64	64	65	65	1	66	66	2
R7	Residence	B (65)	1	N/A	65	65	65	65	0	66	66	1

Receptor ID	Land Use	ODOT Criteria NAAC	No. of Uses	Structure- Borne Leq dB(A)	Existing 2017 Leq TNM dB(A)	Existing 2017 TNM + Structure- Borne Leq dB(A)	No Build 2040 Alternative Leq dB(A)	No Build 2040 TNM + Structure- Borne Leq dB(A)	No Build 2040 Increase over Existing Noise Level dB	Build Alternative Leq dB(A)	Build 2040 TNM + Structure- Borne Leq dB(A)	Build 2040 Increase over Existing Noise Level dB
R8	Residence	B (65)	1	N/A	55	55	56	56	1	57	57	2
R9	Residence	B (65)	1	N/A	58	58	58	58	0	61	61	3
R10	Residence	B (65)	1	N/A	57	57	57	57	0	61	61	4
R11	Residence	B (65)	1	N/A	58	58	59	59	1	62	62	4
R12	Residence	B (65)	1	N/A	70	70	70	70	0	72	72	2
R13	Residence	B (65)	1	N/A	67	67	67	67	0	68	68	1
R14	Residence	B (65)	1	N/A	66	66	66	66	0	66	66	0
R15	Residence	B (65)	1	N/A	71	71	71	71	0	72	72	1
R16	Residence	B (65)	1	N/A	67	67	68	68	1	69	69	2
R17	Residence	B (65)	1	N/A	54	54	54	54	0	55	55	1
R18	Residence	B (65)	1	N/A	58	58	58	58	0	60	60	2
R19	Residence	B (65)	1	N/A	62	62	62	62	0	64	64	2
R20	Residence	B (65)	1	N/A	64	64	65	65	1	67	67	3
R21	Residence	B (65)	1	N/A	70	70	71	71	1	72	72	2
R22	Residence	B (65)	1	N/A	72	72	72	72	0	74	74	2
R23	Residence	B (65)	1	N/A	72	72	72	72	0	73	73	1
R24	Residence	B (65)	1	N/A	72	72	73	73	1	74	74	2
R25	Residence	B (65)	1	N/A	73	73	73	73	0	74	74	1
R26	Residence	B (65)	1	N/A	73	73	73	73	0	74	74	1
R27	Residence	B (65)	1	N/A	73	73	73	73	0	74	74	1
R28	Residence	B (65)	1	N/A	72	72	73	73	1	74	74	2

Receptor ID	Land Use	ODOT Criteria NAAC	No. of Uses	Structure- Borne Leq dB(A)	Existing 2017 Leq TNM dB(A)	Existing 2017 TNM + Structure- Borne Leq dB(A)	No Build 2040 Alternative Leq dB(A)	No Build 2040 TNM + Structure- Borne Leq dB(A)	No Build 2040 Increase over Existing Noise Level dB	Build Alternative Leq dB(A)	Build 2040 TNM + Structure- Borne Leq dB(A)	Build 2040 Increase over Existing Noise Level dB
R29	Residence	B (65)	1	N/A	73	73	74	74	1	75	75	2
R30	Residence	B (65)	1	N/A	72	72	72	72	0	73	73	1
R31	Residence	B (65)	1	N/A	73	73	73	73	0	74	74	1
R32	Residence	B (65)	1	N/A	73	73	73	73	0	74	74	1
R33	Residence	B (65)	1	N/A	74	74	74	74	0	75	75	1
R34	Residence	B (65)	1	N/A	67	67	68	68	1	69	69	2
R35	Residence	B (65)	1	N/A	67	67	67	67	0	69	69	2
R36	Residence	B (65)	1	N/A	65	65	66	66	1	68	68	3
R37	Residence	B (65)	1	N/A	65	65	65	65	0	67	67	2
R38	Residence	B (65)	1	N/A	65	65	66	66	1	67	67	2
R39	Residence	B (65)	1	N/A	65	65	65	65	0	67	67	2
R40	Residence	B (65)	1	N/A	65	65	65	65	0	67	67	2
R41	Residence	B (65)	1	N/A	63	63	63	63	0	66	66	3
R42	Residence	B (65)	1	N/A	61	61	61	61	0	64	64	3
R43	Residence	B (65)	1	N/A	62	62	62	62	0	64	64	2
R44	Residence	B (65)	1	N/A	62	62	62	62	0	64	64	2
R45	Residence	B (65)	1	N/A	62	62	62	62	0	64	64	2
R46	Residence	B (65)	1	N/A	61	61	62	62	1	64	64	3
R47	Residence	B (65)	1	N/A	62	62	62	62	0	64	64	2
R48	Residence	B (65)	1	N/A	63	63	63	63	0	64	64	1
R49	Residence	B (65)	1	N/A	65	65	65	65	0	66	66	1

Receptor ID	Land Use	ODOT Criteria NAAC	No. of Uses	Structure- Borne Leq dB(A)	Existing 2017 Leq TNM dB(A)	Existing 2017 TNM + Structure- Borne Leq dB(A)	No Build 2040 Alternative Leq dB(A)	No Build 2040 TNM + Structure- Borne Leq dB(A)	No Build 2040 Increase over Existing Noise Level dB	Build Alternative Leq dB(A)	Build 2040 TNM + Structure- Borne Leq dB(A)	Build 2040 Increase over Existing Noise Level dB
R50	Residence	B (65)	1	N/A	73	73	74	74	1	74	74	1
R51	Residence	B (65)	1	N/A	70	70	70	70	0	70	70	0
R52	Residence	B (65)	1	N/A	67	67	68	68	1	69	69	2
R53	Residence	B (65)	1	N/A	66	66	67	67	1	67	67	1
R54	Residence	B (65)	1	N/A	62	62	62	62	0	63	63	1
R55	Residence	B (65)	1	N/A	66	66	67	67	1	67	67	1
R56	Residence	B (65)	1	N/A	67	67	67	67	0	67	67	0
R57	Residence	B (65)	1	N/A	67	67	67	67	0	67	67	0
R58	Residence	B (65)	1	N/A	66	66	67	67	1	67	67	1
R59	Residence	B (65)	1	N/A	64	64	65	65	1	65	65	1
R60	Residence	B (65)	1	N/A	65	65	66	66	1	66	66	1
R61	Residence	B (65)	1	N/A	63	63	64	64	1	64	64	1
R62	Residence	B (65)	1	N/A	65	65	65	65	0	66	66	1
R63	Residence	B (65)	1	N/A	71	71	71	71	0	72	72	1
R64	Residence	B (65)	1	N/A	72	72	72	72	0	73	73	1
R65	Residence	B (65)	1	N/A	72	72	73	73	1	74	74	2
R66	Residence	B (65)	1	N/A	70	70	70	70	0	72	72	2
R67	Residence	B (65)	1	N/A	66	66	66	66	0	68	68	2
R68	Residence	B (65)	1	N/A	65	65	65	65	0	67	67	2
R69	Residence	B (65)	1	N/A	63	63	63	63	0	64	64	1
R70	Residence	B (65)	1	N/A	63	63	64	64	1	65	65	2
Receptor ID	Land Use	ODOT Criteria NAAC	No. of Uses	Structure- Borne Leq dB(A)	Existing 2017 Leq TNM dB(A)	Existing 2017 TNM + Structure- Borne Leq dB(A)	No Build 2040 Alternative Leq dB(A)	No Build 2040 TNM + Structure- Borne Leq dB(A)	No Build 2040 Increase over Existing Noise Level dB	Build Alternative Leq dB(A)	Build 2040 TNM + Structure- Borne Leq dB(A)	Build 2040 Increase over Existing Noise Level dB
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R71	Residence	B (65)	1	N/A	65	65	65	65	0	66	66	1
R72	Residence	B (65)	1	N/A	63	63	64	64	1	65	65	2
R73	Residence	B (65)	1	N/A	65	65	65	65	0	67	67	2
R74	Residence	B (65)	1	N/A	64	64	65	65	1	66	66	2
R75	Residence	B (65)	1	N/A	65	65	66	66	1	67	67	2
R76	Retirement Home (no outdoor use)	D (50)*	1	N/A	45	45	45	45	0	45	45	0
R77	Pool at Apts.	C (65)	1	N/A	63	63	64	64	1	66	66	3
R78	Multi-Family	B (65)	1	N/A	65	65	65	65	0	66	66	1
R79	Multi-Family	B (65)	1	N/A	64	64	64	64	0	65	65	1
R80	Multi-Family	B (65)	1	N/A	68	68	69	69	1	70	70	2
R81	Multi-Family	B (65)	1	N/A	68	68	68	68	0	69	69	1
R82	Multi-Family	B (65)	1	N/A	57	57	57	57	0	59	59	2
R83	Multi-Family	B (65)	1	N/A	57	57	57	57	0	58	58	1
R84	Multi-Family	B (65)	1	N/A	61	61	61	61	0	62	62	1
R85	Multi-Family	B (65)	1	N/A	60	60	61	61	1	61	61	1
R86	Multi-Family	B (65)	1	N/A	50	50	50	50	0	53	53	3
R87	Multi-Family	B (65)	1	N/A	53	53	53	53	0	55	55	2
R88	Multi-Family	B (65)	1	N/A	53	53	54	54	1	55	55	2
R89	Multi-Family	B (65)	1	N/A	56	56	56	56	0	57	57	1
R90	Multi-Family	B (65)	1	N/A	53	53	53	53	0	54	54	1
R91	Multi-Family	B (65)	1	N/A	52	52	53	53	1	54	54	2

Receptor ID	Land Use	ODOT Criteria NAAC	No. of Uses	Structure- Borne Leq dB(A)	Existing 2017 Leq TNM dB(A)	Existing 2017 TNM + Structure- Borne Leq dB(A)	No Build 2040 Alternative Leq dB(A)	No Build 2040 TNM + Structure- Borne Leq dB(A)	No Build 2040 Increase over Existing Noise Level dB	Build Alternative Leq dB(A)	Build 2040 TNM + Structure- Borne Leq dB(A)	Build 2040 Increase over Existing Noise Level dB
R92	Multi-Family	B (65)	1	N/A	55	55	56	56	1	56	56	1
R93	Multi-Family	B (65)	1	N/A	55	55	55	55	0	56	56	1
R94	Multi-Family	B (65)	1	N/A	60	60	60	60	0	63	63	3
R95	Multi-Family	B (65)	1	N/A	60	60	60	60	0	63	63	3
R96	Multi-Family	B (65)	1	N/A	64	64	64	64	0	65	65	1
R97	Multi-Family	B (65)	1	N/A	64	64	65	65	1	65	65	1
R98	Multi-Family	B (65)	1	N/A	63	63	63	63	0	65	65	2
R99	Multi-Family	B (65)	1	N/A	63	63	64	64	1	65	65	2
R100	Multi-Family	B (65)	1	N/A	68	68	69	69	1	69	69	1
R101	Multi-Family	B (65)	1	N/A	68	68	68	68	0	69	69	1
R102	Multi-Family	B (65)	1	N/A	57	57	58	58	1	60	60	3
R103	Multi-Family	B (65)	1	N/A	57	57	58	58	1	61	61	4
R104	Multi-Family	B (65)	1	N/A	62	62	63	63	1	63	63	1
R105	Multi-Family	B (65)	1	N/A	62	62	63	63	1	63	63	1
R106	Multi-Family	B (65)	1	N/A	47	47	47	47	0	52	52	5
R107	Multi-Family	B (65)	1	N/A	47	47	47	47	0	51	51	4
R108	Multi-Family	B (65)	1	N/A	50	50	50	50	0	54	54	4
R109	Multi-Family	B (65)	1	N/A	49	49	50	50	1	54	54	5
R110	Multi-Family	B (65)	1	N/A	52	52	52	52	0	55	55	3
R111	Multi-Family	B (65)	1	N/A	48	48	49	49	1	51	51	3
R112	Multi-Family	B (65)	1	N/A	55	55	56	56	1	57	57	2

Receptor ID	Land Use	ODOT Criteria NAAC	No. of Uses	Structure- Borne Leq dB(A)	Existing 2017 Leq TNM dB(A)	Existing 2017 TNM + Structure- Borne Leq dB(A)	No Build 2040 Alternative Leq dB(A)	No Build 2040 TNM + Structure- Borne Leq dB(A)	No Build 2040 Increase over Existing Noise Level dB	Build Alternative Leq dB(A)	Build 2040 TNM + Structure- Borne Leq dB(A)	Build 2040 Increase over Existing Noise Level dB
R113	Multi-Family	B (65)	1	N/A	51	51	51	51	0	53	53	2
R114	Residence	B (65)	1	N/A	64	64	64	64	0	65	65	1
R115	Residence	B (65)	1	N/A	65	65	66	66	1	66	66	1
R116	Residence	B (65)	1	N/A	66	66	67	67	1	67	67	1
R117	Residence	B (65)	1	N/A	67	67	68	68	1	69	69	2
R118	Residence	B (65)	1	N/A	69	69	69	69	0	70	70	1
R119	Residence	B (65)	1	N/A	68	68	69	69	1	70	70	2
R120	Residence	B (65)	1	N/A	68	68	68	68	0	69	69	1
R121	Residence	B (65)	1	N/A	65	65	66	66	1	67	67	2
R122	Residence	B (65)	1	N/A	67	67	68	68	1	68	68	1
R123	Residence	B (65)	1	N/A	65	65	66	66	1	66	66	1
R124	Residence	B (65)	1	N/A	64	64	65	65	1	66	66	2
R125	Residence	B (65)	1	N/A	63	63	63	63	0	64	64	1
R126	Residence	B (65)	1	N/A	66	66	66	66	0	68	68	2
R127	Residence	B (65)	1	N/A	64	64	65	65	1	66	66	2
R128	Residence	B (65)	1	N/A	66	66	66	66	0	68	68	2
R129	Residence	B (65)	1	N/A	64	64	65	65	1	66	66	2
R130	Residence	B (65)	1	N/A	64	64	65	65	1	65	65	1
R131	Residence	B (65)	1	N/A	64	64	64	64	0	65	65	1
R132	Residence	B (65)	1	N/A	60	60	61	61	1	61	61	1
R133	Residence	B (65)	1	N/A	65	65	65	65	0	67	67	2

Receptor ID	Land Use	ODOT Criteria NAAC	No. of Uses	Structure- Borne Leq dB(A)	Existing 2017 Leq TNM dB(A)	Existing 2017 TNM + Structure- Borne Leq dB(A)	No Build 2040 Alternative Leq dB(A)	No Build 2040 TNM + Structure- Borne Leq dB(A)	No Build 2040 Increase over Existing Noise Level dB	Build Alternative Leq dB(A)	Build 2040 TNM + Structure- Borne Leq dB(A)	Build 2040 Increase over Existing Noise Level dB
R134	Residence	B (65)	1	N/A	66	66	66	66	0	67	67	1
R135	Residence	B (65)	1	N/A	65	65	66	66	1	67	67	2
R136	Residence	B (65)	1	N/A	66	66	67	67	1	68	68	2
R137	Residence	B (65)	1	N/A	67	67	68	68	1	69	69	2
R138	Residence	B (65)	1	N/A	66	66	66	66	0	68	68	2
R139	Residence	B (65)	1	N/A	65	65	66	66	1	68	68	3
R140	Residence	B (65)	1	N/A	66	66	67	67	1	69	69	3
R141	Residence	B (65)	1	N/A	67	67	67	67	0	68	68	1
R142	Residence	B (65)	1	N/A	66	66	67	67	1	68	68	2
R143	Residence	B (65)	1	N/A	67	67	68	68	1	69	69	2
R144	Residence	B (65)	1	N/A	68	68	68	68	0	70	70	2
R145	Residence	B (65)	1	N/A	67	67	67	67	0	68	68	1
R146	Residence	B (65)	1	N/A	68	68	68	68	0	69	69	1
R147	Residence	B (65)	1	N/A	66	66	66	66	0	68	68	2
R148	Residence	B (65)	1	N/A	65	65	66	66	1	68	68	3
R149	Residence	B (65)	1	N/A	65	65	66	66	1	68	68	3
R150	Residence	B (65)	1	N/A	64	64	65	65	1	66	66	2
R151	Residence	B (65)	1	N/A	62	62	63	63	1	64	64	2
R152	Residence	B (65)	1	N/A	63	63	63	63	0	65	65	2
R153	Residence	B (65)	1	N/A	63	63	63	63	0	65	65	2
R154	Residence	B (65)	1	N/A	62	62	63	63	1	64	64	2

Receptor ID	Land Use	ODOT Criteria NAAC	No. of Uses	Structure- Borne Leq dB(A)	Existing 2017 Leq TNM dB(A)	Existing 2017 TNM + Structure- Borne Leq dB(A)	No Build 2040 Alternative Leq dB(A)	No Build 2040 TNM + Structure- Borne Leq dB(A)	No Build 2040 Increase over Existing Noise Level dB	Build Alternative Leq dB(A)	Build 2040 TNM + Structure- Borne Leq dB(A)	Build 2040 Increase over Existing Noise Level dB
R155	Residence	B (65)	1	N/A	64	64	64	64	0	66	66	2
R156	Residence	B (65)	1	N/A	65	65	66	66	1	67	67	2
R157	Residence	B (65)	1	N/A	63	63	64	64	1	65	65	2
R158	Residence	B (65)	1	N/A	62	62	63	63	1	64	64	2
R159	Residence	B (65)	1	N/A	59	59	60	60	1	61	61	2
R160	Residence	B (65)	1	N/A	63	63	63	63	0	64	64	1
R161	Residence	B (65)	1	N/A	61	61	62	62	1	63	63	2
R162	Residence	B (65)	1	N/A	60	60	61	61	1	63	63	3
R163	Residence	B (65)	1	N/A	61	61	61	61	0	63	63	2
R164	Residence	B (65)	1	N/A	60	60	61	61	1	62	62	2
R165	Residence	B (65)	1	N/A	62	62	63	63	1	64	64	2
R166	Residence	B (65)	1	N/A	62	62	63	63	1	64	64	2
R167	Residence	B (65)	1	N/A	62	62	62	62	0	64	64	2
R168	Multi-Family	B (65)	1	N/A	65	65	65	65	0	68	68	3
R169	Multi-Family	B (65)	1	N/A	65	65	65	65	0	68	68	3
R170	Multi-Family	B (65)	1	N/A	59	59	60	60	1	60	60	1
R171	Multi-Family	B (65)	1	N/A	64	64	64	64	0	65	65	1
R172	Multi-Family	B (65)	1	N/A	70	70	71	71	1	71	71	1
R173	Multi-Family	B (65)	1	N/A	59	59	59	59	0	60	60	1
R174	Multi-Family	B (65)	1	N/A	63	63	64	64	1	65	65	2
R175	Multi-Family	B (65)	1	N/A	69	69	70	70	1	71	71	2

Receptor ID	Land Use	ODOT Criteria NAAC	No. of Uses	Structure- Borne Leq dB(A)	Existing 2017 Leq TNM dB(A)	Existing 2017 TNM + Structure- Borne Leq dB(A)	No Build 2040 Alternative Leq dB(A)	No Build 2040 TNM + Structure- Borne Leq dB(A)	No Build 2040 Increase over Existing Noise Level dB	Build Alternative Leq dB(A)	Build 2040 TNM + Structure- Borne Leq dB(A)	Build 2040 Increase over Existing Noise Level dB
R176	Multi-Family	B (65)	1	N/A	59	59	60	60	1	60	60	1
R177	Multi-Family	B (65)	1	N/A	65	65	65	65	0	65	65	0
R178	Multi-Family	B (65)	1	N/A	70	70	70	70	0	71	71	1
R179	Multi-Family	B (65)	1	N/A	59	59	59	59	0	60	60	1
R180	Multi-Family	B (65)	1	N/A	64	64	65	65	1	65	65	1
R181	Multi-Family	B (65)	1	N/A	69	69	70	70	1	71	71	2
R182	Multi-Family	B (65)	1	N/A	57	57	57	57	0	59	59	2
R183	Multi-Family	B (65)	1	N/A	63	63	63	63	0	62	62	-1
R184	Multi-Family	B (65)	1	N/A	57	57	58	58	1	59	59	2
R185	Multi-Family	B (65)	1	N/A	64	64	65	65	1	63	63	-1
R186	Multi-Family	B (65)	1	N/A	61	61	61	61	0	63	63	2
R187	Multi-Family	B (65)	1	N/A	65	65	66	66	1	67	67	2
R188	Multi-Family	B (65)	1	N/A	61	61	61	61	0	63	63	2
R189	Multi-Family	B (65)	1	N/A	65	65	66	66	1	67	67	2
R190	Multi-Family	B (65)	1	N/A	60	60	61	61	1	63	63	3
R191	Multi-Family	B (65)	1	N/A	65	65	66	66	1	67	67	2
R192	Multi-Family	B (65)	1	N/A	60	60	60	60	0	63	63	3
R193	Multi-Family	B (65)	1	N/A	65	65	66	66	1	67	67	2
R194	Multi-Family	B (65)	1	N/A	59	59	60	60	1	61	61	2
R195	Multi-Family	B (65)	1	N/A	65	65	65	65	0	67	67	2
R196	Multi-Family	B (65)	1	N/A	59	59	60	60	1	61	61	2

Receptor ID	Land Use	ODOT Criteria NAAC	No. of Uses	Structure- Borne Leq dB(A)	Existing 2017 Leq TNM dB(A)	Existing 2017 TNM + Structure- Borne Leq dB(A)	No Build 2040 Alternative Leq dB(A)	No Build 2040 TNM + Structure- Borne Leq dB(A)	No Build 2040 Increase over Existing Noise Level dB	Build Alternative Leq dB(A)	Build 2040 TNM + Structure- Borne Leq dB(A)	Build 2040 Increase over Existing Noise Level dB
R197	Multi-Family	B (65)	1	N/A	64	64	65	65	1	67	67	3
R198	Multi-Family	B (65)	1	N/A	59	59	59	59	0	60	60	1
R199	Multi-Family	B (65)	1	N/A	63	63	64	64	1	66	66	3
R200	Multi-Family	B (65)	1	N/A	58	58	59	59	1	60	60	2
R201	Multi-Family	B (65)	1	N/A	63	63	63	63	0	65	65	2
R202	Multi-Family	B (65)	1	N/A	58	58	59	59	1	60	60	2
R203	Multi-Family	B (65)	1	N/A	63	63	63	63	0	65	65	2
R204	Multi-Family	B (65)	1	N/A	57	57	58	58	1	59	59	2
R205	Multi-Family	B (65)	1	N/A	61	61	62	62	1	64	64	3
R206	Multi-Family	B (65)	1	N/A	58	58	59	59	1	60	60	2
R207	Multi-Family	B (65)	1	N/A	62	62	63	63	1	65	65	3
R208	Multi-Family	B (65)	1	N/A	58	58	59	59	1	60	60	2
R209	Multi-Family	B (65)	1	N/A	62	62	63	63	1	65	65	3
R210	Multi-Family	B (65)	1	N/A	64	64	65	65	1	67	67	3
R211	Multi-Family	B (65)	1	N/A	64	64	65	65	1	67	67	3
R212	Multi-Family	B (65)	1	N/A	58	58	58	58	0	60	60	2
R213	Multi-Family	B (65)	1	N/A	62	62	63	63	1	65	65	3
R214	Multi-Family	B (65)	1	N/A	58	58	58	58	0	60	60	2
R215	Multi-Family	B (65)	1	N/A	62	62	63	63	1	65	65	3
R216	Multi-Family	B (65)	1	N/A	64	64	65	65	1	66	66	2
R217	Multi-Family	B (65)	1	N/A	64	64	65	65	1	67	67	3

Receptor ID	Land Use	ODOT Criteria NAAC	No. of Uses	Structure- Borne Leq dB(A)	Existing 2017 Leq TNM dB(A)	Existing 2017 TNM + Structure- Borne Leq dB(A)	No Build 2040 Alternative Leq dB(A)	No Build 2040 TNM + Structure- Borne Leq dB(A)	No Build 2040 Increase over Existing Noise Level dB	Build Alternative Leq dB(A)	Build 2040 TNM + Structure- Borne Leq dB(A)	Build 2040 Increase over Existing Noise Level dB
R218	Multi-Family	B (65)	1	N/A	58	58	58	58	0	60	60	2
R219	Multi-Family	B (65)	1	N/A	62	62	63	63	1	64	64	2
R220	Multi-Family	B (65)	1	N/A	58	58	58	58	0	60	60	2
R221	Multi-Family	B (65)	1	N/A	62	62	63	63	1	65	65	3
R222	Multi-Family	B (65)	1	N/A	64	64	65	65	1	66	66	2
R223	Multi-Family	B (65)	1	N/A	64	64	65	65	1	66	66	2
R224	Multi-Family	B (65)	1	N/A	57	57	57	57	0	59	59	2
R225	Multi-Family	B (65)	1	N/A	62	62	62	62	0	64	64	2
R226	Multi-Family	B (65)	1	N/A	70	70	70	70	0	71	71	1
R227	Multi-Family	B (65)	1	N/A	58	58	58	58	0	59	59	1
R228	Multi-Family	B (65)	1	N/A	61	61	62	62	1	64	64	3
R229	Multi-Family	B (65)	1	N/A	69	69	69	69	0	71	71	2
R230	Multi-Family	B (65)	1	N/A	57	57	58	58	1	59	59	2
R231	Multi-Family	B (65)	1	N/A	63	63	64	64	1	64	64	1
R232	Multi-Family	B (65)	1	N/A	70	70	71	71	1	71	71	1
R233	Multi-Family	B (65)	1	N/A	58	58	59	59	1	60	60	2
R234	Multi-Family	B (65)	1	N/A	63	63	63	63	0	64	64	1
R235	Multi-Family	B (65)	1	N/A	69	69	70	70	1	70	70	1
R236	Multi-Family	B (65)	1	N/A	57	57	57	57	0	59	59	2
R237	Multi-Family	B (65)	1	N/A	60	60	61	61	1	62	62	2
R238	Multi-Family	B (65)	1	N/A	56	56	57	57	1	58	58	2

Receptor ID	Land Use	ODOT Criteria NAAC	No. of Uses	Structure- Borne Leq dB(A)	Existing 2017 Leq TNM dB(A)	Existing 2017 TNM + Structure- Borne Leq dB(A)	No Build 2040 Alternative Leq dB(A)	No Build 2040 TNM + Structure- Borne Leq dB(A)	No Build 2040 Increase over Existing Noise Level dB	Build Alternative Leq dB(A)	Build 2040 TNM + Structure- Borne Leq dB(A)	Build 2040 Increase over Existing Noise Level dB
R239	Multi-Family	B (65)	1	N/A	60	60	60	60	0	62	62	2
R240	Multi-Family	B (65)	1	N/A	57	57	57	57	0	58	58	1
R241	Multi-Family	B (65)	1	N/A	61	61	61	61	0	63	63	2
R242	Multi-Family	B (65)	1	N/A	56	56	57	57	1	58	58	2
R243	Multi-Family	B (65)	1	N/A	60	60	61	61	1	63	63	3
R244	Residence	B (65)	1	N/A	60	60	60	60	0	61	61	1
R245	Residence	B (65)	1	N/A	61	61	62	62	1	63	63	2
R246	Residence	B (65)	1	N/A	61	61	61	61	0	62	62	1
R247	Residence	B (65)	1	N/A	60	60	60	60	0	62	62	2
R248	Residence	B (65)	1	N/A	60	60	60	60	0	62	62	2
R249	Residence	B (65)	1	N/A	59	59	59	59	0	61	61	2
R250	Residence	B (65)	1	N/A	57	57	57	57	0	60	60	3
R251	Residence	B (65)	1	N/A	57	57	57	57	0	59	59	2
R252	Residence	B (65)	1	N/A	57	57	57	57	0	59	59	2
R253	Residence	B (65)	1	N/A	56	56	56	56	0	59	59	3
R254	Residence	B (65)	1	N/A	56	56	57	57	1	59	59	3
R255	Residence	B (65)	1	N/A	56	56	57	57	1	59	59	3
R256	Residence	B (65)	1	N/A	63	63	63	63	0	64	64	1
R257	Residence	B (65)	1	N/A	62	62	62	62	0	62	62	0
R258	Residence	B (65)	1	N/A	61	61	61	61	0	61	61	0
R259	Residence	B (65)	1	N/A	60	60	60	60	0	61	61	1

Receptor ID	Land Use	ODOT Criteria NAAC	No. of Uses	Structure- Borne Leq dB(A)	Existing 2017 Leq TNM dB(A)	Existing 2017 TNM + Structure- Borne Leq dB(A)	No Build 2040 Alternative Leq dB(A)	No Build 2040 TNM + Structure- Borne Leq dB(A)	No Build 2040 Increase over Existing Noise Level dB	Build Alternative Leq dB(A)	Build 2040 TNM + Structure- Borne Leq dB(A)	Build 2040 Increase over Existing Noise Level dB
R260	Residence	B (65)	1	N/A	59	59	59	59	0	60	60	1
R261	Residence	B (65)	1	N/A	58	58	58	58	0	59	59	1
R262	Residence	B (65)	1	N/A	58	58	58	58	0	59	59	1
R263	Residence	B (65)	1	N/A	57	57	57	57	0	59	59	2
R264	Residence	B (65)	1	N/A	58	58	58	58	0	61	61	3
R265	Residence	B (65)	1	N/A	58	58	58	58	0	61	61	3
R266	Residence	B (65)	1	N/A	55	55	55	55	0	58	58	3
R267	Residence	B (65)	1	N/A	57	57	57	57	0	59	59	2
R268	Residence	B (65)	1	N/A	59	59	60	60	1	62	62	3
R269	Residence	B (65)	1	N/A	61	61	61	61	0	63	63	2
R270	Residence	B (65)	1	N/A	61	61	61	61	0	63	63	2
R271	Residence	B (65)	1	N/A	62	62	63	63	1	65	65	3
R272	Residence	B (65)	1	N/A	64	64	64	64	0	66	66	2
R273	Residence	B (65)	1	N/A	66	66	66	66	0	67	67	1
R274	Residence	B (65)	1	N/A	62	62	63	63	1	65	65	3
R275	Residence	B (65)	1	N/A	63	63	63	63	0	65	65	2
R276	Residence	B (65)	1	N/A	63	63	63	63	0	65	65	2
R277	Residence	B (65)	1	N/A	63	63	64	64	1	65	65	2
R278	Residence	B (65)	1	N/A	63	63	64	64	1	65	65	2
R279	Residence	B (65)	1	N/A	63	63	64	64	1	65	65	2
R280	Residence	B (65)	1	N/A	63	63	63	63	0	65	65	2

Receptor ID	Land Use	ODOT Criteria NAAC	No. of Uses	Structure- Borne Leq dB(A)	Existing 2017 Leq TNM dB(A)	Existing 2017 TNM + Structure- Borne Leq dB(A)	No Build 2040 Alternative Leq dB(A)	No Build 2040 TNM + Structure- Borne Leq dB(A)	No Build 2040 Increase over Existing Noise Level dB	Build Alternative Leq dB(A)	Build 2040 TNM + Structure- Borne Leq dB(A)	Build 2040 Increase over Existing Noise Level dB
R281	Residence	B (65)	1	N/A	63	63	64	64	1	66	66	3
R282	Residence	B (65)	1	N/A	64	64	64	64	0	66	66	2
R283	Residence	B (65)	1	N/A	64	64	65	65	1	67	67	3
R284	Residence	B (65)	1	N/A	64	64	64	64	0	67	67	3
R285	Residence	B (65)	1	N/A	64	64	64	64	0	67	67	3
R286	Residence	B (65)	1	N/A	62	62	63	63	1	64	64	2
R287	Residence	B (65)	1	N/A	62	62	63	63	1	64	64	2
R288	Residence	B (65)	1	N/A	62	62	63	63	1	65	65	3
R289	Residence	B (65)	1	N/A	62	62	63	63	1	64	64	2
R290	Residence	B (65)	1	N/A	63	63	63	63	0	65	65	2
R291	Residence	B (65)	1	N/A	63	63	63	63	0	65	65	2
R292	Residence	B (65)	1	N/A	62	62	63	63	1	64	64	2
R293	Residence	B (65)	1	N/A	63	63	64	64	1	65	65	2
R294	Residence	B (65)	1	N/A	62	62	63	63	1	64	64	2
R295	Residence	B (65)	1	N/A	62	62	63	63	1	65	65	3
R296	Residence	B (65)	1	N/A	63	63	64	64	1	66	66	3
R297	Residence	B (65)	1	N/A	65	65	66	66	1	69	69	4
R298	Residence	B (65)	1	N/A	68	68	69	69	1	71	71	3
R299	Residence	B (65)	1	N/A	68	68	69	69	1	71	71	3
R300	Residence	B (65)	1	N/A	68	68	68	68	0	70	70	2
R301	Residence	B (65)	1	N/A	66	66	67	67	1	69	69	3

Receptor ID	Land Use	ODOT Criteria NAAC	No. of Uses	Structure- Borne Leq dB(A)	Existing 2017 Leq TNM dB(A)	Existing 2017 TNM + Structure- Borne Leq dB(A)	No Build 2040 Alternative Leq dB(A)	No Build 2040 TNM + Structure- Borne Leq dB(A)	No Build 2040 Increase over Existing Noise Level dB	Build Alternative Leq dB(A)	Build 2040 TNM + Structure- Borne Leq dB(A)	Build 2040 Increase over Existing Noise Level dB
R302	Residence	B (65)	1	N/A	68	68	68	68	0	70	70	2
R303	Residence	B (65)	1	N/A	66	66	67	67	1	69	69	3
R304	Residence	B (65)	1	N/A	66	66	67	67	1	69	69	3
R305	Residence	B (65)	1	N/A	65	65	66	66	1	68	68	3
R306	Residence	B (65)	1	N/A	62	62	63	63	1	65	65	3
R307	Residence	B (65)	1	N/A	62	62	62	62	0	64	64	2
R308	Residence	B (65)	1	N/A	61	61	62	62	1	64	64	3
R309	Residence	B (65)	1	N/A	62	62	62	62	0	64	64	2
R310	Residence	B (65)	1	N/A	62	62	63	63	1	65	65	3
R311	Residence	B (65)	1	N/A	62	62	63	63	1	65	65	3
R312	Residence	B (65)	1	N/A	62	62	63	63	1	64	64	2
R313	Residence	B (65)	1	N/A	62	62	62	62	0	64	64	2
R314	Residence	B (65)	1	N/A	61	61	62	62	1	63	63	2
R315	Residence	B (65)	1	N/A	62	62	63	63	1	64	64	2
R316	Residence	B (65)	1	N/A	62	62	63	63	1	64	64	2
R317	Residence	B (65)	1	N/A	62	62	63	63	1	64	64	2
R318	Residence	B (65)	1	N/A	62	62	63	63	1	64	64	2
R319	Residence	B (65)	1	N/A	62	62	63	63	1	64	64	2
R320	Residence	B (65)	1	N/A	62	62	63	63	1	64	64	2
R321	Residence	B (65)	1	N/A	62	62	63	63	1	64	64	2
R322	Residence	B (65)	1	N/A	62	62	63	63	1	65	65	3

Receptor ID	Land Use	ODOT Criteria NAAC	No. of Uses	Structure- Borne Leq dB(A)	Existing 2017 Leq TNM dB(A)	Existing 2017 TNM + Structure- Borne Leq dB(A)	No Build 2040 Alternative Leq dB(A)	No Build 2040 TNM + Structure- Borne Leq dB(A)	No Build 2040 Increase over Existing Noise Level dB	Build Alternative Leq dB(A)	Build 2040 TNM + Structure- Borne Leq dB(A)	Build 2040 Increase over Existing Noise Level dB
R323	Residence	B (65)	1	N/A	64	64	65	65	1	68	68	4
R324	Residence	B (65)	1	N/A	64	64	65	65	1	68	68	4
R325	Residence	B (65)	1	N/A	64	64	65	65	1	67	67	3
R326	Residence	B (65)	1	N/A	64	64	65	65	1	67	67	3
R327	Residence	B (65)	1	N/A	64	64	65	65	1	68	68	4
R328	Residence	B (65)	1	N/A	64	64	65	65	1	68	68	4
R329	Residence	B (65)	1	N/A	65	65	66	66	1	68	68	3
R330	Residence	B (65)	1	N/A	65	65	66	66	1	68	68	3
R331	Residence	B (65)	1	N/A	62	62	63	63	1	64	64	2
R332	Residence	B (65)	1	N/A	61	61	62	62	1	64	64	3
R333	Residence	B (65)	1	N/A	63	63	64	64	1	65	65	2
R334	Residence	B (65)	1	N/A	61	61	62	62	1	64	64	3
R335	Residence	B (65)	1	N/A	60	60	61	61	1	63	63	3
R336	Residence	B (65)	1	N/A	61	61	62	62	1	64	64	3
R337	Residence	B (65)	1	N/A	65	65	66	66	1	67	67	2
R338	Residence	B (65)	1	N/A	65	65	65	65	0	67	67	2
R339	Residence	B (65)	1	N/A	65	65	65	65	0	66	66	1
R340	Residence	B (65)	1	N/A	65	65	66	66	1	67	67	2
R341	Residence	B (65)	1	N/A	64	64	64	64	0	67	67	3
R342	Residence	B (65)	1	N/A	63	63	64	64	1	67	67	4
R343	Residence	B (65)	1	N/A	66	66	66	66	0	69	69	3

Receptor ID	Land Use	ODOT Criteria NAAC	No. of Uses	Structure- Borne Leq dB(A)	Existing 2017 Leq TNM dB(A)	Existing 2017 TNM + Structure- Borne Leq dB(A)	No Build 2040 Alternative Leq dB(A)	No Build 2040 TNM + Structure- Borne Leq dB(A)	No Build 2040 Increase over Existing Noise Level dB	Build Alternative Leq dB(A)	Build 2040 TNM + Structure- Borne Leq dB(A)	Build 2040 Increase over Existing Noise Level dB
R344	Residence	B (65)	1	N/A	67	67	68	68	1	70	70	3
R345	Residence	B (65)	1	N/A	65	65	66	66	1	68	68	3
R346	Residence	B (65)	1	N/A	66	66	67	67	1	67	67	1
R347	Residence	B (65)	1	N/A	67	67	68	68	1	67	67	0
R348	Residence	B (65)	1	N/A	65	65	66	66	1	66	66	1
R349	Residence	B (65)	1	N/A	67	67	68	68	1	66	66	-1
R350	Residence	B (65)	1	N/A	68	68	69	69	1	67	67	-1
R351	Residence	B (65)	1	N/A	68	68	69	69	1	67	67	-1
R352	Residence	B (65)	1	N/A	68	68	69	69	1	67	67	-1
R353	Residence	B (65)	1	N/A	61	61	62	62	1	64	64	3
R354	Residence	B (65)	1	N/A	56	56	57	57	1	59	59	3
R355	Residence	B (65)	1	N/A	59	59	60	60	1	62	62	3
R356	Residence	B (65)	1	N/A	58	58	59	59	1	61	61	3
R357	Residence	B (65)	1	N/A	55	55	56	56	1	57	57	2
R358	Residence	B (65)	1	N/A	57	57	58	58	1	59	59	2
R359	Residence	B (65)	1	N/A	57	57	58	58	1	58	58	1
R360	Residence	B (65)	1	N/A	67	67	68	68	1	67	67	0
R361	Residence	B (65)	1	N/A	66	66	67	67	1	67	67	1
R362	Residence	B (65)	1	N/A	66	66	67	67	1	67	67	1
R363	Residence	B (65)	1	N/A	66	66	67	67	1	66	66	0
R364	Residence	B (65)	1	N/A	66	66	67	67	1	66	66	0

Receptor ID	Land Use	ODOT Criteria NAAC	No. of Uses	Structure- Borne Leq dB(A)	Existing 2017 Leq TNM dB(A)	Existing 2017 TNM + Structure- Borne Leq dB(A)	No Build 2040 Alternative Leq dB(A)	No Build 2040 TNM + Structure- Borne Leq dB(A)	No Build 2040 Increase over Existing Noise Level dB	Build Alternative Leq dB(A)	Build 2040 TNM + Structure- Borne Leq dB(A)	Build 2040 Increase over Existing Noise Level dB
R365	Residence	B (65)	1	N/A	55	55	56	56	1	57	57	2
R366	Residence	B (65)	1	N/A	55	55	55	55	0	57	57	2
R367	Residence	B (65)	1	N/A	55	55	56	56	1	55	55	0
R368	Residence	B (65)	1	N/A	51	51	51	51	0	54	54	3
R369	Residence	B (65)	1	N/A	50	50	51	51	1	52	52	2
R370	Residence	B (65)	1	N/A	51	51	52	52	1	53	53	2
R371	Residence	B (65)	1	N/A	66	66	67	67	1	66	66	0
R372	Residence	B (65)	1	N/A	66	66	67	67	1	66	66	0
R373	Residence	B (65)	1	N/A	69	69	70	70	1	71	71	2
R374	Residence	B (65)	1	N/A	70	70	71	71	1	72	72	2
R375	Residence	B (65)	1	N/A	70	70	71	71	1	72	72	2
R376	Residence	B (65)	1	N/A	70	70	71	71	1	72	72	2
R377	Residence	B (65)	1	N/A	69	69	70	70	1	71	71	2
R378	Residence	B (65)	1	N/A	71	71	71	71	0	72	72	1
R379	Residence	B (65)	1	N/A	68	68	69	69	1	71	71	3
R380	Residence	B (65)	1	N/A	70	70	71	71	1	72	72	2
R381	Residence	B (65)	1	N/A	67	67	68	68	1	70	70	3
R382	Residence	B (65)	1	N/A	66	66	67	67	1	69	69	3
R383	Residence	B (65)	1	N/A	65	65	66	66	1	67	67	2
R384	Residence	B (65)	1	N/A	63	63	64	64	1	66	66	3
R385	Residence	B (65)	1	N/A	64	64	65	65	1	66	66	2

Receptor ID	Land Use	ODOT Criteria NAAC	No. of Uses	Structure- Borne Leq dB(A)	Existing 2017 Leq TNM dB(A)	Existing 2017 TNM + Structure- Borne Leq dB(A)	No Build 2040 Alternative Leq dB(A)	No Build 2040 TNM + Structure- Borne Leq dB(A)	No Build 2040 Increase over Existing Noise Level dB	Build Alternative Leq dB(A)	Build 2040 TNM + Structure- Borne Leq dB(A)	Build 2040 Increase over Existing Noise Level dB
R386	Residence	B (65)	1	N/A	65	65	66	66	1	68	68	3
R387	Residence	B (65)	1	N/A	59	59	60	60	1	62	62	3
R388	Multi-Family	B (65)	1	N/A	61	61	62	62	1	63	63	2
R389	Multi-Family	B (65)	1	N/A	61	61	62	62	1	64	64	3
R390	Multi-Family	B (65)	1	N/A	59	59	59	59	0	61	61	2
R391	Multi-Family	B (65)	1	N/A	58	58	58	58	0	60	60	2
R392	Multi-Family	B (65)	1	N/A	61	61	62	62	1	64	64	3
R393	Multi-Family	B (65)	1	N/A	62	62	63	63	1	64	64	2
R394	Multi-Family	B (65)	1	N/A	60	60	61	61	1	63	63	3
R395	Multi-Family	B (65)	1	N/A	62	62	63	63	1	65	65	3
R396	Multi-Family	B (65)	1	N/A	61	61	62	62	1	63	63	2
R397	Multi-Family	B (65)	1	N/A	61	61	61	61	0	63	63	2
R398	Multi-Family	B (65)	1	N/A	62	62	63	63	1	64	64	2
R399	Multi-Family	B (65)	1	N/A	62	62	63	63	1	64	64	2
R400	Residence	B (65)	1	N/A	58	58	59	59	1	61	61	3
R401	Residence	B (65)	1	N/A	57	57	58	58	1	60	60	3
R402	Residence	B (65)	1	N/A	56	56	57	57	1	58	58	2
R403	Residence	B (65)	1	N/A	57	57	58	58	1	60	60	3
R404	Residence	B (65)	1	N/A	65	65	66	66	1	68	68	3
R405	Residence	B (65)	1	N/A	72	72	72	72	0	73	73	1
R406	Residence	B (65)	1	N/A	52	52	53	53	1	53	53	1

Receptor ID	Land Use	ODOT Criteria NAAC	No. of Uses	Structure- Borne Leq dB(A)	Existing 2017 Leq TNM dB(A)	Existing 2017 TNM + Structure- Borne Leq dB(A)	No Build 2040 Alternative Leq dB(A)	No Build 2040 TNM + Structure- Borne Leq dB(A)	No Build 2040 Increase over Existing Noise Level dB	Build Alternative Leq dB(A)	Build 2040 TNM + Structure- Borne Leq dB(A)	Build 2040 Increase over Existing Noise Level dB
R407	Residence	B (65)	1	N/A	52	52	53	53	1	53	53	1
R408	Residence	B (65)	1	N/A	52	52	53	53	1	53	53	1
R409	Residence	B (65)	1	N/A	53	53	53	53	0	54	54	1
R410	Residence	B (65)	1	N/A	54	54	55	55	1	56	56	2
R411	Residence	B (65)	1	N/A	54	54	55	55	1	55	55	1
R412	Residence	B (65)	1	N/A	54	54	55	55	1	56	56	2
R413	Residence	B (65)	1	N/A	55	55	56	56	1	57	57	2
R414	Residence	B (65)	1	N/A	54	54	54	54	0	57	57	3
R415	Residence	B (65)	1	N/A	54	54	55	55	1	58	58	4
R416	Residence	B (65)	1	N/A	57	57	58	58	1	61	61	4
R417	Residence	B (65)	1	N/A	53	53	54	54	1	56	56	3
R418	Residence	B (65)	1	N/A	53	53	54	54	1	56	56	3
R419	Residence	B (65)	1	N/A	53	53	54	54	1	56	56	3
R420	Residence	B (65)	1	N/A	53	53	54	54	1	56	56	3
R421	Residence	B (65)	1	N/A	55	55	56	56	1	59	59	4
R422	Residence	B (65)	1	N/A	61	61	62	62	1	64	64	3
R423	Residence	B (65)	1	N/A	62	62	62	62	0	65	65	3
R424	Residence	B (65)	1	N/A	59	59	60	60	1	63	63	4
R425	Residence	B (65)	1	N/A	59	59	60	60	1	63	63	4
R426	Residence	B (65)	1	N/A	62	62	63	63	1	65	65	3
R427	Residence	B (65)	1	N/A	63	63	64	64	1	66	66	3

Receptor ID	Land Use	ODOT Criteria NAAC	No. of Uses	Structure- Borne Leq dB(A)	Existing 2017 Leq TNM dB(A)	Existing 2017 TNM + Structure- Borne Leq dB(A)	No Build 2040 Alternative Leq dB(A)	No Build 2040 TNM + Structure- Borne Leq dB(A)	No Build 2040 Increase over Existing Noise Level dB	Build Alternative Leq dB(A)	Build 2040 TNM + Structure- Borne Leq dB(A)	Build 2040 Increase over Existing Noise Level dB
R428	Residence	B (65)	1	N/A	58	58	59	59	1	62	62	4
R429	Residence	B (65)	1	N/A	63	63	64	64	1	65	65	2
R430	Residence	B (65)	1	N/A	56	56	57	57	1	59	59	3
R431	Residence	B (65)	1	N/A	57	57	58	58	1	60	60	3
R432	Residence	B (65)	1	N/A	63	63	64	64	1	66	66	3
R433	Residence	B (65)	1	N/A	61	61	62	62	1	64	64	3
R434	Residence	B (65)	1	N/A	54	54	55	55	1	57	57	3
R435	Residence	B (65)	1	N/A	53	53	54	54	1	54	54	1
R436	Residence	B (65)	1	N/A	60	60	61	61	1	62	62	2
R437	Residence	B (65)	1	N/A	53	53	54	54	1	54	54	1
R438	Residence	B (65)	1	N/A	53	53	54	54	1	53	53	0
R439	Residence	B (65)	1	N/A	54	54	54	54	0	53	53	-1
R440	Residence	B (65)	1	N/A	69	69	70	70	1	70	70	1
R441	Residence	B (65)	1	N/A	59	59	60	60	1	63	63	4
R442	Multi-Family	B (65)	1	N/A	68	68	69	69	1	69	69	1
R443	Multi-Family	B (65)	1	N/A	69	69	70	70	1	69	69	0
R444	Multi-Family	B (65)	1	N/A	69	69	70	70	1	67	67	-2
R445	Multi-Family	B (65)	1	N/A	69	69	70	70	1	66	66	-3
R446	Multi-Family	B (65)	1	N/A	71	71	72	72	1	72	72	1
R447	Multi-Family	B (65)	1	N/A	72	72	73	73	1	73	73	1
R448	Multi-Family	B (65)	1	N/A	72	72	73	73	1	73	73	1

Receptor ID	Land Use	ODOT Criteria NAAC	No. of Uses	Structure- Borne Leq dB(A)	Existing 2017 Leq TNM dB(A)	Existing 2017 TNM + Structure- Borne Leq dB(A)	No Build 2040 Alternative Leq dB(A)	No Build 2040 TNM + Structure- Borne Leq dB(A)	No Build 2040 Increase over Existing Noise Level dB	Build Alternative Leq dB(A)	Build 2040 TNM + Structure- Borne Leq dB(A)	Build 2040 Increase over Existing Noise Level dB
R449	Multi-Family	B (65)	1	N/A	72	72	73	73	1	73	73	1
R450	Multi-Family	B (65)	1	N/A	62	62	63	63	1	63	63	1
R451	Multi-Family	B (65)	1	N/A	63	63	64	64	1	64	64	1
R452	Multi-Family	B (65)	1	N/A	67	67	67	67	0	67	67	0
R453	Multi-Family	B (65)	1	N/A	69	69	70	70	1	69	69	0
R454	Multi-Family	B (65)	1	N/A	58	58	59	59	1	60	60	2
R455	Multi-Family	B (65)	1	N/A	58	58	59	59	1	60	60	2
R456	Multi-Family	B (65)	1	N/A	58	58	59	59	1	60	60	2
R457	Multi-Family	B (65)	1	N/A	61	61	62	62	1	63	63	2
R458	Multi-Family	B (65)	1	N/A	61	61	62	62	1	63	63	2
R459	Multi-Family	B (65)	1	N/A	61	61	62	62	1	63	63	2
R460	Residence	B (65)	1	N/A	55	55	56	56	1	56	56	1
R461	Residence	B (65)	1	N/A	56	56	58	58	2	58	58	2
R462	Residence	B (65)	1	N/A	55	55	56	56	1	57	57	2
R463	Residence	B (65)	1	N/A	56	56	57	57	1	57	57	1
R464	Residence	B (65)	1	N/A	57	57	58	58	1	58	58	1
R465	Residence	B (65)	1	N/A	57	57	58	58	1	59	59	2
R466	School (Atlas Immersion Academy)	C (65)	1	N/A	65	65	66	66	1	66	66	1
R467	Multi-Family	B (65)	1	N/A	67	67	69	69	2	70	70	3
R468	Multi-Family	B (65)	1	N/A	68	68	70	70	2	71	71	3
R469	Multi-Family	B (65)	1	N/A	66	66	67	67	1	69	69	3

Receptor ID	Land Use	ODOT Criteria NAAC	No. of Uses	Structure- Borne Leq dB(A)	Existing 2017 Leq TNM dB(A)	Existing 2017 TNM + Structure- Borne Leq dB(A)	No Build 2040 Alternative Leq dB(A)	No Build 2040 TNM + Structure- Borne Leq dB(A)	No Build 2040 Increase over Existing Noise Level dB	Build Alternative Leq dB(A)	Build 2040 TNM + Structure- Borne Leq dB(A)	Build 2040 Increase over Existing Noise Level dB
R470	Multi-Family	B (65)	1	N/A	67	67	68	68	1	70	70	3
R471	Multi-Family	B (65)	1	N/A	68	68	69	69	1	70	70	2
R472	Multi-Family	B (65)	1	N/A	65	65	66	66	1	68	68	3
R473	Multi-Family	B (65)	1	N/A	66	66	67	67	1	69	69	3
R474	Multi-Family	B (65)	1	N/A	67	67	68	68	1	70	70	3
R475	Multi-Family	B (65)	1	N/A	64	64	65	65	1	67	67	3
R476	Multi-Family	B (65)	1	N/A	65	65	66	66	1	68	68	3
R477	Multi-Family	B (65)	1	N/A	65	65	66	66	1	68	68	3
R478	Multi-Family	B (65)	1	N/A	63	63	64	64	1	66	66	3
R479	Multi-Family	B (65)	1	N/A	64	64	65	65	1	67	67	3
R480	Multi-Family	B (65)	1	N/A	64	64	65	65	1	67	67	3
R481	Multi-Family	B (65)	1	N/A	62	62	64	64	2	65	65	3
R482	Multi-Family	B (65)	1	N/A	63	63	65	65	2	66	66	3
R483	Multi-Family	B (65)	1	N/A	64	64	65	65	1	66	66	2
R484	Residence	B (65)	1	N/A	56	56	57	57	1	61	61	5
R485	Residence	B (65)	1	N/A	55	55	56	56	1	60	60	5
R486	Residence	B (65)	1	N/A	54	54	55	55	1	58	58	4
R487	Residence	B (65)	1	N/A	54	54	55	55	1	58	58	4
R488	Residence	B (65)	1	N/A	54	54	55	55	1	57	57	3
R489	Residence	B (65)	1	N/A	72	72	73	73	1	74	74	2
R490	Residence	B (65)	1	N/A	72	72	73	73	1	74	74	2

Receptor ID	Land Use	ODOT Criteria NAAC	No. of Uses	Structure- Borne Leq dB(A)	Existing 2017 Leq TNM dB(A)	Existing 2017 TNM + Structure- Borne Leq dB(A)	No Build 2040 Alternative Leq dB(A)	No Build 2040 TNM + Structure- Borne Leq dB(A)	No Build 2040 Increase over Existing Noise Level dB	Build Alternative Leq dB(A)	Build 2040 TNM + Structure- Borne Leq dB(A)	Build 2040 Increase over Existing Noise Level dB
R491	Residence	B (65)	1	N/A	69	69	70	70	1	71	71	2
R492	Residence	B (65)	1	N/A	67	67	68	68	1	69	69	2
R493	Residence	B (65)	1	N/A	64	64	65	65	1	66	66	2
R494	Residence	B (65)	1	N/A	63	63	64	64	1	65	65	2
R495	Residence	B (65)	1	N/A	62	62	62	62	0	64	64	2
R496	Residence	B (65)	1	N/A	68	68	69	69	1	70	70	2
R497	Residence	B (65)	1	N/A	67	67	68	68	1	69	69	2
R498	Residence	B (65)	1	N/A	64	64	65	65	1	66	66	2
R499	Residence	B (65)	1	N/A	62	62	63	63	1	65	65	3
R500	Residence	B (65)	1	N/A	61	61	62	62	1	63	63	2
R501	Residence	B (65)	1	N/A	70	70	71	71	1	72	72	2
R502	Residence	B (65)	1	N/A	69	69	70	70	1	71	71	2
R503	Residence	B (65)	1	N/A	69	69	70	70	1	71	71	2
R504	Residence	B (65)	1	N/A	70	70	71	71	1	72	72	2
R505	Residence	B (65)	1	N/A	70	70	70	70	0	72	72	2
R506	Residence	B (65)	1	N/A	69	69	70	70	1	72	72	3
R507	Residence	B (65)	1	N/A	63	63	64	64	1	65	65	2
R508	Residence	B (65)	1	N/A	61	61	62	62	1	63	63	2
R509	Residence	B (65)	1	N/A	62	62	63	63	1	65	65	3
R510	Residence	B (65)	1	N/A	63	63	64	64	1	65	65	2
R511	Residence	B (65)	1	N/A	62	62	63	63	1	64	64	2

Receptor ID	Land Use	ODOT Criteria NAAC	No. of Uses	Structure- Borne Leq dB(A)	Existing 2017 Leq TNM dB(A)	Existing 2017 TNM + Structure- Borne Leq dB(A)	No Build 2040 Alternative Leq dB(A)	No Build 2040 TNM + Structure- Borne Leq dB(A)	No Build 2040 Increase over Existing Noise Level dB	Build Alternative Leq dB(A)	Build 2040 TNM + Structure- Borne Leq dB(A)	Build 2040 Increase over Existing Noise Level dB
R512	Residence	B (65)	1	N/A	61	61	62	62	1	64	64	3
R513	Residence	B (65)	1	N/A	61	61	62	62	1	63	63	2
R514	Residence	B (65)	1	N/A	60	60	61	61	1	62	62	2
R515	Residence	B (65)	1	N/A	58	58	59	59	1	60	60	2
R516	Residence	B (65)	1	N/A	58	58	59	59	1	60	60	2
R517	Residence	B (65)	1	N/A	57	57	58	58	1	59	59	2
R518	Residence	B (65)	1	N/A	60	60	60	60	0	61	61	1
R519	Residence	B (65)	1	N/A	54	54	55	55	1	56	56	2
R520	Residence	B (65)	1	N/A	53	53	54	54	1	55	55	2
R521	Residence	B (65)	1	N/A	65	65	66	66	1	67	67	2
R522	Residence	B (65)	1	N/A	65	65	66	66	1	67	67	2
R523	Residence	B (65)	1	N/A	64	64	65	65	1	66	66	2
R524	Residence	B (65)	1	N/A	64	64	65	65	1	66	66	2
R525	Residence	B (65)	1	N/A	63	63	65	65	2	65	65	2
R526	Residence	B (65)	1	N/A	59	59	60	60	1	61	61	2
R527	Multi-Family	B (65)	1	N/A	69	69	70	70	1	72	72	3
R528	Multi-Family	B (65)	1	N/A	68	68	69	69	1	71	71	3
R529	Multi-Family	B (65)	1	N/A	67	67	68	68	1	69	69	2
R530	Multi-Family	B (65)	1	N/A	70	70	70	70	0	73	73	3
R531	Multi-Family	B (65)	1	N/A	69	69	70	70	1	71	71	2
R532	Multi-Family	B (65)	1	N/A	68	68	68	68	0	70	70	2

Receptor ID	Land Use	ODOT Criteria NAAC	No. of Uses	Structure- Borne Leq dB(A)	Existing 2017 Leq TNM dB(A)	Existing 2017 TNM + Structure- Borne Leq dB(A)	No Build 2040 Alternative Leq dB(A)	No Build 2040 TNM + Structure- Borne Leq dB(A)	No Build 2040 Increase over Existing Noise Level dB	Build Alternative Leq dB(A)	Build 2040 TNM + Structure- Borne Leq dB(A)	Build 2040 Increase over Existing Noise Level dB
R533	Multi-Family	B (65)	1	N/A	54	54	57	57	3	56	56	2
R534	Multi-Family	B (65)	1	N/A	60	60	61	61	1	62	62	2
R535	Multi-Family	B (65)	1	N/A	53	53	56	56	3	55	55	2
R536	Residence	B (65)	1	N/A	62	62	64	64	2	64	64	2
R537	Residence	B (65)	1	54	63	64	63	63	-1	64	64	0
R538	Residence	B (65)	1	53	61	62	66	66	4	62	62	0
R539	Residence	B (65)	1	52	59	60	61	62	2	60	61	1
R540	Residence	B (65)	1	52	59	60	60	61	1	60	61	1
R541	Residence	B (65)	1	53	59	60	60	61	1	60	61	1
R542	Residence	B (65)	1	53	59	60	60	61	1	60	61	1
R543	Residence	B (65)	1	53	59	60	60	61	1	60	61	1
R544	Residence	B (65)	1	53	59	60	59	60	0	60	61	1
R545	Residence	B (65)	1	53	59	60	60	61	1	61	62	2
R546	Residence	B (65)	1	53	61	62	62	62	0	63	63	1
R547	Residence	B (65)	1	53	60	61	61	62	1	62	63	2
R548	Residence	B (65)	1	54	61	62	61	62	0	62	63	1
R549	Residence	B (65)	1	54	61	61	61	62	1	62	63	2
R550	Residence	B (65)	1	55	60	61	61	62	1	62	63	2
R551	Residence	B (65)	1	56	61	62	62	63	1	63	64	2
R552	Residence	B (65)	1	56	62	63	63	64	1	64	65	2
R553	Residence	B (65)	1	57	63	64	64	65	1	65	66	2

Receptor ID	Land Use	ODOT Criteria NAAC	No. of Uses	Structure- Borne Leq dB(A)	Existing 2017 Leq TNM dB(A)	Existing 2017 TNM + Structure- Borne Leq dB(A)	No Build 2040 Alternative Leq dB(A)	No Build 2040 TNM + Structure- Borne Leq dB(A)	No Build 2040 Increase over Existing Noise Level dB	Build Alternative Leq dB(A)	Build 2040 TNM + Structure- Borne Leq dB(A)	Build 2040 Increase over Existing Noise Level dB
R554	Residence	B (65)	1	58	60	62	61	63	1	62	63	1
R555	Residence	B (65)	1	60	58	62	59	63	1	58	62	0
R556	Residence	B (65)	1	59	62	64	62	64	0	62	64	0
R557	Residence	B (65)	1	57	64	65	64	65	0	64	65	0
R558	Residence	B (65)	1	58	59	62	60	62	0	59	62	0
R559	Residence	B (65)	1	59	59	62	59	62	0	59	62	0
R560	Residence	B (65)	1	61	61	64	61	64	0	60	63	-1
R561	Residence	B (65)	1	59	63	64	62	64	0	62	64	0
R562	Residence	B (65)	1	57	64	65	64	65	0	64	65	0
R563	Residence	B (65)	1	56	64	65	64	65	0	64	65	0
R564	Residence	B (65)	1	55	64	64	64	65	1	64	65	1
R565	Residence	B (65)	1	55	63	63	63	64	1	62	63	0
R566	Residence	B (65)	1	55	63	63	63	64	1	62	63	0
R567	Residence	B (65)	1	55	62	63	62	63	0	62	63	0
R568	Residence	B (65)	1	55	62	62	62	63	1	62	63	1
R569	Residence	B (65)	1	54	63	63	63	63	0	64	64	1
R570	Residence	B (65)	1	53	62	63	63	63	0	63	63	0
R571	Residence	B (65)	1	55	64	64	64	65	1	65	65	1
R572	Residence	B (65)	1	55	63	64	64	64	0	64	64	0
R573	Best Western (Pool)	E (70)	1	54	60	61	61	62	1	61	62	1
R574	Best Western (Outdoor Seating)	E (70)	1	54	59	60	60	61	1	61	62	2

Receptor ID	Land Use	ODOT Criteria NAAC	No. of Uses	Structure- Borne Leq dB(A)	Existing 2017 Leq TNM dB(A)	Existing 2017 TNM + Structure- Borne Leq dB(A)	No Build 2040 Alternative Leq dB(A)	No Build 2040 TNM + Structure- Borne Leq dB(A)	No Build 2040 Increase over Existing Noise Level dB	Build Alternative Leq dB(A)	Build 2040 TNM + Structure- Borne Leq dB(A)	Build 2040 Increase over Existing Noise Level dB
R575	Best Western	E (70)	1	58	65	66	65	66	0	66	67	1
R693	Residence	B (65)	1	N/A	65	65	65	65	0	66	66	1
R694	Residence	B (65)	1	N/A	66	66	66	66	0	67	67	1
R695	Residence	B (65)	1	N/A	72	72	72	72	0	73	73	1
R696	Residence	B (65)	1	N/A	68	68	69	69	1	69	69	1
R697	Residence	B (65)	1	N/A	67	67	68	68	1	68	68	1
R698	Residence	B (65)	1	N/A	66	66	66	66	0	67	67	1
R699	Residence	B (65)	1	N/A	74	74	74	74	0	75	75	1
R700	Jon Storm Park	C (65)	1	66	66	69	65	68	-1	64	68	-1
R701	Jon Storm Park	C (65)	1	64	67	68	66	68	0	67	69	1
R702	Jon Storm Park	C (65)	1	63	67	68	66	68	0	68	69	1
R703	Jon Storm Park	C (65)	1	62	66	67	66	67	0	68	69	2
R704	Multi-Family	B (65)	1	N/A	67	67	68	68	1	69	69	2
R705	Multi-Family	B (65)	1	N/A	67	67	68	68	1	69	69	2
R706	Multi-Family	B (65)	1	N/A	68	68	69	69	1	70	70	2
R707	Multi-Family	B (65)	1	N/A	68	68	69	69	1	70	70	2
R708	Multi-Family	B (65)	1	N/A	57	57	58	58	1	58	58	1
R709	Multi-Family	B (65)	1	N/A	54	54	55	55	1	56	56	2
R710	Multi-Family	B (65)	1	N/A	67	67	67	67	0	68	68	1
R711	Multi-Family	B (65)	1	N/A	66	66	66	66	0	67	67	1
R712	Multi-Family	B (65)	1	N/A	48	48	49	49	1	49	49	1

Receptor ID	Land Use	ODOT Criteria NAAC	No. of Uses	Structure- Borne Leq dB(A)	Existing 2017 Leq TNM dB(A)	Existing 2017 TNM + Structure- Borne Leq dB(A)	No Build 2040 Alternative Leq dB(A)	No Build 2040 TNM + Structure- Borne Leq dB(A)	No Build 2040 Increase over Existing Noise Level dB	Build Alternative Leq dB(A)	Build 2040 TNM + Structure- Borne Leq dB(A)	Build 2040 Increase over Existing Noise Level dB
R713	Multi-Family	B (65)	1	N/A	51	51	52	52	1	53	53	2
R714	Multi-Family	B (65)	1	N/A	55	55	56	56	1	56	56	1
R715	Multi-Family	B (65)	1	N/A	56	56	56	56	0	57	57	1
R716	Multi-Family	B (65)	1	N/A	43	43	45	45	2	45	45	2
R717	Multi-Family	B (65)	1	N/A	43	43	45	45	2	45	45	2
R718	Multi-Family	B (65)	1	N/A	44	44	45	45	1	46	46	2
R719	Multi-Family	B (65)	1	N/A	45	45	46	46	1	46	46	1
R720	Multi-Family	B (65)	1	N/A	61	61	62	62	1	63	63	2
R721	Multi-Family	B (65)	1	N/A	60	60	61	61	1	61	61	1
R722	Multi-Family	B (65)	1	N/A	58	58	59	59	1	59	59	1
R723	Multi-Family	B (65)	1	N/A	57	57	58	58	1	59	59	2
R724	Multi-Family	B (65)	1	N/A	50	50	51	51	1	52	52	2
R725	Multi-Family	B (65)	1	N/A	49	49	51	51	2	52	52	3
R726	Multi-Family	B (65)	1	N/A	49	49	50	50	1	51	51	2
R727	Multi-Family	B (65)	1	N/A	46	46	47	47	1	48	48	2
R728	Multi-Family	B (65)	1	N/A	45	45	46	46	1	47	47	2
R729	Multi-Family	B (65)	1	N/A	45	45	46	46	1	46	46	1
R730	Multi-Family	B (65)	1	N/A	51	51	51	51	0	53	53	2
R731	Multi-Family	B (65)	1	N/A	52	52	52	52	0	54	54	2
R732	Multi-Family	B (65)	1	N/A	52	52	52	52	0	53	53	1
R733	Multi-Family	B (65)	1	N/A	52	52	52	52	0	53	53	1

Receptor ID	Land Use	ODOT Criteria NAAC	No. of Uses	Structure- Borne Leq dB(A)	Existing 2017 Leq TNM dB(A)	Existing 2017 TNM + Structure- Borne Leq dB(A)	No Build 2040 Alternative Leq dB(A)	No Build 2040 TNM + Structure- Borne Leq dB(A)	No Build 2040 Increase over Existing Noise Level dB	Build Alternative Leq dB(A)	Build 2040 TNM + Structure- Borne Leq dB(A)	Build 2040 Increase over Existing Noise Level dB
R734	Multi-Family	B (65)	1	N/A	44	44	45	45	1	46	46	2
R735	Multi-Family	B (65)	1	N/A	44	44	45	45	1	46	46	2
R736	Multi-Family	B (65)	1	N/A	56	56	57	57	1	57	57	1
R737	Multi-Family	B (65)	1	N/A	56	56	57	57	1	57	57	1
R738	Multi-Family	B (65)	1	N/A	54	54	55	55	1	56	56	2
R739	Multi-Family	B (65)	1	N/A	54	54	55	55	1	56	56	2
R740	Multi-Family	B (65)	1	N/A	59	59	60	60	1	60	60	1
R741	Multi-Family	B (65)	1	N/A	54	54	55	55	1	56	56	2
R742	Multi-Family	B (65)	1	N/A	52	52	53	53	1	53	53	1
R743	Multi-Family	B (65)	1	N/A	51	51	53	53	2	53	53	2
R744	Multi-Family	B (65)	1	N/A	51	51	52	52	1	53	53	2
R745	Multi-Family	B (65)	1	N/A	51	51	52	52	1	53	53	2
R746	Pool at Apts.	C (65)	1	N/A	51	51	52	52	1	53	53	2
R747	Multi-Family	B (65)	1	N/A	51	51	52	52	1	53	53	2
R748	Multi-Family	B (65)	1	N/A	53	53	54	54	1	55	55	2
R749	Multi-Family	B (65)	1	N/A	69	69	70	70	1	71	71	2
R750	Multi-Family	B (65)	1	N/A	69	69	70	70	1	71	71	2
R751	Multi-Family	B (65)	1	N/A	70	70	70	70	0	71	71	1
R752	Multi-Family	B (65)	1	N/A	70	70	71	71	1	71	71	1
R753	Multi-Family	B (65)	1	N/A	58	58	59	59	1	60	60	2
R754	Multi-Family	B (65)	1	N/A	54	54	55	55	1	56	56	2

Receptor ID	Land Use	ODOT Criteria NAAC	No. of Uses	Structure- Borne Leq dB(A)	Existing 2017 Leq TNM dB(A)	Existing 2017 TNM + Structure- Borne Leq dB(A)	No Build 2040 Alternative Leq dB(A)	No Build 2040 TNM + Structure- Borne Leq dB(A)	No Build 2040 Increase over Existing Noise Level dB	Build Alternative Leq dB(A)	Build 2040 TNM + Structure- Borne Leq dB(A)	Build 2040 Increase over Existing Noise Level dB
R755	Multi-Family	B (65)	1	N/A	68	68	68	68	0	69	69	1
R756	Multi-Family	B (65)	1	N/A	66	66	67	67	1	68	68	2
R757	Multi-Family	B (65)	1	N/A	48	48	48	48	0	49	49	1
R758	Multi-Family	B (65)	1	N/A	51	51	52	52	1	53	53	2
R759	Multi-Family	B (65)	1	N/A	56	56	56	56	0	57	57	1
R760	Multi-Family	B (65)	1	N/A	57	57	58	58	1	58	58	1
R761	Multi-Family	B (65)	1	N/A	45	45	46	46	1	46	46	1
R762	Multi-Family	B (65)	1	N/A	45	45	46	46	1	46	46	1
R763	Multi-Family	B (65)	1	N/A	46	46	47	47	1	47	47	1
R764	Multi-Family	B (65)	1	N/A	46	46	47	47	1	47	47	1
R765	Multi-Family	B (65)	1	N/A	62	62	63	63	1	64	64	2
R766	Multi-Family	B (65)	1	N/A	61	61	62	62	1	63	63	2
R767	Multi-Family	B (65)	1	N/A	59	59	60	60	1	60	60	1
R768	Multi-Family	B (65)	1	N/A	58	58	59	59	1	60	60	2
R769	Multi-Family	B (65)	1	N/A	50	50	51	51	1	53	53	3
R770	Multi-Family	B (65)	1	N/A	50	50	51	51	1	52	52	2
R771	Multi-Family	B (65)	1	N/A	50	50	51	51	1	52	52	2
R772	Multi-Family	B (65)	1	N/A	47	47	48	48	1	49	49	2
R773	Multi-Family	B (65)	1	N/A	46	46	47	47	1	48	48	2
R774	Multi-Family	B (65)	1	N/A	46	46	47	47	1	48	48	2
R775	Multi-Family	B (65)	1	N/A	56	56	56	56	0	57	57	1

Receptor ID	Land Use	ODOT Criteria NAAC	No. of Uses	Structure- Borne Leq dB(A)	Existing 2017 Leq TNM dB(A)	Existing 2017 TNM + Structure- Borne Leq dB(A)	No Build 2040 Alternative Leq dB(A)	No Build 2040 TNM + Structure- Borne Leq dB(A)	No Build 2040 Increase over Existing Noise Level dB	Build Alternative Leq dB(A)	Build 2040 TNM + Structure- Borne Leq dB(A)	Build 2040 Increase over Existing Noise Level dB
R776	Multi-Family	B (65)	1	N/A	55	55	56	56	1	56	56	1
R777	Multi-Family	B (65)	1	N/A	54	54	54	54	0	55	55	1
R778	Multi-Family	B (65)	1	N/A	54	54	54	54	0	55	55	1
R779	Multi-Family	B (65)	1	N/A	45	45	46	46	1	47	47	2
R780	Multi-Family	B (65)	1	N/A	45	45	46	46	1	47	47	2
R781	Multi-Family	B (65)	1	N/A	57	57	58	58	1	59	59	2
R782	Multi-Family	B (65)	1	N/A	57	57	58	58	1	59	59	2
R783	Multi-Family	B (65)	1	N/A	56	56	57	57	1	58	58	2
R784	Multi-Family	B (65)	1	N/A	56	56	57	57	1	57	57	1
R785	Multi-Family	B (65)	1	N/A	61	61	62	62	1	62	62	1
R786	Multi-Family	B (65)	1	N/A	60	60	61	61	1	61	61	1
R787	Multi-Family	B (65)	1	N/A	54	54	56	56	2	56	56	2
R788	Multi-Family	B (65)	1	N/A	54	54	55	55	1	56	56	2
R789	Multi-Family	B (65)	1	N/A	54	54	55	55	1	56	56	2
R790	Multi-Family	B (65)	1	N/A	54	54	55	55	1	56	56	2
R791	Multi-Family	B (65)	1	N/A	54	54	55	55	1	56	56	2
R792	Multi-Family	B (65)	1	N/A	54	54	55	55	1	56	56	2
R793	Multi-Family	B (65)	1	N/A	70	70	71	71	1	72	72	2
R794	Multi-Family	B (65)	1	N/A	70	70	71	71	1	72	72	2
R795	Multi-Family	B (65)	1	N/A	71	71	71	71	0	72	72	1
R796	Multi-Family	B (65)	1	N/A	71	71	72	72	1	72	72	1

Receptor ID	Land Use	ODOT Criteria NAAC	No. of Uses	Structure- Borne Leq dB(A)	Existing 2017 Leq TNM dB(A)	Existing 2017 TNM + Structure- Borne Leq dB(A)	No Build 2040 Alternative Leq dB(A)	No Build 2040 TNM + Structure- Borne Leq dB(A)	No Build 2040 Increase over Existing Noise Level dB	Build Alternative Leq dB(A)	Build 2040 TNM + Structure- Borne Leq dB(A)	Build 2040 Increase over Existing Noise Level dB
R797	Multi-Family	B (65)	1	N/A	59	59	60	60	1	61	61	2
R798	Multi-Family	B (65)	1	N/A	55	55	56	56	1	57	57	2
R799	Multi-Family	B (65)	1	N/A	68	68	69	69	1	70	70	2
R800	Multi-Family	B (65)	1	N/A	67	67	68	68	1	69	69	2
R801	Multi-Family	B (65)	1	N/A	51	51	52	52	1	53	53	2
R802	Multi-Family	B (65)	1	N/A	53	53	54	54	1	55	55	2
R803	Multi-Family	B (65)	1	N/A	57	57	57	57	0	58	58	1
R804	Multi-Family	B (65)	1	N/A	58	58	59	59	1	59	59	1
R805	Multi-Family	B (65)	1	N/A	47	47	48	48	1	49	49	2
R806	Multi-Family	B (65)	1	N/A	48	48	49	49	1	50	50	2
R807	Multi-Family	B (65)	1	N/A	49	49	50	50	1	51	51	2
R808	Multi-Family	B (65)	1	N/A	50	50	50	50	0	51	51	1
R809	Multi-Family	B (65)	1	N/A	63	63	64	64	1	65	65	2
R810	Multi-Family	B (65)	1	N/A	62	62	63	63	1	64	64	2
R811	Multi-Family	B (65)	1	N/A	60	60	61	61	1	61	61	1
R812	Multi-Family	B (65)	1	N/A	59	59	60	60	1	61	61	2
R813	Multi-Family	B (65)	1	N/A	52	52	53	53	1	55	55	3
R814	Multi-Family	B (65)	1	N/A	52	52	53	53	1	54	54	2
R815	Multi-Family	B (65)	1	N/A	53	53	53	53	0	54	54	1
R816	Multi-Family	B (65)	1	N/A	51	51	51	51	0	52	52	1
R817	Multi-Family	B (65)	1	N/A	50	50	51	51	1	52	52	2

Receptor ID	Land Use	ODOT Criteria NAAC	No. of Uses	Structure- Borne Leq dB(A)	Existing 2017 Leq TNM dB(A)	Existing 2017 TNM + Structure- Borne Leq dB(A)	No Build 2040 Alternative Leq dB(A)	No Build 2040 TNM + Structure- Borne Leq dB(A)	No Build 2040 Increase over Existing Noise Level dB	Build Alternative Leq dB(A)	Build 2040 TNM + Structure- Borne Leq dB(A)	Build 2040 Increase over Existing Noise Level dB
R818	Multi-Family	B (65)	1	N/A	50	50	50	50	0	51	51	1
R819	Multi-Family	B (65)	1	N/A	57	57	58	58	1	59	59	2
R820	Multi-Family	B (65)	1	N/A	57	57	57	57	0	58	58	1
R821	Multi-Family	B (65)	1	N/A	56	56	57	57	1	58	58	2
R822	Multi-Family	B (65)	1	N/A	56	56	57	57	1	58	58	2
R823	Multi-Family	B (65)	1	N/A	49	49	50	50	1	50	50	1
R824	Multi-Family	B (65)	1	N/A	48	48	49	49	1	50	50	2
R825	Multi-Family	B (65)	1	N/A	59	59	60	60	1	61	61	2
R826	Multi-Family	B (65)	1	N/A	60	60	60	60	0	61	61	1
R827	Multi-Family	B (65)	1	N/A	57	57	58	58	1	59	59	2
R828	Multi-Family	B (65)	1	N/A	56	56	57	57	1	58	58	2
R829	Multi-Family	B (65)	1	N/A	62	62	63	63	1	63	63	1
R830	Multi-Family	B (65)	1	N/A	61	61	62	62	1	62	62	1
R831	Multi-Family	B (65)	1	N/A	59	59	60	60	1	61	61	2
R832	Multi-Family	B (65)	1	N/A	58	58	59	59	1	60	60	2
R833	Multi-Family	B (65)	1	N/A	58	58	59	59	1	60	60	2
R834	Multi-Family	B (65)	1	N/A	58	58	59	59	1	60	60	2
R835	Multi-Family	B (65)	1	N/A	58	58	59	59	1	60	60	2
R836	Multi-Family	B (65)	1	N/A	59	59	60	60	1	60	60	1
R837	Multi-Family	B (65)	1	N/A	61	61	62	62	1	63	63	2
R838	Multi-Family	B (65)	1	N/A	68	68	69	69	1	69	69	1

Receptor ID	Land Use	ODOT Criteria NAAC	No. of Uses	Structure- Borne Leq dB(A)	Existing 2017 Leq TNM dB(A)	Existing 2017 TNM + Structure- Borne Leq dB(A)	No Build 2040 Alternative Leq dB(A)	No Build 2040 TNM + Structure- Borne Leq dB(A)	No Build 2040 Increase over Existing Noise Level dB	Build Alternative Leq dB(A)	Build 2040 TNM + Structure- Borne Leq dB(A)	Build 2040 Increase over Existing Noise Level dB
R839	Multi-Family	B (65)	1	N/A	64	64	65	65	1	66	66	2
R840	Multi-Family	B (65)	1	N/A	63	63	64	64	1	65	65	2
R841	Multi-Family	B (65)	1	N/A	62	62	62	62	0	64	64	2
R842	Multi-Family	B (65)	1	N/A	61	61	62	62	1	63	63	2
R843	Multi-Family	B (65)	1	N/A	66	66	66	66	0	67	67	1
R844	Multi-Family	B (65)	1	N/A	65	65	66	66	1	67	67	2
R845	Multi-Family	B (65)	1	N/A	63	63	64	64	1	65	65	2
R846	Multi-Family	B (65)	1	N/A	63	63	63	63	0	64	64	1
R847	Multi-Family	B (65)	1	N/A	65	65	66	66	1	67	67	2
R848	Multi-Family	B (65)	1	N/A	64	64	65	65	1	66	66	2
R849	Multi-Family	B (65)	1	N/A	63	63	63	63	0	64	64	1
R850	Multi-Family	B (65)	1	N/A	62	62	63	63	1	64	64	2
R851	Multi-Family	B (65)	1	N/A	60	60	61	61	1	62	62	2
R852	Multi-Family	B (65)	1	N/A	60	60	60	60	0	61	61	1
R853	Multi-Family	B (65)	1	N/A	57	57	58	58	1	59	59	2
R854	Multi-Family	B (65)	1	N/A	57	57	57	57	0	59	59	2
R855	Multi-Family	B (65)	1	N/A	61	61	62	62	1	63	63	2
R856	Multi-Family	B (65)	1	N/A	61	61	62	62	1	63	63	2
R857	Multi-Family	B (65)	1	N/A	59	59	60	60	1	61	61	2
R858	Multi-Family	B (65)	1	N/A	59	59	59	59	0	61	61	2
R859	Multi-Family	B (65)	1	N/A	61	61	62	62	1	63	63	2

Receptor ID	Land Use	ODOT Criteria NAAC	No. of Uses	Structure- Borne Leq dB(A)	Existing 2017 Leq TNM dB(A)	Existing 2017 TNM + Structure- Borne Leq dB(A)	No Build 2040 Alternative Leq dB(A)	No Build 2040 TNM + Structure- Borne Leq dB(A)	No Build 2040 Increase over Existing Noise Level dB	Build Alternative Leq dB(A)	Build 2040 TNM + Structure- Borne Leq dB(A)	Build 2040 Increase over Existing Noise Level dB
R860	Multi-Family	B (65)	1	N/A	61	61	61	61	0	62	62	1
R861	Multi-Family	B (65)	1	N/A	59	59	59	59	0	60	60	1
R862	Multi-Family	B (65)	1	N/A	58	58	59	59	1	60	60	2
R863	Multi-Family	B (65)	1	N/A	67	67	67	67	0	68	68	1
R864	Multi-Family	B (65)	1	N/A	66	66	67	67	1	68	68	2
R865	Multi-Family	B (65)	1	N/A	66	66	66	66	0	67	67	1
R866	Multi-Family	B (65)	1	N/A	65	65	66	66	1	67	67	2
R867	Multi-Family	B (65)	1	N/A	66	66	66	66	0	67	67	1
R868	Multi-Family	B (65)	1	N/A	66	66	66	66	0	67	67	1
R869	Multi-Family	B (65)	1	N/A	65	65	65	65	0	66	66	1
R870	Multi-Family	B (65)	1	N/A	65	65	65	65	0	66	66	1
R871	Multi-Family	B (65)	1	N/A	69	69	70	70	1	71	71	2
R872	Multi-Family	B (65)	1	N/A	69	69	70	70	1	70	70	1
R873	Multi-Family	B (65)	1	N/A	68	68	69	69	1	70	70	2
R874	Multi-Family	B (65)	1	N/A	68	68	68	68	0	69	69	1
R875	Multi-Family	B (65)	1	N/A	69	69	69	69	0	70	70	1
R876	Multi-Family	B (65)	1	N/A	69	69	69	69	0	70	70	1
R877	Multi-Family	B (65)	1	N/A	68	68	68	68	0	69	69	1
R878	Multi-Family	B (65)	1	N/A	67	67	68	68	1	69	69	2
R879(6b)	Residence	B (65)	1	N/A	58	58	57	57	-1	58	58	0
R880(6b)	Residence	B (65)	1	N/A	58	58	57	57	-1	58	58	0

Receptor ID	Land Use	ODOT Criteria NAAC	No. of Uses	Structure- Borne Leq dB(A)	Existing 2017 Leq TNM dB(A)	Existing 2017 TNM + Structure- Borne Leq dB(A)	No Build 2040 Alternative Leq dB(A)	No Build 2040 TNM + Structure- Borne Leq dB(A)	No Build 2040 Increase over Existing Noise Level dB	Build Alternative Leq dB(A)	Build 2040 TNM + Structure- Borne Leq dB(A)	Build 2040 Increase over Existing Noise Level dB
R881(6b)	Residence	B (65)	1	N/A	61	61	61	61	0	61	61	0
R882(6b)	Residence	B (65)	1	N/A	60	60	60	60	0	60	60	0
R883(6b)	Residence	B (65)	1	N/A	60	60	60	60	0	60	60	0
R884(6b)	Residence	B (65)	1	N/A	60	60	60	60	0	60	60	0
R885(6a)	Residence	B (65)	1	N/A	57	57	58	58	1	60	60	3
R886(6a)	Residence	B (65)	1	N/A	58	58	59	59	1	60	60	2
R887(6a)	Residence	B (65)	1	N/A	58	58	58	58	0	60	60	2
R888(6a)	Residence	B (65)	1	N/A	57	57	58	58	1	60	60	3
R889(6a)	Residence	B (65)	1	N/A	57	57	58	58	1	60	60	3
R890(6a)	Residence	B (65)	1	N/A	57	57	58	58	1	59	59	2
R891(6a)	Residence	B (65)	1	N/A	58	58	59	59	1	60	60	2
R892(6a)	Residence	B (65)	1	N/A	56	56	57	57	1	59	59	3
R893(6a)	Residence	B (65)	1	N/A	57	57	58	58	1	60	60	3
R894(6a)	Residence	B (65)	1	N/A	57	57	58	58	1	60	60	3
R895(6a)	Residence	B (65)	1	N/A	58	58	59	59	1	60	60	2
R896(6a)	Residence	B (65)	1	N/A	59	59	60	60	1	62	62	3

Notes: ## indicates noise level is at or above ODOT NAAC; * visual inspection indicated no outdoor use and construction of the building appears to be light frame with storm windows which FHWA has identified as resulting in 25 dB reduction when going from noise exposure outdoors to indoors (FHWA 2011).

6 Evaluation of Noise Abatement Measures

Build Alternative traffic noise levels would meet or exceed the NAAC for 322 residences (NAAC B) and 8 Category C recreational receptors. Traffic noise mitigation measures were evaluated for all of these receptors.

Traffic noise mitigation must be *feasible* and *reasonable* to be included in the Project's design. ODOT identifies that acoustical feasibility is achieved if a simple majority of impacted receptors achieve a 5 dB(A) or greater insertion loss (reduction) as a result of the mitigation measure. In addition, feasibility also considers engineering factors such as safety, topography, environmental constraints (i.e., presence of wetlands), drainage, and excessive barrier height. For noise abatement to be reasonable, ODOT must consider the viewpoints of the residents and property owners who would benefit from the mitigation measure, the cost-effectiveness of the abatement measure, and the ODOT noise reduction design goal of 7 dB(A) at one or more benefited properties.

6.1 Noise Abatement Considerations

Several noise abatement options were considered for noise impacts under the Build Alternative. Some of these options include speed restrictions, truck restrictions, and alignment changes. The posted speed limits on I-205 range from 65 mph west of the 10th Street interchange and 55 mph east of the 10th Street interchange. Reducing speeds on I-205 would defeat one of the purposes of the Project which is to improve mobility on the facility and reduced traffic speeds are unlikely to reduce noise levels enough to be noticeable. Truck restrictions are not feasible because I-205 is a major truck route for moving goods to, from, and through the Portland metropolitan area.

ODOT also considers changes in Project alignment to abate traffic noise; however, the Project alignment has been identified to minimize property impacts potentially resulting from the Project, such as acquisitions, potentially resulting from the Project. Furthermore, ODOT has found that shifting roadway alignments typically only results in shifting of noise impacts to other properties and is not a reasonable approach for abating traffic noise impacts.

Noise barriers, such as noise walls, are ODOT's preferred method for abating traffic noise impacts from a given project. For this Project, noise barriers in the form of noise walls were evaluated for all impacted receptors. For a noise wall to be feasible it must reduce noise levels at over 50 percent of impacted receptors by 5 dB(A) or greater. In order for a noise wall to be reasonable it must cost no more than \$25,000 per benefited receptor and achieve a 7 dB(A) reduction at one or more receptors. For cost estimation purposes one square foot of noise barrier is assumed to cost \$20 to construct for walls up to 16 feet in height. For walls taller than 16 feet, it is assumed that they would cost \$25 per square foot to construct.

Noise barriers were modeled at ODOT's right of way unless Project engineers indicated that such a location would not be constructible for a variety of reasons. For example, there are several drainages and some steep topography throughout the noise study area that would, in some cases, make siting a noise wall infeasible at the ODOT right of way. In such cases, noise walls have been modeled in locations nearer to the edge of the roadway; such shifts are discussed in the noise barrier narratives in Section 6.3.

As part of this noise analysis, as-built drawings were reviewed for the original I-205 facility to identify if noise barriers, either berms or walls, were included as mitigation in the original facility. This review did not identify any existing noise barriers part of the original I-205 facility.

6.2 Rural and Other Individual Impacted Receptors

Individual impacted receptors, or those that are isolated from more densely developed noise-sensitive land uses, are situated throughout the corridor. For these receptors it is not possible to feasibly provide noise abatement. In general, noise walls cannot be constructed cost effectively since there is not sufficient receptor density to justify the costs. For example, an individually impacted residence is allotted \$25,000 for noise abatement, which equates to a 10-foot tall noise wall with a maximum length of 125 feet. The FHWA has found that in order for a noise wall to feasibly reduce noise levels, it must block the line of sight from the receptor to the roadway noise source. To block line of sight, a noise barrier length would need to be roughly equivalent to four times the perpendicular distance from the proposed barrier to the receptor.

- The western portion of the project area, roughly the area from where Woodbine Road crosses beneath I-205 and the areas to the west, includes primarily rural low density developed areas. Impacts occur at the following receptors in this area: LT-1/ST-1, ST-2, ST-3, ST-4, R1, R2, R5 to R7, R12, R13, R14, R15, and R16. Other than LT-1/ST-1, which is a church/preschool/daycare, the remaining receptors are relatively isolated rural residences offset from one another by relatively large distances.
 - For LT-1/ST-1 HMMH completed ODOT's NAAC C calculation table, the results of which are included in Appendix D. LT-1/ST-1 would be located 186 feet from the realigned I-205 facility, further away than it currently is from I-205 as a result of the roadway realignment to cross the Tualatin River. To block the line of sight from LT-1/ST-1 to the roadway a noise wall length would need to be four times the perpendicular distance from the barrier, which equates to 744 feet. Even at a height of 8 feet, a barrier of this length would be unreasonably expensive according to ODOT's NAAC C calculation methodology. Therefore, this barrier is not feasible because it cannot be constructed tall enough and long enough to achieve a 5 dB(A) reduction.
- Another individual impact is predicted at R293, south of the I-205 NB lanes and 2,650 feet east of the 10th Street interchange. This receptor is not clustered with other noise-sensitive receptors; therefore, a noise barrier cannot be feasibly constructed to reduce noise levels in the area.
- Receptor R466 is the Atlas Immersion Academy School. A noise barrier cannot be constructed in this area because it would need to cross three driveways that accessing the school. A noise wall in this area with gaps in it would not feasibly reduce noise levels at the impacted receptor.
- Two receptors, R693 and R694, located northeast of the I-205 and OR 213 interchange, also have driveways accessing the nearby roadway. A noise wall cannot feasibly reduce noise levels because it would have gaps allowing for driveway access.

6.3 Noise Walls

Thirteen noise walls were evaluated to determine if they could feasibly and reasonably reduce noise levels at clusters of impacted receptors. Noise walls were evaluated along the ODOT right of way unless otherwise stated and were analyzed at heights ranging from 10 to 24 feet in height. Detailed noise wall tabular analyses are included in Appendix D. Table 10 provides a summary of the Project noise wall abatement analysis and the subsections that follow provide a narrative descriptions of these analyses. Noise walls identified as being feasible and reasonable per ODOT regulations are shown in red on Figure 18 to Figure 32 in Section 11 of this report. Walls analyzed in detail but not recommended are shown in black on these same figures.

ODOT's Noise Manual provides a special use area worksheet for NAAC C land uses applicable to some NAAC C uses, such as parks. Other than in the analysis described in Section 6.2, this worksheet was not used in this noise abatement analysis, because each of the NAAC C land uses are co-located behind noise walls with other noise-sensitive land uses, such as NAAC B residences with outdoor uses at apartment complexes (i.e., balconies and patios). For this reason, other impacted NAAC C receptors were treated as being equivalent to "one" residential unit for considerations of cost reasonableness calculations.

Table 10. Noise Wall Analysis Summary

Wall	No. of Impacts	Length (feet)	Height (feet)	No. of Impacts Benefited	Acoustically Feasible?	Achieves Acoustic Design Goal?	Total Benefits	Estimated Cost per Benefit	Cost Reasonable?	Wall Recommended ?
1	16	1,560	16	12	Yes	Yes	15	\$33,288	No	No
2	41	2,070	12	24	Yes	Yes	29	\$17,147	Yes	Yes
3	41	2,161	20	28	Yes	Yes	35	\$30,840	No	No
4	37	1,517	14	33	Yes	Yes	75	\$5,668	Yes	Yes
5	18	1,550	24	0	No	N/A	0	N/A	N/A	No
6a	55	3,697	14	45	Yes	Yes	74	\$14,024	Yes	Yes
6b	10	1,165	14	10	Yes	Yes	11	\$29,625	No	No
7	16	989	14	11	Yes	Yes	12	\$22,725	Yes	Yes
8	25	683	24	12	No	N/A	17	N/A	N/A	No
9	17	594	24	8	No	N/A	8	N/A	N/A	No
10	12	3,257	17	7	Yes	No	15	\$90,538	N/A	No
11	5	1,145	16	3	Yes	Yes	3	\$152,675	No	No
12	43	1,381	18	23	Yes	Yes	46	\$13,504	Yes	Yes

6.3.1 Noise Wall 1

Noise wall 1 was evaluated at a location 30 feet from the fog line of the NB I-205 lanes extending north from Blankenship Road 1,560 feet (see Figure 23). The noise wall was evaluated to determine if it could effectively abate noise at impacted residential receptors R49 to R53, R55 to R60, R62, R71, R73, R74, and R75. Analysis of noise walls in this area suggested a barrier positioned along the I-205 right of way cannot effectively block the line of sight to a sufficient number of impacted receptors to be feasible. As a result, ODOT elected to analyze the barrier closer to the I-205 travel lanes, at a position where a small earthen berm currently exists. Design engineers for the project indicated installation of a noise wall in this area would require removal and leveling of the top four feet of the berm. This adjustment in noise wall footing height was taken into consideration in this analysis. Noise modeling, as documented in the detailed tables in Appendix D, shows that a noise wall 14 feet or taller would reduce noise levels by 5 dB(A) or greater at over 50 percent of the impacted receptors and is therefore feasible. A noise wall 16 feet tall and 1,560 feet long, would achieve the design goal of a 7 dB(A) reduction at one or more receptors, would benefit 15 receptors, and would cost \$499,320 or \$33,288 per benefited receptor. Noise wall 1 would be feasible but not reasonable because it would exceed the ODOT guideline maximum of \$25,000 per benefited receptor, and is therefore not recommended for inclusion in the Project design at this time.

6.3.2 Noise Wall 2

Noise wall 2 was evaluated along the north side of the SB I-205 lanes where I-205 is elevated above the surrounding land uses and then would jog further away from I-205 to the facilities right of way (see Figure 23). The noise wall would extend north from where I-205 crosses Blankenship Road approximately 2,070 feet. The noise wall would provide shielding to impacted residential receptors and an apartment pool IDs ST-5a, ST-5b, R20 to R41, R63 to R68, R76 to R81, and R96 to R101. Noise modeling, as documented in the detailed tables in Appendix D, shows that the noise wall at 12 feet would reduce noise levels by 5 dB(A) or greater at over 50 percent of the impacted receptors and is therefore feasible. A 12-foot tall noise wall, 2,070 feet long, would also achieve the design goal of 7 dB(A) reduction at one or more receptors, would benefit 29 receptors, and would cost \$497,260 or \$17,147 per benefited receptor. Noise wall 2 would be both feasible and reasonable and is recommended for inclusion in the Project design. Note that the residential equivalency for the pool was considered to be one for the purposes of this analysis; however, even without its inclusion the noise wall would still be feasible and reasonable.

6.3.3 Noise Wall 3

Noise wall 3 was evaluated at a location 30 feet from the fog line of the I-205 NB lanes (See Figure 23 and Figure 24). The noise wall would extend south from where I-205 crosses Blankenship Road approximately 2,161 feet. The noise wall was analyzed to evaluate noise abatement at impacted residential receptor IDs ST-7,

R114 to R124, R126 to R131, R133 to R150, R152, R153, and R155 to R1557. Initial analysis of noise walls in this area identified that a barrier positioned along the I-205 right of way cannot effectively block the line of sight to a sufficient number of impacted receptors to be feasible. As a result, ODOT elected to analyze the barrier closer to the I-205 travel lanes, at a position where a small earthen berm currently exists. Design engineers for the project indicated installation of a noise wall in this area would require removal and leveling of the top four feet of the berm. This adjustment in noise wall footing height was taken into consideration in this analysis. Noise modeling, as documented in the detailed tables in Appendix D, shows that a noise wall 20 feet tall would reduce noise levels by 5 dB(A) or greater at over 50 percent of the impacted receptors and is therefore feasible. The 20-foot tall noise wall, 2,160 feet long, would achieve the design goal of 7 dB(A) reduction at one or more receptors, would benefit 35 receptors, and would cost \$1,079,400 or \$30,840 per benefited receptor. Noise wall 3 would be feasible but not reasonable because it would exceed the ODOT guideline maximum of \$25,000 per benefited receptor, and is therefore not recommended for inclusion in the Project design at this time.

6.3.4 Noise Wall 4

Noise wall 4 was evaluated along the north side of the SB I-205 lanes where the facility is on elevated topography (See Figure 23 and Figure 24). The noise wall would extend south from where I-205 crosses Blankenship Road approximately 1,518 feet. Preliminary engineering identified that the barrier would need to stop at this point because of utility and/or drainage requirements. The noise wall would provide shielding to impacted residential receptors IDs R168, R169, R171, R172, R174, R175, R177, R178, R180, R181, R183, R187, R189, R191, R193, R195, R197, R199, R201, R203, R207, R209 to R211, R213, R215 to R217, R221 to R223, R226, R229, R232, R235, and R271 to R273. Noise modeling, as documented in the detailed tables in Appendix D, shows that at 10 feet or taller the noise wall would reduce noise levels by 5 dB(A) or greater at over 50 percent of the impacted receptors and therefore would be feasible. A 14-foot tall noise wall, 1,517 feet long, would achieve the design goal of 7 dB(A) reduction at one or more receptors, would benefit 75 receptors, and would cost \$425,120 or \$5,688 per benefited receptor. Noise wall 4 would be both feasible and reasonable and is recommended for inclusion in the Project design.

6.3.5 Noise Wall 5

Noise wall 5 was evaluated along the NB I-205 right of way extending northwest from 10th Street 1,550 feet (see Figure 24 and Figure 25). The noise wall would provide shielding to impacted residential receptors IDs ST-8, R274 to R285, and R288 to R291. I-205 is at a higher elevation than the impacted receptors in this area and the topography between them is below both. At the ODOT right of way, the barrier would be approximately 10 feet below the elevation of the receptors and further below the highway. The noise wall cannot be located closer to the I-205 mainline due to the on-ramp from 10th Street to I-205 NB. As a result, a noise barrier even at 24 feet tall



6.3.6 Noise Wall 6a

Noise wall 6a was evaluated along the north side of the SB I-205 lanes 3,697 feet south of the 10th Street Interchange and located on a ridge at the SB I-205 right-ofway (See Figure 26, Figure 27, and Figure 28). Initially noise wall 6a and noise wall 6b were a continuous noise barrier; however, detailed survey of the are identified that an approximately 100 foot wide gap would be needed due to steep topography where a drainage passes through the area. For this reason the noise wall was divided into noise walls 6a and 6b. The noise wall would extend south from the Sunset Avenue overcrossing along a ridge between Imperial Drive and the I-205 SB lanes for 3,697 feet. The noise wall would provide shielding to impacted residential receptors IDs ST-9, R306, R310, R311, R322 to R330, R333, R337 to R352, R360 to R364, R371 to R386, R395, R404, R405, and R423. Noise modeling, as documented in the detailed tables in Appendix D, shows that at 10 feet or taller the noise wall would reduce noise levels by 5 dB(A) or greater at over 50 percent of the impacted receptors and therefore would be feasible. A 14-foot tall noise wall, 3,697 feet long, would achieve the design goal of 7 dB(A) reduction at one or more receptors, would benefit 74 receptors, and would cost \$1,037,740 or \$14,024 per benefited receptor. Noise wall 6a would be both feasible and reasonable and is recommended for inclusion in the Project design.

6.3.7 Noise Wall 6b

Noise wall 6b was evaluated along the north side of the SB I-205 lanes beginning the drainage gully described in Section 6.3.7. (See Figure 26). The noise wall would extend along a ridge between Imperial Drive and the I-205 SB lanes for 1,165 feet. The noise wall would provide shielding to impacted residential receptors IDs R296 to R305. Noise modeling, as documented in the detailed tables in Appendix D, shows that at 12 feet or taller the noise wall would reduce noise levels by 5 dB(A) or greater at over 50 percent of the impacted receptors and therefore would be feasible. A 14-foot tall noise wall, 1,165 feet long, would achieve the design goal of 7 dB(A) reduction at one or more receptors, would benefit 11 receptors, and would cost \$325,880 or \$29,625 per benefited receptor. Noise wall 6b would be feasible but not reasonable because it would exceed the ODOT guideline maximum of \$25,000 per benefited receptor, and is therefore not recommended for inclusion in the Project design at this time.

6.3.8 Noise Wall 7

Noise wall 7 was evaluated along the north side of the SB I-205 right of way extending 959 feet to the east from where Sunset Avenue crosses I-205 (See Figure 28). The noise wall would provide shielding to impacted residential receptor IDs R423, R426, R427, R429, R432, R440, R442 to R449, R452, and R453. The

impacted receptors are situated on a ridge overlooking I-205 below. Detailed topographic survey of the area was conducted to ascertain engineering feasibility. The noise wall location analyzed is the most feasible from an engineering perspective. Noise modeling, as documented in the detailed tables in Appendix D, shows that at 14 feet or taller the noise wall would reduce noise levels by 5 dB(A) or greater at over 50 percent of the impacted receptors and therefore would be feasible. A 14-foot tall noise wall, 989 feet long, would achieve the design goal of 7 dB(A) reduction at one or more receptors, would benefit 12 receptors, and would cost \$272,700 or \$22,725 per benefited receptor. Noise wall 7 would be both feasible and reasonable and is recommended for inclusion in the Project design.

6.3.9 Noise Wall 8

Noise wall 8 was evaluated north of the I-205 SB lanes between A Street and OR 43, in an area where the existing Broadway Bridge overpass would be removed as part of the project (See Figure 29). ODOT obtained detailed survey data to identify the specific height of the footing of the noise wall in this area since there are steep slopes adjacent to the south between the on-ramp to I-205 SB from OR 43 and the noise sensitive receptors. The noise wall was evaluated to determine if it would effectively abate traffic noise at impacted residential receptor IDs R489 to R493, R496, R497, R501 to R507, R521 to R525, and R527 to R532. The impacted residences are situated on a ridge overlooking I-205 below. Noise modeling, as documented in the detailed tables in Appendix D, shows that even at 24 feet tall the noise wall would not reduce noise levels by 5 dB(A) or greater at over 50 percent of the impacted receptors and therefore would not be feasible per ODOT policy. For this reason noise wall 8 is not recommended for inclusion in the Project design.

6.3.10 Noise Wall 9

Noise Wall 9 would be located along the I-205 NB exit ramp to OR 43 and would provide shielding to impacted residential receptor IDs R467 to 483, apartment units at two separate structures (See Figure 29). Topography in the area includes a relatively steep slope as one moves away from I-205 towards the apartments and down the exit ramp. Noise modeling, as documented in the detailed tables in Appendix D, shows that even at 24 feet the noise wall would not reduce noise levels by 5 dB(A) or greater at over 50 percent of the impacted receptors and therefore would not be feasible. Noise wall 9 is not recommended for inclusion in the Project design at this time.

6.3.11 Noise Wall 10

Noise wall 10 was evaluated along the north side of the I-205 Abernethy Bridge structure adjacent to the SB I-205 lanes and exit ramps to OR 43 and OR 99E (See Figure 29 and Figure 30). The Abernethy structure noise wall would provide shielding to impacted receptors located north of the bridge on both sides of the Willamette River and would be 3,257 feet long. Bridge deck noise that emanates through the deck itself cannot be abated with a noise wall on the structure. For this reason, the

contribution of bridge deck noise was analyzed via a noise monitoring effort as described in Section 4.2.1. Structure-borne noise was added to the TNM noise levels for receptors near the bridge as to not overestimate the reductions in traffic noise that would be expected with a noise wall on the bridge. Noise wall heights ranging from 9 feet to 17 feet were evaluated. Design engineers identified (HDR 2017a) that a 17-foot on structure barrier is as tall as feasible without reinforcing the structure to accommodate the barrier which is considered infeasible. The noise wall would provide shielding to impacted residential receptors and Jon Storm Park, specifically:

- Residential IDs: R552, R553, R557, R562 to R564, and R571
- Jon Storm Park outdoor use areas IDs: ST-13 and R700 to R703

Noise modeling, as documented in the detailed tables in Appendix D, shows that even at 15 feet or taller the noise wall would reduce noise levels by 5 dB(A) or greater at over 50 percent of the impacted receptors and is therefore feasible. However, even at 17-feet tall a noise wall would not achieve the design goal of 7 dB(A) reduction at one or more receptors, and at 17-feet tall a noise wall would cost \$90,538 per benefitted receptor which is unreasonably expensive for noise abatement. For these reasons noise wall 10 is not recommended for inclusion in the Project design at this time.

6.3.12 Noise Wall 11

Noise wall 11 was evaluated along the north side of the SB I-205 right of way to provide shielding to noise-sensitive receptors situated in the northeast quadrant of the I-205 and OR 213 interchange (See Figure 32). The noise wall would provide shielding to impacted residential receptor IDs R695 to R699. Noise modeling, as documented in the detailed tables in Appendix D, shows that at 16 feet or taller a noise wall would reduce noise levels by 5 dB(A) or greater at over 50 percent of the impacted receptors and therefore would be feasible. A 16-foot tall noise wall, 1,145 feet long, would achieve the design goal of 7 dB(A) reduction at one or more receptors, would benefit three receptors, and would cost \$458,025 or \$152,675 per benefited receptor. Noise wall 11 would be feasible but would not be reasonable because it would exceed the ODOT guideline maximum of \$25,000 per benefited receptor and is therefore not recommended for inclusion in the Project design.

6.3.13 Noise Wall 12

Noise wall 12 was evaluated along the north side of the SB I-205 right of way to provide shielding to the Grand Cove Development, specifically the Edgewater at the Cove Apartments, in Oregon City (See Figure 31). The apartment development is currently under construction and is behind the Oregon City Shopping Center, east of OR 99E. Several units have balconies or patios that will face I-205, resulting in impacts at 43 outdoor use areas (i.e., balconies or patios). Receptor IDs R704 to R706, R710, R711, R749 to R752, R755, R756, R793 to R796, R799, R800, R809, R838 to R840, R843 to R845, R847, R848, and R863 to R878 are predicted to exceed the NAAC at the complex. Noise modeling, as documented in the detailed

tables in Appendix D, shows that at 18 feet or taller a noise wall would reduce noise levels by 5 dB(A) or greater at over 50 percent of the impacted receptors and therefore would be feasible. An 18-foot tall noise wall, 1,381 feet long, would achieve the design goal of 7 dB(A) reduction at one or more receptors, would benefit 46 receptors, and would cost \$621,200 or \$13,504 per benefited receptor. Noise wall 12 would be both feasible and reasonable and is recommended for inclusion in the Project design.

7 Construction Noise and Vibration Analysis

Analysis of temporary construction noise and vibration impacts was completed for the Project. This effort included a qualitative assessment of noise and vibration from general construction of the roadway as well as a semi-quantitative analysis of blasting noise and vibration associated with the rock cut.

7.1 General Construction Noise and Vibration

If the Build Alternative were constructed sensitive land uses and structures would be exposed to temporarily elevated noise and vibration levels which may be a source of annoyance to the public.

Construction noise would be the result of operating construction equipment along the Project right of way. Noise levels from construction equipment would be dependent upon several factors such as the type of equipment, construction schedule, and distance to the equipment in use for the various Project construction activities.

Temporary construction vibration, similar to construction noise, would result in temporary elevated vibration levels; however, construction vibration attenuates more quickly with distance than noise. As a result, only sensitive structures in much closer proximity to the Project could be potentially impacted by construction vibration.

Typical construction equipment maximum noise (L_{max}) and vibration (peak particle velocity in inches per second [ppv]) levels are provided in Table 11 and Table 12, respectively.

Equipment Description	Impulsive Noise Device? ¹	Acoustical use Factor (%) ²	Specified L _{max} @ 50ft (dB(A), slow) ³	Actual Measured L _{max} @ 50ft (dB(A), slow)⁴
All Other Equipment > 5 HP	No	50	85	-N/A-
Auger Drill Rig	No	20	85	84
Backhoe	No	40	80	78

Table 11. Typical Construction Equipment Noise Levels

Equipment Description	Impulsive Noise Device? ¹	Acoustical use Factor (%)²	Specified L _{max} @ 50ft (dB(A), slow) ³	Actual Measured L _{max} @ 50ft (dB(A), slow)⁴
Bar Bender	No	20	80	-N/A-
Blasting	Yes	-N/A-	94	-N/A-
Boring Jack Power Unit	No	50	80	83
Chain Saw	No	20	85	84
Clam Shovel (dropping)	Yes	20	93	87
Compactor (ground)	No	20	80	83
Compressor (air)	No	40	80	78
Concrete Batch Plant	No	15	83	-N/A-
Concrete Mixer Truck	No	40	85	79
Concrete Pump Truck	No	20	82	81
Concrete Saw	No	20	90	90
Crane	No	16	85	81
Dozer	No	40	85	82
Drill Rig Truck	No	20	84	79
Drum Mixer	No	50	80	80
Dump Truck	No	40	84	76
Excavator	No	40	85	81
Flat Bed Truck	No	40	84	74
Front End Loader	No	40	80	79
Generator	No	50	82	81

Table 11. Typical Construction Equipment Noise Levels

Equipment Description	Impulsive Noise Device? ¹	Acoustical use Factor (%)²	Specified L _{max} @ 50ft (dB(A), slow) ³	Actual Measured L _{max} @ 50ft (dB(A), slow)⁴
Generator (<25KVA, VMS signs)	No	50	70	73
Gradall	No	40	85	83
Grader	No	40	85	-N/A-
Grapple (on backhoe)	No	40	85	87
Horizontal Boring Hydr. Jack	No	25	80	82
Hydra Break Ram	Yes	10	90	-N/A-
Impact Pile Driver	Yes	20	95	101
Jackhammer	Yes	20	85	89
Man Lift	No	20	85	75
Mounted Impact hammer (hoe ram)	Yes	20	90	90
Pavement Scarafier	No	20	85	90
Paver	No	50	85	77
Pickup Truck	No	40	55	75
Pneumatic Tools	No	50	85	85
Pumps	No	50	77	81
Refrigerator Unit	No	100	82	73
Rivit Buster/chipping gun	Yes	20	85	79
Rock Drill	No	20	85	81
Roller	No	20	85	80
Sand Blasting (Single Nozzle)	No	20	85	96

Table 11. Typical Construction Equipment Noise Levels

Equipment Description	Impulsive Noise Device? ¹	Acoustical use Factor (%) ²	Specified L _{max} @ 50ft (dB(A), slow) ³	Actual Measured L _{max} @ 50ft (dB(A), slow) ⁴
Scraper	No	40	85	84
Shears (on backhoe)	No	40	85	96
Slurry Plant	No	100	78	78
Slurry Trenching Machine	No	50	82	80
Soil Mix Drill Rig	No	50	80	-N/A-
Tractor	No	40	84	-N/A-
Vacuum Excavator (Vac- truck)	No	40	85	85
Vacuum Street Sweeper	No	10	80	82
Ventilation Fan	No	100	85	79
Vibrating Hopper	No	50	85	87
Vibratory Concrete Mixer	No	20	80	80
Vibratory Pile Driver	No	20	95	101
Warning Horn	No	5	85	83
Welder/Torch	No	40	73	74

Table 11. Typical Construction Equipment Noise Levels

Notes:

^{1.} An indication as to whether or not the equipment is an impact device.

^{2.} The acoustical usage factor to assume for modeling purposes.

^{3.} The specification "spec" limit for each piece of equipment expressed as an Lmax level in dB(A) at a reference distance of 50 feet.

^{4.} The measured "ACTUAL" noise level at 50 feet for each piece of equipment.

Source: FHWA, 2006

Equipment Description		PPV at 25 ft			
	Upper range	1.518			
	Typical	0.644			
Dila Driver (conic)	Upper range	0.734			
	Typical	0.170			
Clam shovel drop (slurry wall)		0.202			
	In soil	0.008			
	In rock	0.017			
Vibratory Roller		0.210			
Hoe Ram		0.089			
Large bulldozer		0.089			
Caisson drilling		0.089			
Loaded Trucks		0.076			
Jackhammer		0.035			
Small bulldozer		0.003			
Source: FTA, 2006					

Table 12. Typical Construction Equipment Vibration Levels

7.2 Rock Cut (Blasting) Noise and Vibration

Blasting would be required to accomplish the rock cut needed to accommodate the widening of the I-205 facility from the Sunset Avenue overpass to the A Street overpass. Consequently, blast noise and vibration could result in impacts to nearby sensitive land uses. Blast vibration is calculated using the methods described in the Department of Interior Office of Surface Mining Reclamation and Enforcement (OSMRE) Blasting Guidance Manual (OSMRE, 1987). This approach uses the Scaled Distance Equation, which describes the relationship between distance in feet from a blast to a receptor point and the maximum explosive charge weight in pounds (lbs) per 8 milliseconds delay period. Using this equation, preliminary engineering determined the rock cut could be accomplished, without damaging nearby structures, with charge weights (per 8-millisecond delay period) ranging from 2 lbs to 40 lbs (Shannon and Wilson, 2017). The estimated range of distances to impact thresholds for vibration damage are provided in Table 13 for these sizes of charges, and include an upper bounds (i.e., worst case) and lower bounds (i.e., best case). The damage thresholds are from the Federal Transmit Administration's guidance manual (FTA, 2006) and the vibration attenuation rates are based on OSMRE's construction vibration calculation methodology. The range of distances to air blast damage levels are provided in Table 14. Attenuation rates for air blasts (blast noise) were also calculated assuming a construction detonation. The blasting effort will be designed to



avoid structural damage at nearby sensitive areas while minimizing annoyance to the extent practicable.

Table 13. Estimated Blast Vibration Damage Distances

		Lower Bounds		Upper Bo	ounds
Building Category	Damage Threshold (PPV in/sec)	Distance to Damage Threshold for 2 Ib Charge (feet)	Distance to Damage Threshold for 40 Ib Charge (feet)	Distance to Damage Threshold for 2 lb Charge (feet)	Distance to Damage Threshold for 40 lb Charge (feet)
Reinforced-concrete, steel, or timber (Category 1)	0.5	16	71	67	300
Engineered concrete and masonry, no plaster (Category 2)	0.3	22	98	92	415
Non-engineered timber and masonry buildings	0.2	28	125	120	535
Buildings extremely susceptible to vibration damage	0.12	38	175	165	720

Source: Shannon and Wilson, 2017 and HMMH, 2018

Table 14. Estimated Blast Noise Levels

Charge Weight (lbs)	Damage Criteria [linear decibels (dBL)]	Annoyance Criteria (dBL)	Distance to Damage Criteria (feet)	Distance to Annoyance Criteria (feet)
9 lbs	151 dBL	120	4	325
40 lbs			7	550

Source: Shannon and Wilson, 2017 and HMMH, 2018

7.3 Construction Noise and Vibration Abatement

To avoid, minimize, and abate temporary adverse noise and vibration impacts the following measures, as described in Section 290.32 of ODOT standard specifications, should be taken to the extent practicable:

• The contractor shall comply with all state and local sound control and noise level rules, regulations, and ordinances that would apply to any work performed pursuant to the contract.

- The contractor must provide a detailed construction noise control plan, which would list all of the proposed construction equipment and types of construction activity.
- All equipment shall comply with pertinent equipment noise standards of the US Environmental Protection Agency (EPA).
- All equipment used shall have sound control devices no less effective than those provided on the original equipment. No equipment shall have unmuffled exhaust.
- All equipment shall comply with the pertinent equipment noise standards found in the FHWA Roadway Construction Noise Model (FHWA 2006).
- No construction shall be performed within 1,000 feet of an occupied dwelling unit on weekends, legal holidays, and between the hours of 10:00 p.m. and 7:00 a.m. on other days without the approval of ODOT's Project Manager.
- No pile driving, hoe ramming, or blasting operations shall be performed within 3,000 feet of any occupied dwelling unit on weekends, legal holidays, and between the hours of 10:00 p.m. and 7:00 a.m. on other days without the approval of ODOT's Project Manager.
- The noise from rock crushing or screening operations within 3,000 feet of any occupied dwelling shall be mitigated by strategic placement of material stockpiles between the operation and the affected dwelling or by other means approved by ODOT's Project Manager.

Should specific noise complaints occur during the construction of the project, one or more of the following noise abatement measures may be required at the Contractor's expense, as directed by ODOT's Project Manager:

- Locate stationary construction equipment as far from the nearby noise-sensitive properties as possible.
- Shut off idling equipment.
- Use alternative methods or equipment which produces less noise.
- Reschedule construction operations to avoid periods of noise annoyance identified in the complaint.
- Notify nearby residences whenever extremely noisy work will be occurring.
- Install temporary or portable acoustic barriers around stationary construction noise sources.
- Operate electric-powered equipment using line voltage power instead of on-site generators.

• Use manually adjustable or new broadband backup alarms which can be localized and focused to the danger zone and set to the low noise setting on all construction vehicles used during nighttime hours.

ODOT employs several methods to ensure successful and safe blasting, specifically (ODOT 2018):

- Require an approved blasting consultant to design/approve the blasting plans
- Perform pre-blast surveys. These are done either by or through the blasting contractor prior to the blast to document the condition of structures, foundations, and windows prior to exposure to vibration from blasting.
- ODOT reviews the submitted blasting plans prior to allowing the blasts to proceed
- Require ground vibration monitoring during the blasts
- Require that blast mats be laid upon the blast area to help contain flying rock Blasting contractors are licensed and bonded

ODOT will obtain construction noise variances as needed from West Linn, Oregon City, and Clackamas County.

8 Information for Local Government Officials

A copy of this report will be provided to the planning departments of the City of West Linn, the City of Oregon City, and Clackamas County by ODOT. By providing this to the local agencies responsible for planning in the areas analyzed it will be possible for these agencies to inform development.

At the time of the development of this report several vacant lands are located within the study area. Most of the vacant areas are located between the Stafford Road and 10th Street interchanges with several other smaller vacant areas between 10th Avenue and OR 43 as well as between OR 99E and OR 213. Table 15 provides the distances to ODOT's NAAC. Local agencies should consider whether residential (NAAC B), public use such as schools and parks (NAAC C), and commercial uses (NAAC E) are compatible in these areas.

I-205 Segment	Distance to NAAC B & C Threshold (feet)	Distance to NAAC E Threshold (feet)
Stafford Road to 10 th Street	420	150
10 th Street to OR 43	435	155
OR 99E to OR 213	480	170

Table 15. Distances to NAACs for Local Planning Agencies

9 Statement of Likelihood

Based on the findings of this noise technical report, ODOT will further evaluate traffic noise abatement measures in the form of noise walls during the final design of the roadway. At a minimum, the following seven locations will be reevaluated in detail:

- Noise Wall 2: North of Blankenship Road located parallel to the SB I-205 lanes.
- Noise Wall 4: South of Blankenship Road located parallel to the SB I-205 lanes.
- Noise Wall 6a: 4,750 feet south of the 10th Street interchange and located on a ridge at the SB I-205 right of way.
- Noise Wall 7: North of the Sunset Avenue overcrossing and west of the I-205 SB lanes extending for approximately 960 feet.

These noise walls would abate impacts at 108 residences and would benefit an additional 36 residences and the retirement home. Preliminary costs for the noise walls would total \$2,315,640. If during final design of the roadway these conditions have changed substantially, the abatement measure might no longer be feasible and reasonable and therefore not provided. A final decision will be made upon completion of the Project's final design, a cost estimating process, and the public involvement process.



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- HDR (2017). Email with link to traffic data on ProjectWise.
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- US Department of Transportation, John A. Volpe National Transportation Systems Center. July 2004. TNM Version 2.5 Addendum to Validation of FHWA's TNM® (TNM) Phase 1 report. Cambridge, MA. http://www.fhwa.dot.gov/environment/noise/traffic_noise_model/model_validation/

11 Figures







Figure 2. Comprehensive Plan Designations











Service Layer Credits: Data Resource Center/Metro; Environmental Systems Research Institute (ESRI)



Measurement and Receptor Location



I-205: Stafford Road to OR 99E Corridor Widening & Abernethy Bridge Seismic Retrofit / Widening Figure 3

Measured and Modeled Receptor Sites Existing Conditions and No Build Alternative





Figure 4. Existing Conditions/No Build Alternative





loor Noise Prediction Resul om Floor Noise Prediction Result Note: Grouped Receiver Labels are in order of Leader Occurrence.

Service Layer Credits: Data Resource Center/Metro; Environmental Systems Research Institute (ESRI)



Receptor Location Measurement and Receptor Location



I-205: Stafford Road to OR 99E Corridor Widening & Abernethy Bridge Seismic Retrofit / Widening Figure 4

Measured and Modeled Receptor Sites Existing Conditions and No Build Alternative





(735) ST-2 LT-1/ST-1



Service Layer Credits: Data Resource Center/Metro; Environmental Systems Research Institute (ESRI)



Receptor Location Measurement and Receptor Location



I-205: Stafford Road to OR 99E Corridor Widening & Abernethy Bridge Seismic Retrofit / Widening Figure 5

Measured and Modeled Receptor Sites Existing Conditions and No Build Alternative







Figure 6. Existing Conditions/No Build Alternative



loor Noise Prediction Result ttom Floor Noise Prediction Result Note: Grouped Receiver Labels are in order of Leader Occurrence.

Service Layer Credits: Data Resource Center/Metro; Environmental Systems Research Institute (ESRI)



Receptor Location Measurement and Receptor Location



I-205: Stafford Road to OR 99E Corridor Widening & Abernethy Bridge Seismic Retrofit / Widening Figure 6

Measured and Modeled Receptor Sites Existing Conditions and No Build Alternative





Figure 7. Existing Conditions/No Build Alternative







Service Layer Credits: Data Resource Center/Metro; Environmental Systems Research Institute (ESRI)



Receptor Location Measurement and Receptor Location



I-205: Stafford Road to OR 99E Corridor Widening & Abernethy Bridge Seismic Retrofit / Widening Figure 7

Measured and Modeled Receptor Sites Existing Conditions and No Build Alternative





Figure 8. Existing Conditions/No Build Alternative







Va 400 Feet 200

Receptor Location Measurement and Receptor Location

I-205: Stafford Road to OR 99E Corridor Widening & Abernethy Bridge Seismic Retrofit / Widening Figure 8

Measured and Modeled Receptor Sites Existing Conditions and No Build Alternative





Figure 9. Existing Conditions/No Build Alternative





Service Layer Credits: Data Resource Center/Metro; Environmental Systems Research Institute (ESRI)



Receptor Location Measurement and Receptor Location

I-205: Stafford Road to OR 99E Corridor Widening & Abernethy Bridge Seismic Retrofit / Widening Figure 9

Measured and Modeled Receptor Sites Existing Conditions and No Build Alternative





Figure 10. Existing Conditions/No Build Alternative





Service Layer Credits: Data Resource Center/Metro; Environmental Systems Research Institute (ESRI)



Receptor Location Measurement and Receptor Location



I-205: Stafford Road to OR 99E Corridor Widening & Abernethy Bridge Seismic Retrofit / Widening Figure 10

Measured and Modeled Receptor Sites Existing Conditions and No Build Alternative









Service Layer Credits: Data Resource Center/Metro; Environmental Systems Research Institute (ESRI)



Receptor Location Measurement and Receptor Location



I-205: Stafford Road to OR 99E Corridor Widening & Abernethy Bridge Seismic Retrofit / Widening Figure 11

Measured and Modeled Receptor Sites Existing Conditions and No Build Alternative





Figure 12. Existing Conditions/No Build Alternative







Receptor Location Measurement and Receptor Location



I-205: Stafford Road to OR 99E Corridor Widening & Abernethy Bridge Seismic Retrofit / Widening Figure 12 Measured and Modeled Receptor Sites Existing Conditions and No Build Alternative





Figure 13. Existing Conditions/No Build Alternative













I-205: Stafford Road to OR 99E Corridor Widening & Abernethy Bridge Seismic Retrofit / Widening Figure 13

Measured and Modeled Receptor Sites Existing Conditions and No Build Alternative





Figure 14. Existing Conditions/No Build Alternative



Service Layer Credits: Data Resource Center/Metro; Environmental Systems Research Institute (ESRI)





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Measured and Modeled Receptor Sites Existing Conditions and No Build Alternative











Service Layer Credits; Data Resource Center/Metro; Environmental Systems Research Institute (ESRI)



Q Receptor Location Measurement and Receptor Location



& Abernethy Bridge Seismic Retrofit / Widening

Figure 15

Measured and Modeled Receptor Sites Existing Conditions and No Build Alternative





I-205: Stafford Road to OR 99E Corridor Widening

Figure 16. Existing Conditions/No Build Alternative





Noise Wall Location (Feasible and Reasonable)

Noise Wall Location (Not Feasible or Reasonable)

Note: Sensitive receptors located behind not feasible or reasonable noise walls do not include any mitigation reduction in noise levels.



I-205: Stafford Road to OR 99E Corridor Widening & Abernethy Bridge Seismic Retrofit / Widening Figure 31 Measured and Modeled Receptor Sites Build Alternative



Figure 17. Existing Conditions/No Build Alternative





Service Layer Credits: Data Resource Center/Metro; Environmental Systems Research Institute (ESRI)



Receptor Location Measurement and Receptor Location



I-205: Stafford Road to OR 99E Corridor Widening & Abernethy Bridge Seismic Retrofit / Widening Figure 17

Measured and Modeled Receptor Sites Existing Conditions and No Build Alternative





Figure 18. Build Alternative





Noise Wall Location (Feasible and Reasonable)

Noise Wall Location (Not Feasible or Reasonable)

Note: Sensitive receptors located behind not feasible or reasonable noise walls do not include any mitigation reduction in noise levels.



I-205: Stafford Road to OR 99E Corridor Widening & Abernethy Bridge Seismic Retrofit / Widening Figure 18 Measured and Modeled Receptor Sites Build Alternative


Figure 19. Build Alternative





Impacted and 7 dBA or more Insertion Loss Impacted but Not Benefited Benefited but Not Impacted Not Benefited or Impacted

Impacted and 5 or 6 dBA Insertion Loss Impacted and 7 dBA or more Insertion Loss Benefited but Not Impacted Impacted but Not Benefited Not Benefited or Impacted

Noise Wall Location (Not Feasible or Reasonable)

Note: Sensitive receptors located behind not feasible or reasonable noise walls do not include any mitigation reduction in noise levels.



I-205: Stafford Road to OR 99E Corridor Widening & Abernethy Bridge Seismic Retrofit / Widening Figure 19 Measured and Modeled Receptor Sites Build Alternative





Figure 20. Build Alternative





Impacted and 5 or 6 dBA Insertion Loss Impacted and 7 dBA or more Insertion Loss Impacted but Not Benefited

Not Benefited or Impacted

Impacted and 5 or 6 dBA Insertion Loss Impacted and 7 dBA or more Insertion Loss Benefited but Not Impacted Impacted but Not Benefited

Noise Wall Location (Feasible and Reasonable)

Noise Wall Location (Not Feasible or Reasonable) Note:

Sensitive receptors located behind not feasible or reasonable noise walls do not include any mitigation reduction in noise levels.



I-205: Stafford Road to OR 99E Corridor Widening & Abernethy Bridge Seismic Retrofit / Widening Figure 20 Measured and Modeled Receptor Sites Build Alternative



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Figure 21. Build Alternative









Noise Wall Location (Not Feasible or Reasonable)

Note: Sensitive receptors located behind not feasible or reasonable noise walls do not include any miligation reduction in noise levels.



I-205: Stafford Road to OR 99E Corridor Widening & Abernethy Bridge Seismic Retrofit / Widening Figure 21 Measured and Modeled Receptor Sites Build Alternative





Figure 22. Build Alternative





Noise Wall Location (Not Feasible or Reasonable) Note:

Sensitive receptors located behind not feasible or reasonable noise walls do not include any miligation reduction in noise levels.



& Abernethy Bridge Seismic Retrofit / Widening Figure 22



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Measured and Modeled Receptor Sites Build Alternative

Figure 23. Build Alternative









Noise Wall Location (Feasible and Reasonable)

Noise Wall Location (Not Feasible or Reasonable)

Note: Sensitive receptors located behind not feasible or reasonable noise walls do not include any mitigation reduction in noise levels.



I-205: Stafford Road to OR 99E Corridor Widening & Abernethy Bridge Seismic Retrofit / Widening Figure 23 Measured and Modeled Receptor Sites Build Alternative





Figure 24. Build Alternative





Noise Wall Location (Feasible and Reasonable)

Noise Wall Location (Not Feasible or Reasonable)

Note: Sensitive receptors located behind not feasible or reasonable noise walls do not include any miligation reduction in noise levels.



I-205: Stafford Road to OR 99E Corridor Widening & Abernethy Bridge Seismic Retrofit / Widening Figure 24 Measured and Modeled Receptor Sites Build Alternative



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Figure 25. Build Alternative









Noise Wall Location (Feasible and Reasonable)

Noise Wall Location (Not Feasible or Reasonable)

Note: Sensitive receptors located behind not feasible or reasonable noise walls do not include any miligation reduction in noise levels.



I-205: Stafford Road to OR 99E Corridor Widening & Abernethy Bridge Seismic Retrofit / Widening Figure 25 Measured and Modeled Receptor Sites Build Alternative

hmmh



Figure 26. Build Alternative







Impacted and 7 dBA or more Insertion Loss Benefited but Not Impacted Impacted but Not Benefited Not Benefited or Impacted

Moise Wall Location (Feasible and Reasonable)

Noise Wall Location (Not Feasible or Reasonable)

Note: Sensitive receptors located behind not feasible or reasonable noise walls do not include any mitigation reduction in noise levels.



I-205: Stafford Road to OR 99E Corridor Widening & Abernethy Bridge Seismic Retrofit / Widening Figure 26 Measured and Modeled Receptor Sites Build Alternative



Figure 27. Build Alternative







Impacted but Not Benefited Not Benefited or Impacted

Noise Wall Location (Feasible and Reasonable)

Noise Wall Location (Not Feasible or Reasonable)

Note: Sensitive receptors located behind not feasible or reasonable noise walls do not include any mitigation reduction in noise levels.



I-205: Stafford Road to OR 99E Corridor Widening & Abernethy Bridge Seismic Retrofit / Widening Figure 27 Measured and Modeled Receptor Sites Build Alternative





Figure 28. Build Alternative





Impacted and 5 or 6 dBA Insertion Loss Impacted and 7 dBA or more Insertion Loss Benefited but Not Impacted Impacted but Not Benefited Not Benefited or Impacted





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Figure 29. Build Alternative





Note:

Sensitive receptors located behind not feasible or reasonable noise walls do not include any mitigation reduction in noise levels.



Figure 29 Measured and Modeled Receptor Sites Build Alternative





Figure 30. Build Alternative



Figure 31. Build Alternative







Impacted but Not Benefited Not Benefited or Impacted

Noise Wall Location (Feasible and Reasonable)

Noise Wall Location (Not Feasible or Reasonable)

Note: Sensitive receptors located behind not feasible or reasonable noise walls do not include any mitigation reduction in noise levels.



I-205: Stafford Road to OR 99E Corridor Widening & Abernethy Bridge Seismic Retrofit / Widening Figure 31 Measured and Modeled Receptor Sites Build Alternative

hmmh



Figure 32. Build Alternative





Noise Wall Location (Not Feasible or Reasonable)

Note: Sensitive receptors located behind not feasible or reasonable noise walls do not include any miligation reduction in noise levels.



& Abernethy Bridge Seismic Retrofit / Widening Figure 32

Measured and Modeled Receptor Sites Build Alternative





I-205: Stafford Road to OR 99E Corridor Widening

Figure 33. Structure-Borne Noise Measurement Locations



Measurement Location







I-205: Stafford Road to OR 99E Corridor Widening & Abernethy Bridge Seismic Retrofit / Widening Figure 33 Structure-Borne Noise Measurement Locations





Figure 34. Structure-Borne Analysis Schematic Drawing





Figure 35. Structure-Borne Analysis Drop of Rates Chart

Appendix A. Noise Measurement Data Sheets, Photographs, and NCHRP 791 Worksheets



SHORT-TERM NOISE MEASUREMENT DATA SHEET

PROJECT: K19786:I-205CW

JOB NO.:

309180.000

MEASUREMENT SITE NO.: ST-1 ADDRESS/DESCRIPTION: Southlake Church and Preschool

PERSONNEL: SRN DATE: 8/29/17

								12.0/20/11
#	Time	L _{eq} (dBA)	L _{min} (dBA)	L _{max} (dBA)	L ₁₀ (dBA)	L ₃₃ (dBA)	L ₅₀ (dBA)	L ₉₀ (dBA)
1	12:35:00	72.5	68.7	75.3	74.8	72.8	72.0	70.2
2	12:36:00	72.1	65.8	75.2	74.0	72.5	71.9	69.7
3	12:37:00	72.4	63.7	77.7	74.5	72.8	71.9	68.3
4	12:38:00	73.4	67.3	77.4	75.6	74.0	72.9	70.2
5	12:39:00	72.4	66.4	75.6	74.3	73.2	72.4	67.9
6	12:40:00	72.5	69.1	74.8	73.9	72.8	72.3	70.8
7	12:41:00	73.4	64.2	76.2	75.6	74.1	73.2	69.9
8	12:42:00	72.1	65.6	76.0	74.2	72.8	72.1	68.8
9	12:43:00	72.3	66.0	76.5	75.1	72.6	71.6	68.7
10	12:44:00	74.0	68.9	77.9	76.3	74.5	73.5	70.4
11	12:45:00	72.2	64.7	74.8	73.9	72.9	72.4	68.7
12	12:46:00	73.1	68.1	76.8	75.7	73.1	72.3	70.5
13	12:47:00	72.3	69.3	75.2	73.6	72.9	72.4	70.3
14	12:48:00	72.2	65.5	75.2	74.2	72.9	71.9	68.3
15	12:49:00	72.1	63.5	76.1	73.8	72.7	72.0	68.4
16	12:50:00	71.6	67.0	75.1	73.0	72.2	71.4	68.8
Tota	l for Period	72.6	63.5	77.9	74.5	73.1	72.3	69.4



JOB NO.: 309180.000

SHORT-TERM NOISE MEASUREMENT SITE LOG

ASSESSMENT AREA:	WEST LINN	MEASUREMENT SITE NO .:	ST-1				
ADDRESS:	1555 SW BORLAND ROAD						
OWNER:							
DESCRIPTION:	CHURCH AND PR	ESCHOOL					
NOISE SOURCES:	I-205 TRAFFIC						
NOISE MONITOR:	B&K 2250	S/N:	2579777				
MICROPHONE:	B&K						
CALIBRATOR:	B&K						
TEMP. RANGE (°F):	71	WEATHER CONDITIONS:	SUNNY				





Notes: I-205 dominant. Vehicles are visible in both directions of travel on I-205 from measurement site.









HARRIS MILLER MILLER & HANSON INC.



SHORT-TERM NOISE MEASUREMENT DATA SHEET

PROJECT: K19786:I-205CW

JOB NO.:

309180.000

MEASUREMENT SITE NO.: ST-2 ADDRESS/DESCRIPTION: 22400 Johnson Road

PERSONNEL: SRN DATE: 8/29/17

#	Time	L _{eq} (dBA)	L _{min} (dBA)	L _{max} (dBA)	L ₁₀ (dBA)	L ₃₃ (dBA)	L ₅₀ (dBA)	L ₉₀ (dBA)
1	13:24:00	66.4	63.9	70.1	67.8	66.8	66.3	64.6
2	13:25:00	65.4	62.5	67.4	66.7	65.8	65.4	63.7
3	13:26:00	65.1	62.3	67.2	66.5	65.7	65.2	63.0
4	13:27:00	66.1	64.3	68.4	67.0	66.5	66.1	65.0
5	13:28:00	65.8	62.5	68.6	67.2	66.2	65.7	64.1
6	13:29:00	65.6	62.9	67.3	66.7	65.9	65.5	64.1
7	13:30:00	65.5	63.4	67.5	66.6	65.8	65.4	64.3
8	13:31:00	65.4	60.9	68.1	67.1	65.9	65.2	62.8
9	13:32:00	65.4	63.3	67.8	66.7	65.8	65.1	63.8
10	13:33:00	65.1	62.6	67.0	66.3	65.5	65.1	63.8
11	13:34:00	65.3	63.6	66.9	66.1	65.6	65.3	64.3
12	13:35:00	65.0	62.8	67.0	65.9	65.3	64.9	63.9
13	13:36:00	65.6	63.5	68.0	66.7	65.8	65.4	64.4
14	13:37:00	65.1	61.6	66.9	66.0	65.6	65.3	63.3
15	13:38:00	65.9	63.9	68.5	67.3	66.2	65.7	64.4
16	13:39:00	65.0	61.7	68.1	66.8	65.5	64.9	62.4
17	13:40:00	64.8	61.1	66.7	65.9	65.3	64.9	62.9
18	13:41:00	64.9	62.9	67.2	66.1	65.2	64.8	63.7
19	13:42:00	65.4	63.3	67.1	66.4	65.7	65.4	64.2
20	13:43:00	65.2	62.1	67.0	66.3	65.6	65.2	63.6
21	13:44:00	65.4	62.6	67.5	66.5	65.7	65.4	64.2
22	13:45:00	65.3	61.4	67.5	66.7	65.7	65.2	63.4
23	13:46:00	65.6	63.9	67.8	66.7	65.8	65.4	64.3
24	13:47:00	65.1	62.2	68.4	66.8	65.5	64.8	63.3
25	13:48:00	64.9	62.4	67.5	66.1	65.2	64.7	63.5
26	13:49:00	64.7	59.7	66.9	66.0	65.4	65.0	62.0
27	13:50:00	65.0	62.5	66.5	65.8	65.4	65.0	63.7
28	13:51:00	65.6	63.3	67.4	66.6	65.9	65.5	64.4
29	13:52:00	65.7	63.3	68.0	66.9	66.1	65.6	64.3
Tota	I for Period	64.5	59.7	70.1	66.6	65.8	65.3	63.8



JOB NO.: 309180.000

SHORT-TERM NOISE MEASUREMENT SITE LOG

ASSESSMENT AREA:	WEST LINN	MEASUREMENT SITE NO .:	ST-2				
ADDRESS:	22400 JOHNSON ROAD						
OWNER:							
DESCRIPTION:	SINGLE-FAMILY F	RESIDENTIAL					
NOISE SOURCES:	I-205 TRAFFIC						
NOISE MONITOR:	LD 824	S/N:	A3975				
MICROPHONE:	GRAS						
CALIBRATOR:	CAL200						
TEMP. RANGE (°F):	61	WEATHER CONDITIONS:	SMOKEY				

SITE MAP:











HARRIS MILLER MILLER & HANSON INC.



SHORT-TERM NOISE MEASUREMENT DATA SHEET

PROJECT: K19786:I-205CW

JOB NO.:

309180.000

MEASUREMENT SITE NO.: ST-3

ADDRESS/DESCRIPTION: 22501 S. Grapevine Road

PERSONNEL: SRN DATE: 8/30/17

#	Time	L _{eq} (dBA)	L _{min} (dBA)	L _{max} (dBA)	L ₁₀ (dBA)	L ₃₃ (dBA)	L ₅₀ (dBA)	L ₉₀ (dBA)
1	9:38:07	62.5	60.6	64.4	63.7	63.0	62.5	61.3
2	9:39:07	62.1	60.1	65.3	63.3	62.5	62.0	61.1
3	9:40:07	63.1	61.3	65.2	64.0	63.4	63.0	62.2
4	9:41:07	62.5	60.4	67.1	63.6	62.7	62.3	61.3
5	9:42:07	62.6	60.7	64.1	63.7	63.0	62.6	61.4
6	9:43:07	62.8	60.5	65.2	63.9	63.1	62.7	61.4
7	9:44:07	61.9	60.0	63.9	63.0	62.3	61.8	60.4
8	9:45:07	62.7	61.2	66.6	63.8	62.8	62.4	61.4
9	9:46:07	62.9	61.5	64.6	63.8	63.2	62.8	62.1
10	9:47:07	63.2	61.7	65.5	64.2	63.6	63.2	62.2
11	9:48:07	64.5	61	70.6	67.0	64.3	63.6	62.2
12	9:49:07	63.0	61.3	67.3	63.9	62.9	62.6	62.0
13	9:50:07	62.9	60.9	65.9	64.0	62.9	62.6	61.7
14	9:51:07	65.1	61.1	74.0	68.8	63.6	62.7	61.4
15	9:52:07	63.1	61.1	67.7	64.9	63.0	62.6	61.6
Tota	l for Period	63.1	60.0	74.0	64.4	63.1	62.6	61.6



PROJECT: K19786:I-205CW

JOB NO.: 309180.000

SHORT-TERM NOISE MEASUREMENT SITE LOG

ASSESSMENT AREA:	WEST LINN	MEASUREMENT SITE NO .:	ST-3				
ADDRESS:	22501 S. GRAPEVINE ROAD						
OWNER:							
DESCRIPTION:	SINGLE-FAMILY F	RESIDENTIAL					
NOISE SOURCES:	I-205 TRAFFIC						
NOISE MONITOR:	LD 824	S/N:	A3975				
MICROPHONE:	GRAS						
CALIBRATOR:	CAL200						
TEMP. RANGE (°F):	61	WEATHER CONDITIONS:	CLOUDY				













HARRIS MILLER MILLER & HANSON INC.



SHORT-TERM NOISE MEASUREMENT DATA SHEET

PROJECT: K19786:I-205CW

JOB NO.:

309180.000

MEASUREMENT SITE NO.: ST-4 ADDRESS/DESCRIPTION: 23400 Johnson Road

PERSONNEL: SRN

ADD	RESS/DES	DA	ΓE: 8/30/17					
#	Time	L _{eq} (dBA)	L _{min} (dBA)	L _{max} (dBA)	L ₁₀ (dBA)	L ₃₃ (dBA)	L ₅₀ (dBA)	L ₉₀ (dBA)
1	10:16:00	64.7	62	75.4	65.9	64.7	64.0	63.0
2	10:17:00	64.5	61	67.6	66.1	64.8	64.3	62.5
3	10:18:00	64.2	60.5	66.3	65.4	64.6	64.2	62.5
4	10:19:00	64.6	57.7	69.4	66.2	65.2	64.6	61.1
5	10:20:00	63.2	58.4	65.7	64.7	63.8	63.3	60.3
6	10:21:00	63.5	59.8	66.3	65.4	64.2	63.0	61.1
7	10:22:00	63.5	56	66.8	65.0	64.4	63.8	57.5
8	10:23:00	63.6	58.8	65.9	65.3	64.2	63.4	61.2
9	10:24:00	63.8	59.8	66.5	65.3	64.3	63.8	62.1
10	10:25:00	63.8	60.7	66.9	65.5	64.2	63.6	62.0
11	10:26:00	63.3	55.1	66.1	64.9	64.2	63.4	60.3
12	10:27:00	64.4	54.5	69.1	67.2	64.8	64.2	57.0
13	10:28:00	63.8	61.3	66.2	64.9	64.2	63.7	62.2
14	10:29:00	64.1	57.1	71.6	65.9	64.3	63.5	59.6
15	10:30:00	63.8	60.1	67.7	66.0	64.4	63.4	61.2
Tota	l for Period	63.9	54.5	75.4	65.6	64.4	63.8	60.9



PROJECT: K19786:I-205CW

JOB NO.: 309180.000

SHORT-TERM NOISE MEASUREMENT SITE LOG

ASSESSMENT AREA:	WEST LINN	MEASUREMENT SITE NO .:	ST-4				
ADDRESS:	23400 JOHNSON ROAD						
OWNER:							
DESCRIPTION:	SINGLE-FAMILY F	RESIDENTIAL					
NOISE SOURCES:	I-205 TRAFFIC						
NOISE MONITOR:	LD 824	S/N:	A3975				
MICROPHONE:	GRAS						
CALIBRATOR:	CAL200						
TEMP. RANGE (°F):	63	WEATHER CONDITIONS:	CLOUDY				

SITE MAP:











HARRIS MILLER MILLER & HANSON INC.


PROJECT: K19786:I-205CW

JOB NO.:

309180.000

MEASUREMENT SITE NO.: ST-5a ADDRESS/DESCRIPTION: 2384 Margery Street

ADD	RESS/DE	DA	ΓE: 8/30/17					
#	Time	L _{eq} (dBA)	L _{min} (dBA)	L _{max} (dBA)	L ₁₀ (dBA)	L ₃₃ (dBA)	L ₅₀ (dBA)	L ₉₀ (dBA)
1	10:49:04	67.3	63.2	69.9	68.8	68.1	67.4	64.4
2	10:50:04	68	63.6	70.5	69.5	68.6	68.2	65.1
3	10:51:04	69.2	66.1	75.6	71.1	69.4	68.5	66.8
4	10:52:04	69	64.9	73.4	70.6	69.4	68.8	66.6
5	10:53:04	69.9	66.2	76	72.0	69.9	69.0	67.3
6	10:54:04	69.9	65.3	72.9	71.4	70.4	69.9	67.6
7	10:55:04	69.9	66.2	76.1	71.6	70.2	69.6	67.7
8	10:56:04	68.8	65.7	71.6	69.9	69.0	68.6	67.3
9	10:57:04	69.6	66.3	72.8	71.1	70.1	69.3	67.6
10	10:58:04	70	67.9	72.5	71.1	70.4	69.9	68.6
11	10:59:04	69.4	66.3	73.7	71.1	69.6	69.0	67.5
12	11:00:04	69.1	66.4	71.6	70.5	69.5	69.0	67.6
13	11:01:04	69.9	67.3	74.3	71.4	70.2	69.5	68.1
14	11:02:04	70.2	67.1	75.8	72.3	69.9	69.4	68.0
15	11:03:04	69.4	64.6	73.3	71.3	70.0	69.3	66.0
16	11:04:04	70	65.2	73.8	71.5	70.4	69.9	68.0
Tota	l for Period	69.4	63.2	76.1	71.0	69.7	69.1	67.1



JOB NO.: 309180.000

SHORT-TERM NOISE MEASUREMENT SITE LOG

ASSESSMENT AREA:	WEST LINN	MEASUREMENT SITE NO .:	ST-5A
ADDRESS:	2384 MARGERY S	STREET	
OWNER:			
DESCRIPTION:	SINGLE-FAMILY F	RESIDENTIAL	
NOISE SOURCES:	I-205 TRAFFIC		
NOISE MONITOR:	LD 824	S/N:	A3975
MICROPHONE:	GRAS		
CALIBRATOR:	CAL200		
TEMP. RANGE (°F):	63	WEATHER CONDITIONS:	PARTLY CLOUDY















PROJECT: K19786:I-205CW

JOB NO.:

309180.000

MEASUREMENT SITE NO.: ST-5b ADDRESS/DESCRIPTION: 2383 Margery Street

ADD	RESS/DE	DA	TE: 8/30/17					
#	Time	L _{eq} (dBA)	L _{min} (dBA)	L _{max} (dBA)	L ₁₀ (dBA)	L ₃₃ (dBA)	L ₅₀ (dBA)	L ₉₀ (dBA)
1	11:06:40	64.3	60.8	66.5	65.5	64.7	64.3	62.5
2	11:07:40	64.6	62	67.5	66.0	64.9	64.5	63.1
3	11:08:40	65	62.8	68.4	66.0	65.2	64.7	63.6
4	11:09:40	65.2	63.3	68.9	66.4	65.5	65.1	64.0
5	11:10:40	65.4	62.9	68.5	66.7	65.7	65.2	63.9
6	11:11:40	64.9	61.4	67.6	66.6	65.6	64.7	62.5
7	11:12:40	65.1	61.6	68.4	66.7	65.5	64.8	63.1
8	11:13:40	65	63	67.3	66.1	65.4	64.9	63.6
9	11:14:40	65.5	63	70.2	66.6	65.7	65.3	64.0
10	11:15:40	64.7	61.7	66.7	65.9	65.2	64.8	62.7
11	11:16:40	65.3	63	67.7	66.5	65.7	65.3	63.8
12	11:17:40	63.9	61	66.2	65.0	64.5	64.1	62.2
13	11:18:40	64.7	61.6	68.8	66.1	65.0	64.4	62.5
14	11:19:40	65	62.4	68.2	67.0	65.0	64.5	63.1
15	11:20:40	64.7	60.5	67.3	66.0	65.4	64.9	62.4
Tota	I for Period	64.9	60.5	70.2	66.2	65.3	64.8	63.1



JOB NO.: 309180.000

SHORT-TERM NOISE MEASUREMENT SITE LOG

ASSESSMENT AREA:	WEST LINN	MEASUREMENT SITE NO .:	ST-5B
ADDRESS:	2383 MARGERY S	STREET	
OWNER:			
DESCRIPTION:	SINGLE-FAMILY F	RESIDENTIAL	
NOISE SOURCES:	I-205 TRAFFIC		
NOISE MONITOR:	LD 824	S/N:	A3975
MICROPHONE:	GRAS		
CALIBRATOR:	CAL200		
TEMP. RANGE (°F):	63	WEATHER CONDITIONS:	PARTLY CLOUDY











PROJECT: K19786:I-205CW

JOB NO.:

309180.000

MEASUREMENT SITE NO.: ST-6

ADDRESS/DESCRIPTION: 1709 Blankenship Rd							DAT	ΓE: 8/30/17
#	Time	L _{eq} (dBA)	L _{min} (dBA)	L _{max} (dBA)	L ₁₀ (dBA)	L ₃₃ (dBA)	L ₅₀ (dBA)	L ₉₀ (dBA)
1	12:36:36	56.5	55.3	61.8	57.1	56.7	56.4	55.5
2	12:37:36	57.2	55.6	60.2	58.0	57.5	57.2	56.2
3	12:38:36	58.1	55.7	67.5	58.9	57.8	57.4	56.3
4	12:39:36	57.2	55.1	60.1	58.2	57.5	57.0	56.1
5	12:40:36	57.7	54.1	60.3	59.0	58.0	57.6	55.5
6	12:41:36	59.4	54.8	66.6	60.9	59.8	59.2	55.8
7	12:42:36	58.3	56.2	60.2	59.5	58.7	58.3	57.1
8	12:43:36	57.6	54.7	62.3	60.1	57.5	56.9	55.4
9	12:44:36	56.2	54	60.6	57.8	56.4	55.8	54.5
10	12:45:36	55.5	53.6	57.6	56.7	55.8	55.3	54.2
11	12:46:36	56.6	55.4	58.1	57.6	56.9	56.6	55.9
12	12:47:36	56.8	52.3	60.5	58.8	57.6	56.9	53.1
13	12:48:36	58.1	54.9	64.9	60.5	57.5	57.0	56.1
14	12:49:36	57.4	54.5	60.1	58.5	57.7	57.4	56.0
15	12:50:36	58.7	56.9	63.3	59.9	59.0	58.4	57.3
16	12:51:36	59.6	57.3	62.2	60.8	59.8	59.5	58.2
17	12:52:36	59.6	57.8	61.8	60.6	59.9	59.6	58.5
18	12:53:36	58.2	55.9	60.5	59.7	58.8	58.0	56.4
19	12:54:36	59.4	56.4	62.0	60.9	60.0	59.2	57.4
20	12:55:36	58.4	55.5	60.5	59.5	58.7	58.3	56.8
21	12:56:36	58.0	54.6	63.0	59.7	58.4	57.8	56.0
22	12:57:36	58.2	56.7	60.1	58.9	58.5	58.2	57.2
23	12:58:36	58.1	54.5	60.9	59.6	58.8	58.1	56.1
24	12:59:36	55.8	53.8	57.7	56.8	56.1	55.7	54.6
25	13:00:36	61.0	54.7	72.9	62.3	57.3	56.7	55.3
26	13:01:36	55.5	53.4	57.6	56.9	55.9	55.4	54.1
Tota	l for Period	58.0	52.3	72.9	59.1	57.9	57.5	56.0



JOB NO.: 309180.000

SHORT-TERM NOISE MEASUREMENT SITE LOG

ASSESSMENT AREA:	WEST LINN	MEASUREMENT SITE NO .:	ST-6					
ADDRESS:	1709 BLANKENSH	1709 BLANKENSHIP RD (WILLAMETTE TERRACE APTS)						
OWNER:								
DESCRIPTION:	MULITI-FAMILY R	ESIDENTIAL (76 TOTAL UNIT	S)					
NOISE SOURCES:	I-205 TRAFFIC, ENGINE BREAKING ON I-205							
NOISE MONITOR:	LD 824	S/N:	A3975					
MICROPHONE:	GRAS							
CALIBRATOR:	CAL200							
TEMP. RANGE (°F):	67	WEATHER CONDITIONS:	SUNNY					

SITE MAP:



Notes: I-205 dominant. Interstate is elevated above the apartments by approximately 25 feet as it crosses over Blankenship Road.









PROJECT: K19786:I-205CW

JOB NO.:

309180.000

MEASUREMENT SITE NO.: ST-7

ADDRESS/DESCRIPTION: 1788 Jamie Circle								ΓE: 8/30/17
#	Time	L _{eq} (dBA)	L _{min} (dBA)	L _{max} (dBA)	L ₁₀ (dBA)	L ₃₃ (dBA)	L ₅₀ (dBA)	L ₉₀ (dBA)
1	15:06:14	59.8	56.8	65.4	61.2	59.8	59.3	57.6
2	15:07:14	58.6	54.7	65.5	62.1	57.8	56.9	55.3
3	15:08:14	55.4	52.6	59.6	56.8	55.9	55.3	53.5
4	15:09:14	56.1	52.9	60.0	58.2	56.4	55.8	53.9
5	15:10:14	57.9	55.5	60.8	59.3	58.3	57.7	56.2
6	15:11:14	58.5	56.4	61.0	59.7	58.8	58.4	57.2
7	15:12:14	58.3	55.4	63.3	59.6	58.7	58.2	56.5
8	15:13:14	57.5	54.3	61.0	59.2	57.8	57.1	55.4
9	15:14:14	58.8	56.2	61.8	60.4	59.2	58.5	57.1
10	15:15:14	57.8	53.9	63.3	59.9	57.8	57.1	54.8
11	15:16:14	55.8	52.6	62.0	57.3	56.1	55.4	53.5
12	15:17:14	56.6	54.3	60.8	58.5	57.1	56.0	54.4
13	15:18:14	58.4	54.9	61.4	60.1	58.8	58.3	56.0
14	15:19:14	59.2	57.2	61.9	60.5	59.6	59.0	57.8
15	15:20:14	59.9	57.5	63.3	61.6	60.1	59.5	58.2
Tota	I for Period	58.1	52.6	65.5	59.1	57.9	57.5	56.0



JOB NO.: 309180.000

SHORT-TERM NOISE MEASUREMENT SITE LOG

WEST LINN	MEASUREMENT SITE NO .:	ST-7				
1788 JAMIE CIRC	LE					
SINGLE-FAMILY F	RESIDENTIAL					
I-205 TRAFFIC, EI	I-205 TRAFFIC, ENGINE BREAKING ON I-205					
LD 824	S/N:	A3975				
GRAS						
CAL200						
75	WEATHER CONDITIONS:	SUNNY				
	WEST LINN 1788 JAMIE CIRC SINGLE-FAMILY F I-205 TRAFFIC, EN LD 824 GRAS CAL200 75	WEST LINNMEASUREMENT SITE NO.:1788 JAMIE CIRCLESINGLE-FAMILY RESIDENTIALI-205 TRAFFIC, ENGINE BREAKING ON I-205LD 824S/N:GRASCAL20075WEATHER CONDITIONS:				

SITE MAP:











PROJECT: K19786:I-205CW

JOB NO.:

309180.000

MEASUREMENT SITE NO.: ST-8

ADDRESS/DESCRIPTION: 2318 8th Street							DA	ΓE: 8/31/17
#	Time	L _{eq} (dBA)	L _{min} (dBA)	L _{max} (dBA)	L ₁₀ (dBA)	L ₃₃ (dBA)	L ₅₀ (dBA)	L ₉₀ (dBA)
1	9:38:10	63.5	58.8	68.3	65.8	63.9	63.1	60.3
2	9:39:10	63.6	60.9	66.1	65.0	64.3	63.6	61.5
3	9:40:10	62.9	59.1	71	64.6	63.2	62.5	60.2
4	9:41:10	63.9	60.7	69.6	65.8	64.0	63.3	61.7
5	9:42:10	62.8	59.8	66.6	64.6	63.2	62.6	60.6
6	9:43:10	64.8	59.9	67.6	66.5	65.4	64.7	62.3
7	9:44:10	64	60.8	68.3	65.9	64.5	63.6	61.6
8	9:45:10	63.1	59.8	67.4	65.5	63.0	62.3	60.9
9	9:46:10	62.1	55.2	66.4	64.9	63.1	61.6	57.1
10	9:47:10	63.5	61	74	64.8	63.7	63.1	62.0
11	9:48:10	63.8	59.2	66.9	65.5	64.4	63.7	61.3
12	9:49:10	62.6	59.1	65.6	64.6	63.1	62.3	59.8
13	9:50:10	62.9	58.7	66.7	65.2	63.6	62.4	59.8
14	9:51:10	63.8	59.7	68.3	66.4	63.8	63.1	61.2
15	9:52:10	62.2	57.3	68.9	64.7	62.7	61.6	58.8
16	9:53:10	64.3	59.5	69.1	66.4	64.9	64.1	60.9
17	9:54:10	62.4	58.7	65.5	63.9	63.0	62.5	59.8
18	9:55:10	62.3	57.5	66.1	63.9	62.8	62.1	59.7
19	9:56:10	62.5	59.4	66.7	64.0	62.9	62.4	60.5
20	9:57:10	61.5	58.6	64.6	63.0	61.9	61.3	59.6
Tota	I for Period	63.2	55.2	64.6	65.1	63.6	62.8	60.5



JOB NO.: 309180.000

SHORT-TERM NOISE MEASUREMENT SITE LOG

ASSESSMENT AREA:	WEST LINN	MEASUREMENT SITE NO .:	ST-8
ADDRESS:	2318 8 TH STREET		
OWNER:			
DESCRIPTION:	SINGLE-FAMILY F	RESIDENTIAL	
NOISE SOURCES:	I-205 TRAFFIC, EN	NGINE BREAKING ON I-205	
NOISE MONITOR:	LD 824	S/N:	A3975
MICROPHONE:	GRAS		
CALIBRATOR:	CAL200		
TEMP. RANGE (°F):	61	WEATHER CONDITIONS:	SUNNY
SITE MAP:			



Notes: I-205 is audible and dominates; however traffic on Willamette Falls Drive, while lower traffic volumes, is louder when present.









PROJECT: K19786:I-205CW

JOB NO.:

309180.000

MEASUREMENT SITE NO.: ST-9 ADDRESS/DESCRIPTION: 4107 Imperial Drive

ADD	RESS/DES	DA	ΓE: 8/31/17					
#	Time	L _{eq} (dBA)	L _{min} (dBA)	L _{max} (dBA)	L ₁₀ (dBA)	L ₃₃ (dBA)	L ₅₀ (dBA)	L ₉₀ (dBA)
1	10:25:06	55.5	53.7	57.5	56.5	55.7	55.4	54.3
2	10:26:06	55.2	53.8	59.2	56.0	55.4	55.0	54.2
3	10:27:06	54.8	52.6	57.9	56.0	55.1	54.7	53.4
4	10:28:06	54.6	52.3	59.1	56.3	55.1	54.3	53.0
5	10:29:06	55.5	52.5	65.0	56.3	55.0	54.6	53.3
6	10:30:06	55.8	52.9	62.1	56.9	55.8	55.3	54.0
7	10:31:06	56.8	54.1	67.3	58.4	55.8	55.5	54.4
8	10:32:06	55.9	53.0	64.0	56.8	56.2	55.8	54.4
9	10:33:06	54.9	53.2	58.2	55.9	54.9	54.6	53.8
10	10:34:06	55.2	53.4	58.9	56.9	55.3	54.7	53.7
11	10:35:06	54.1	51.9	58.6	55.0	54.4	53.9	53.0
12	10:36:06	56.8	53.4	61.9	58.6	57.3	56.6	54.3
13	10:37:06	56.7	54.7	61.0	57.9	57.0	56.5	55.3
14	10:38:06	58.4	54.8	64.0	61.5	58.2	57.4	55.5
15	10:39:06	57.5	55.5	63.1	58.4	57.7	57.4	56.3
16	10:40:06	56.6	55.4	58.5	57.5	56.8	56.5	55.8
Tota	I for Period	56.0	51.9	67.3	57.2	56.0	55.5	54.3



JOB NO.: 309180.000

SHORT-TERM NOISE MEASUREMENT SITE LOG

ASSESSMENT AREA:	WEST LINN	MEASUREMENT SITE NO .:	ST-9
ADDRESS:	4701 IMPERIAL D	RIVE	
OWNER:			
DESCRIPTION:	SINGLE-FAMILY F	RESIDENTIAL	
NOISE SOURCES:	I-205 TRAFFIC		
NOISE MONITOR:	LD 824	S/N:	A3975
MICROPHONE:	GRAS		
CALIBRATOR:	CAL200		
TEMP. RANGE (°F):	68	WEATHER CONDITIONS:	SUNNY

SITE MAP:



Notes: I-205 dominates; however, sound of water flowing in Tanner Creek also audible. I-20 approximately at grade with receptor.









PROJECT: K19786:I-205CW

JOB NO.:

309180.000

MEASUREMENT SITE NO.: ST-10 ADDRESS/DESCRIPTION: 4329 Imperial Drive

ADDRESS/DESCRIPTION: 4329 Imperial Drive								TE: 8/30/17
#	Time	L _{eq} (dBA)	L _{min} (dBA)	L _{max} (dBA)	L ₁₀ (dBA)	L ₃₃ (dBA)	L ₅₀ (dBA)	L ₉₀ (dBA)
1	14:35:00	59.2	57.9	60.7	60.0	59.4	58.9	58.4
2	14:36:00	59.1	57.7	60.7	60.0	59.5	58.9	58.2
3	14:37:00	59.5	58.0	65.0	60.1	59.5	59.1	58.3
4	14:38:00	58.8	57.0	60.9	60.2	58.8	58.6	57.8
5	14:39:00	58.3	57.2	59.6	59.0	58.5	58.3	57.6
6	14:40:00	57.7	56.0	59.3	58.8	58.0	57.5	56.8
7	14:41:00	56.4	55.1	57.4	57.0	56.6	56.4	55.9
8	14:42:00	56.6	54.7	66.6	56.3	55.8	55.6	55.0
9	14:43:00	56.0	54.4	59.6	57.4	55.8	55.6	55.1
10	14:44:00	55.9	55.0	57.0	56.4	56.0	55.9	55.5
11	14:45:00	56.1	55.4	57.0	56.6	56.3	56.1	55.5
12	14:46:00	56.4	54.6	58.8	57.7	56.6	56.4	54.9
13	14:47:00	55.9	55.0	56.8	56.3	56.1	56.0	55.3
14	14:48:00	55.8	54.8	56.7	56.3	56.0	55.8	55.1
15	14:49:00	56.8	56.1	57.9	57.1	56.9	56.8	56.4
16	14:50:00	56.3	54.3	58.8	57.5	56.7	55.8	55.3
Tota	I for Period	57.4	54.3	66.6	57.9	57.3	57.0	56.3



JOB NO.: 309180.000

SHORT-TERM NOISE MEASUREMENT SITE LOG

ASSESSMENT AREA:	WEST LINN	MEASUREMENT SITE NO .:	ST-10				
ADDRESS:	4329 IMPERIAL DRIVE						
OWNER:							
DESCRIPTION:	ATTACHED SING	LE-FAMILY RESIDENTIAL (DU	JPLEX)				
NOISE SOURCES:	I-205 TRAFFIC						
NOISE MONITOR:	LD 824	S/N:	A3975				
MICROPHONE:	GRAS						
CALIBRATOR:	CAL200						
TEMP. RANGE (°F):	72	WEATHER CONDITIONS:	SUNNY				

SITE MAP:



Notes: I-205 dominates, but is not visible from the receptor since the interstate is approximately 25 feet below the receptor which is attop a bluff.











PROJECT: K19786:I-205CW

JOB NO.:

309180.000

MEASUREMENT SITE NO.: ST-11

ADDRESS/DESCRIPTION: 4835 Willamette Falls Drive

PERSONNEL: SRN	
DATE: 8/31/17	7
	_

#	Time	L _{eq} (dBA)	L _{min} (dBA)	L _{max} (dBA)	L ₁₀ (dBA)	L ₃₃ (dBA)	L ₅₀ (dBA)	L ₉₀ (dBA)
1	13:07:00	59.0	50.7	64.3	61.8	59.7	58.3	53.3
2	13:08:00	56.9	50.3	64	59.7	57.4	56.0	52.2
3	13:09:00	57.3	49.8	71.9	59.9	57.4	55.8	50.9
4	13:10:00	57.8	51.4	63.2	60.9	58.4	57.2	52.2
5	13:11:00	55.4	48.6	60.4	58.8	55.9	54.0	50.3
6	13:12:00	58.8	52.3	64.8	62.2	59.2	57.3	53.5
7	13:13:00	56.0	50.3	65.3	59.3	55.5	53.9	51.3
8	13:14:00	54.5	48.8	62.7	58.1	54.0	51.8	49.5
9	13:15:00	55.7	50.4	62.5	58.8	56.5	53.7	51.1
10	13:16:00	59.1	51.4	65.6	62.8	58.9	57.1	53.1
11	13:17:00	56.2	49.9	61.4	59.0	56.3	55.2	51.4
12	13:18:00	60.0	50.9	66.3	62.7	60.9	59.6	52.3
13	13:19:00	57.3	51.3	70.6	59.8	57.3	55.9	52.6
14	13:20:00	58.0	50.7	64.6	61.7	57.9	55.8	52.0
15	13:21:00	58.7	50.7	65.8	61.7	58.9	57.7	52.2
Tota	I for Period	57.6	48.6	71.9	60.5	57.6	56.0	51.9



JOB NO.: 309180.000

SHORT-TERM NOISE MEASUREMENT SITE LOG

ASSESSMENT AREA:	WEST LINN	MEASUREMENT SITE NO .:	ST-11			
ADDRESS:	4835 WILLAMETTE FALLS DRIVE					
OWNER:						
DESCRIPTION:	SINGLE-FAMILY F	RESIDENTIAL				
NOISE SOURCES:	TRAFFIC ON WIL	LAMETTE FALLS DRIVE, I-20	5 TRAFFIC			
NOISE MONITOR:	LD 824	S/N:	A3975			
MICROPHONE:	GRAS					
CALIBRATOR:	CAL200					
TEMP. RANGE (°F):	72	WEATHER CONDITIONS:	SUNNY			

SITE MAP:



Notes: I-205 is approximately 30-35 feet above the home and traffic noise from I-205 is audible but not when traffic is present on Willamette Falls Drive. The home is also approximately 10-12 feet lower than Willamette Falls Drive. Terrain is providing sheilding from noise on I-205.











PROJECT: K19786:I-205CW

JOB NO.:

309180.000

MEASUREMENT SITE NO.: ST-12 ADDRESS/DESCRIPTION: 5345 Grove Street

ADDRESS/DESCRIPTION: 5345 Grove Street							DAT	ΓE: 8/31/17
#	Time	L _{eq} (dBA)	L _{min} (dBA)	L _{max} (dBA)	L ₁₀ (dBA)	L ₃₃ (dBA)	L ₅₀ (dBA)	L ₉₀ (dBA)
1	13:39:25	60.8	57.6	66.1	64.1	60.6	59.4	58.1
2	13:40:25	58.9	57.3	61.9	59.9	59.2	58.8	57.7
3	13:41:25	59.6	57.4	63.3	61.0	60.1	59.4	57.9
4	13:42:25	59.8	57.8	62.8	60.9	60.1	59.6	58.4
5	13:43:25	59.4	57.2	61.9	60.6	59.7	59.4	58.0
6	13:44:25	59.5	56.6	63.3	60.9	59.7	59.2	58.0
7	13:45:25	60.0	57.4	62.7	61.6	60.4	59.8	58.3
8	13:46:25	59.5	57.7	62.3	60.7	59.7	59.3	58.2
9	13:47:25	61.0	59.2	62.5	61.8	61.3	61.0	60.0
10	13:48:25	61.5	59.1	67.3	63.8	61.3	60.7	59.4
11	13:49:25	60.8	58.9	64.1	62.2	61.1	60.6	59.4
12	13:50:25	62.2	59.8	65.1	64.0	62.5	61.8	60.5
13	13:51:25	60.0	57.9	62.5	61.0	60.4	59.9	58.8
14	13:52:25	58.2	55.6	60.5	59.2	58.6	58.2	56.8
15	13:53:25	58.7	55.3	63.1	60.4	59.2	58.5	56.4
16	13:54:25	58.7	54.6	64.5	60.4	59.0	58.4	56.5
17	13:55:25	60.2	55.7	71.3	60.9	58.6	58.0	56.9
18	13:56:25	58.8	56.7	62.7	60.0	59.0	58.6	57.4
19	13:57:25	60.2	57.7	63.7	61.7	60.6	60.0	58.4
20	13:58:25	59.1	56.2	62.5	60.5	59.5	59.0	57.5
21	13:59:25	57.8	55.1	63.2	59.4	58.3	57.6	56.1
22	14:00:25	59.2	56.5	64.8	60.5	59.5	58.9	57.3
Tota	I for Period	59.9	54.6	71.3	61.2	59.9	59.4	58.0



JOB NO.: 309180.000

SHORT-TERM NOISE MEASUREMENT SITE LOG

ASSESSMENT AREA:	WEST LINN	MEASUREMENT SITE NO .:	ST-12
ADDRESS:	5345 GROVE STR		
OWNER:			
DESCRIPTION:	SINGLE-FAMILY F	RESIDENTIAL	
NOISE SOURCES:	I-205 TRAFFIC, BA	ARKING SEALS	
NOISE MONITOR:	LD 824	S/N:	A3975
MICROPHONE:	GRAS		
CALIBRATOR:	CAL200		
TEMP. RANGE (°F):	72	WEATHER CONDITIONS:	SUNNY

SITE MAP:



Notes: I-205 on Abernathy Bridge 35-40 feet above the home. A number of seals live in the river and bark repeatedly; however, the interstate dominates the acoustic environment.











PROJECT: K19786:I-205CW

JOB NO.:

309180.000

MEASUREMENT SITE NO.: ST-13

PERSONNEL: SRN DATE: 8/31/17

ADDRESS/DESCRIPTION: Jon Storm Park							DA	ΓE: 8/31/17
#	Time	L _{eq} (dBA)	L _{min} (dBA)	L _{max} (dBA)	L ₁₀ (dBA)	L ₃₃ (dBA)	L ₅₀ (dBA)	L ₉₀ (dBA)
1	14:14:46	64.0	61.6	71.2	65.4	64.3	63.8	62.4
2	14:15:46	63.6	60.6	71.3	65.3	62.9	62.3	61.2
3	14:16:46	63.8	61.1	70.1	65.1	63.8	63.4	62.1
4	14:17:46	63.4	61.1	66.3	64.7	63.7	63.3	62.0
5	14:18:46	63.3	60.6	67.3	64.7	63.6	63.2	61.6
6	14:19:46	63.8	60.0	66.9	65.5	64.3	63.7	61.5
7	14:20:46	61.7	59.0	65.3	63.7	62.0	61.2	59.7
8	14:21:46	61.4	58.6	65.2	63.2	61.8	61.0	59.2
9	14:22:46	61.7	57.8	65.5	63.6	62.3	61.5	59.0
10	14:23:46	62.6	59.5	70.2	64.4	62.6	61.8	60.2
11	14:24:46	66.2	59.4	74.2	70.4	64.8	63.9	60.8
12	14:25:46	62.0	58.9	65.9	64.2	62.4	61.1	59.7
13	14:26:46	64.6	61.6	70.1	66.4	64.8	64.1	62.4
14	14:27:46	65.7	60.1	74.3	68.9	64.7	63.4	61.4
15	14:28:46	61.3	58.8	64.8	63.2	61.5	60.8	59.5
16	14:29:46	63.7	60.3	71.9	65.7	63.5	62.7	61.3
17	14:30:46	61.9	59.0	65.4	63.5	62.2	61.6	60.1
18	14:31:46	63.7	59.2	67.5	66.3	63.8	63.2	60.4
19	14:32:46	62.0	58.8	64.2	63.4	62.6	62.2	59.7
Tota	l for Period	63.4	57.8	74.3	65.1	63.2	62.5	60.7



JOB NO.: 309180.000

SHORT-TERM NOISE MEASUREMENT SITE LOG

ASSESSMENT AREA:	WEST LINN	MEASUREMENT SITE NO .:	ST-13
ADDRESS:	1801 CLACKAMET	TE DRIVE	
OWNER:			
DESCRIPTION:	JON STORM PAR	<	
NOISE SOURCES:	I-205 TRAFFIC, HI	GHWAY 99E	
NOISE MONITOR:	LD 824	S/N:	A3975
MICROPHONE:	GRAS		
CALIBRATOR:	CAL200		
TEMP. RANGE (°F):	73	WEATHER CONDITIONS:	SUNNY

SITE MAP:



Notes: I-205 on Abernathy Bridge 35-40 feet above the park. Highway 99E is also a major source of traffic noise.










hmmh	PROJECT: <u>I-205 с</u> JOB NO.: <u>Зодио</u>	w + Albernethy Brid	g e
SHORT	TERM NOISE MEA	SUREMENT SITE LO	DG
ASSESSMENT AREA: ADDRESS: OWNER: DESCRIPTION: NOISE SOURCES: NOISE MONITOR: MICROPHONE:	John Stern PARK (OC) John Stern Pi Drogon City PARK Highway / Rocdway BK 2250 × 3 RK	MEASUREMENT SITE NO.: 92K Noise S/N: S/N:	with 4,5,6
CALIBRATOR:	BK	S/N:	Ú.
TEMP. RANGE (°F):	60	WEATHER CONDITIONS:	PARTLY (Joudy
SITE SKETCH: Show in wind direction, where in Site States of the states	Private TABLE D-Private TABLE D-Private TABLE D-Private TABLE D-Private teste D-Private teste D-Drivate teste D-Drivat	ads, reference distances, arr , elevated, where direct lines	ows for North & s of sight exist.
PHOTOS: YES	GPS COOR	DINATES: N/M	1

hmmh

SHORT-TERM NOISE MEASUREMENT DATA SHEET

PROJECT: K19786:I-205CW

JOB NO.: 309180.000

MEASUREMENT SITE NO .: OC Structure Bor - e Megasoning PERSONNEL: SRN

DATE: 6-13-18

ADDRESS/DESCRIPTION: John Show PARK

66 #	Minute Period Starting	Meas'd Leq (dBA)	√ or X	Autos	Medium Trucks	Heavy Trucks	Other Noise Sources	COMMENTS (Include Calibration Data)
1	Drie alue	72.3						11=17 - 12:23pm
2	5							
3	So'	68.5						11:170m - 12:23pm
4		0.0						36
5	100'	68,3						11:17am - 12:23pm
6								20
7	9							
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

TOTAL Leq =

SUBSET Leq =

 $\sqrt{1}$ = Other sources contributed to Leq X = Exclude period - contaminated by non-characteristic sources

>> ADD SKETCH AND WEATHER CONDITIONS TO REVERSE OR OTHER SHEET <<

Oregon City – John Storm Park Structure-Borne Noise Measurements





100 feet

Drip Edge



50 feet

K19786: I-205 Widening and Seismic ImprovementsOregon City Side of CrossingInput Data:h: Height of structure, from ground to underside of deck50Aref: Center point between ground and underside of structure (h/2)25w: Width of Structure100Mw: Midpoint of structure (w/2) The underside of the deck at this point is the assumed source of structure noise (S)50Dref: Reference distance - from S to Aref55.9Measured Noise Level at Drip Edge, dB(A)72.3Set-back Calculations:Distance from Analysis PointMeasured Drip Edge (ft.)Aref055.972.372.3A252580.9A100100155.9A100100155.9A200200255.9A200200255.9A200200555.9A200200255.9A200200255.9A200200A200500555.9A200200A200200A200200A25.966A400400A500500A55.966
Oregon City Side of CrossingInput Data:h: Height of structure, from ground to underside of deck50Aref: Center point between ground and underside of structure (h/2)25w: Width of Structure100Mw: Midpoint of structure (w/2) The underside of the deck at this point is the assumed source of structure noise (S)50Dref: Reference distance - from S to Aref55.9Measured Noise Level at Drip Edge, dB(A)72.3Set-back Calculations:Distance from Analysis PointMeasured Drip Edge (ft.)Aref055.972.3A252580.971A5050105.970A100100155.968A200200255.966A400400455.963A500500555.962
Input Data:h: Height of structure, from ground to underside of deck50Aref: Center point between ground and underside of25structure (h/2)25w: Width of Structure100Mw: Midpoint of structure (w/2) The underside of the deckat this point is the assumed source of structure noise (S)50Dref: Reference distance - from S to Aref55.9Measured Noise Level at Drip Edge, dB(A)72.3Set-back Calculations:NeasuredDistance from Distance from Analysis PointMeasured (ft.)Aref055.9A252580.971A5050105.9A100100155.9A200200255.9A200200200555.9A20066A400400450500500555.962
h: Height of structure, from ground to underside of deck 50 Aref: Center point between ground and underside of structure (h/2) 25 w: Width of Structure (w/2) The underside of the deck at this point is the assumed source of structure noise (S) 50 Dref: Reference distance - from S to Aref 55.9 Measured Noise Level at Drip Edge, dB(A) 72.3 Set-back Calculations: Calculated Distance from Analysis Point Drip Edge (ft.) Analysis Point Drip Edge (ft.) (ft.) in dB(A) = 3.0 dB/DD Aref 0 55.9 72.3 A25 25 80.9 711 A50 50 100 155.9 70 A100 100 155.9 68 A200 200 255.9 66 A400 400 400 455.9 63 A500 500 555.9 62
Aref: Center point between ground and underside of structure (h/2)25w: Width of Structure100Mw: Midpoint of structure (w/2) The underside of the deck at this point is the assumed source of structure noise (S)50Dref: Reference distance - from S to Aref55.9Measured Noise Level at Drip Edge, dB(A)72.3Set-back Calculations:Measured Distance from Analysis PointCalculated Drip Edge Level at Drip Edge Level in dB(A)Analysis PointDrip Edge (ft.) (ft.)Measured in dB(A)Calculated Prop-off Rate a 3.0 dB/DDAref055.972.3A252580.971A5050105.970A100100155.968A200200255.966A400400455.963A500500555.962
structure (h/2)25w: Width of Structure100Mw: Midpoint of structure (w/2) The underside of the deck at this point is the assumed source of structure noise (S)50Dref: Reference distance - from S to Aref55.9Measured Noise Level at Drip Edge, dB(A)72.3Set-back Calculations:Measured Distance from Analysis PointCalculated Noise Level at Drip Edge (ft.)Analysis PointDrip Edge (ft.)(ft.)Measured in dB(A)Calculated Prop-off Rate = 3.0 dB/DDAref055.972.3A252580.971A5050105.970A100100155.968A200200255.966A400400455.963A500500555.962
w: Width of Structure100Mw: Midpoint of structure (w/2) The underside of the deck at this point is the assumed source of structure noise (S)50Dref: Reference distance - from S to Aref55.9Measured Noise Level at Drip Edge, dB(A)72.3Set-back Calculations:Measured Distance from Analysis PointCalculated Noise Level at Drip Edge (ft.)Aref055.972.3Azef055.972.3Azef055.971A5050105.970A100100155.968A200200255.966A400400455.963A500500555.962
Mw: Midpoint of structure (w/2) The underside of the deck at this point is the assumed source of structure noise (S)50Dref: Reference distance - from S to Aref55.9Measured Noise Level at Drip Edge, dB(A)72.3Set-back Calculations:72.3Set-back Calculations:MeasuredDistance from Distance from Analysis PointMeasured Drip Edge Level Drip Edge Level Drop-off Rate in dB(A)Calculated Prop-off Rate in dB(A)Aref055.9A252580.971A5050105.970A100100155.968A200200255.966A400400455.963A500500555.962
at this point is the assumed source of structure noise (S)50Dref: Reference distance - from S to Aref55.9Measured Noise Level at Drip Edge, dB(A)72.3Set-back Calculations:MeasuredDistance fromNoise Level atDistance fromNoise Level atDistance fromAnalysis PointDrip Edge (ft.)(ft.)Aref0055.9A252580.971A5050100155.9A200200255.966A400400455.963A500500500555.962
Dref: Reference distance - from S to Aref55.9Measured Noise Level at Drip Edge, dB(A)72.3Set-back Calculations:MeasuredDistance fromMeasuredDistance fromNoise Level atDistance fromAnalysis PointDrip Edge (ft.)(ft.)Aref0055.9A252580.971A5050100100100155.9A200200255.966A400400455.962
Measured Noise Level at Drip Edge, dB(A)72.3Set-back Calculations:Set-back Calculations:MeasuredDistance fromNoise Level atDistance fromAnalysis PointDrip Edge (ft.)(ft.)Aref0A252580.971A5050100155.9A100100A200200255.966A400400A50500500555.966666750068666666666666666666666666666766666666666666666666666666666768696060606162
Set-back Calculations:MeasuredCalculatedDistance fromDistance fromNoise Level atNoise Level atDistance fromAnalysis PointDrip Edge LeqDrop-off RateAnalysis PointDrip Edge (ft.)(ft.)in dB(A)= 3.0 dB/DDAref055.972.371A252580.971A5050105.970A100100155.968A200200255.966A400400455.963A500500555.962
Analysis PointDistance fromMeasuredCalculatedAnalysis PointDistance fromAnalysis PointDrip Edge LeqDrop-off RateAnalysis PointDrip Edge (ft.)(ft.)in dB(A)= 3.0 dB/DDAref055.972.371A252580.9711A5050105.970A100100155.968A200200255.966A400400455.963
MeasuredCalculatedDistance fromDistance fromNoise Level atDistance fromAnalysis PointDrip Edge LeqDrop-off RateAnalysis PointDrip Edge (ft.)(ft.)in dB(A)= 3.0 dB/DDAref055.972.3A252580.971A5050105.970A100100155.968A200200255.966A400400455.963A500500555.962
Distance from Distance fromNoise Level at Noise Level at Noise Level at Noise Level at Noise Level at Drop-off Rate analysis PointDrip Edge Leq Drop-off Rate = 3.0 dB/DDAref055.972.3A252580.971A5050105.970A100100155.968A200200255.966A400400455.963A500500555.962
Analysis Point Drip Edge (df.) Analysis Point Drip Edge (df.) Drip Edge (df.) In dB(A) = 3.0 dB/DD Aref 0 55.9 72.3 A25 25 80.9 71 A50 50 105.9 70 A100 100 155.9 68 A200 200 255.9 66 A400 400 455.9 63 A500 500 555.9 62
Analysis Point Drip Edge (tt.)(tt.)In dB(A)= 3.0 dB/DD Aref0 55.9 72.3 A2525 80.9 71A5050 105.9 70A100100 155.9 68A200200 255.9 66A400400 455.9 63A500500 555.9 62
Arer 0 55.9 /2.3 A25 25 80.9 71 A50 50 105.9 70 A100 100 155.9 68 A200 200 255.9 66 A400 400 455.9 63 A500 500 555.9 62
A25 25 80.9 71 A50 50 105.9 70 A100 100 155.9 68 A200 200 255.9 66 A400 400 455.9 63 A500 500 555.9 62
A50 50 105.9 70 A100 100 155.9 68 A200 200 255.9 66 A400 400 455.9 63 A500 500 555.9 62
A100 100 155.9 68 A200 200 255.9 66 A400 400 455.9 63 A500 500 555.9 62
A200 200 255.9 66 A400 400 455.9 63 A500 500 555.9 62
A400 400 455.9 63 A500 500 555.9 62
ואם ואסטע געניין ארכבי ואס
Massured
Distance from Noice Lovel at Noice Lovel
Distance from Analysis Point Drin Edge Log. Dron off Pate
$\begin{array}{c} \text{Distance from Analysis Point Drip Edge Leq Drop-off Kate} \\ \text{Analysis Point Drip Edge (ft)} \\ \text{(ft)} \\ \text{in d} P(A) \\ \text{in d} P(A) \\ \text{(ft)} \\ \text{(ft)}$
A25 25 60.9 09.9
A100 100 155 9 65 6
A200 200 255 9 62 4
A200 200 255.5 02.4 A400 400 455.9 58.6
A500 500 555 9 57 3
Measured Calculated
Distance from Noise Level at Noise Level
Distance from Analysis Point Drip Edge Leg Drop-off Rate
Analysis Point Drip Edge (ft.) (ft.) in dB(A) = 6.0 dB/DD
Aref 0 55.9 72.3
A25 25 80.9 69
A50 50 105.9 67
A100 100 155.9 63
A200 200 255.9 59
אייטע איטען 4סט.אן 1 54 אייטע געער אין 1 אייטען 1 אייטע געער אין 1 אייטע 1 געער געער געער אייטע געער געער געער געער געער געער געער גע

Structure Related Noise Calculation Worksheet				
	K1978	36: I-205 Widening and S	Seismic Improvements	
		Southbound	Side	
Input Data:				
h: Height of str	ructure, from groun	d to underside of deck		50
Aref: Center p	oint between grour	nd and underside of strue	cture (h/2)	25
w: Width of St	ructure			100
Mw: Midpoint	of structure (w/2)	The underside of the dec	ck at this point is the	
assumed source	e of structure noise	e (S)		50
Dref: Reference	ce distance - from S	to Aref		55.9
Measured Nois	se Level at Drip Edg	e, dB(A)		72.3
Set-back Calcu	lations:			
			Measured Noise Level	Calculated Noise Level
	Distance from	Distance from Analysis	at Drip Edge Leq in	Drop-off Rate = 4.5
Analysis Point	Drip Edge (ft.)	Point (ft.)	dB(A)	dB/DD
Aref	0	55.9	72.3	
A1	1	56.9		72.2
A2	2	57.9		72.1
A3	3	58.9		72.0
A4	4	59.9		71.8
A5	5	60.9		71.7
A6	6	61.9		71.6
A7	7	62.9		71.5
A8	8	63.9		71.4
A9	9	64.9		71.3
A10	10	65.9		71.2
A11	11	66.9		71.1
A12	12	67.9		71.0
A13	13	68.9		70.9
A14	14	69.9		70.8
A15	15	70.9		70.8
A16	16	71.9		70.7
A17	17	72.9		70.6
A18	18	73.9		70.5
A19	19	74.9		70.4
A20	20	75.9		70.3
A21	21	76.9		70.2
A22	22	77.9		70.1
A23	23	78.9		70.1
A24	24	79.9		70.0
A25	25	80.9		69.9
A26	69.8			
A27	27	82.9		69.7
A28	28	83.9		69.7
A29	29	84.9		69.6
A30	30	85.9		69.5
A31	31	86.9		69.4

Structure Related Noise Calculation Worksheet				
	K1978	36: I-205 Widening and S	Seismic Improvements	
		Southbound	Side	
Input Data:				
h: Height of str	ructure, from groun	d to underside of deck		50
Aref: Center p	oint between grour	nd and underside of strue	cture (h/2)	25
w: Width of St	ructure			100
Mw: Midpoint	of structure (w/2)	The underside of the dee	ck at this point is the	
assumed sourc	e of structure noise	e (S)		50
Dref: Reference	ce distance - from S	to Aref		55.9
Measured Nois	se Level at Drip Edg	e, dB(A)		72.3
Set-back Calcu	lations:	I		
			Measured Noise Level	Calculated Noise Level
	Distance from	Distance from Analysis	at Drip Edge Leq in	Drop-off Rate = 4.5
Analysis Point	Drip Edge (ft.)	Point (ft.)	dB(A)	dB/DD
A32	32	87.9		69.4
A33	33	88.9		69.3
A34	34	89.9		69.2
A35	35	90.9		69.1
A36	36	91.9		69.1
A37	37	92.9		69.0
A38	38	93.9		68.9
A39	39	94.9		68.9
A40	40	95.9		68.8
A41	41	96.9		68.7
A42	42	97.9		68.6
A43	43	98.9		68.6
A44	44	99.9		68.5
A45	45	100.9		68.5
A46	46	101.9		68.4
A47	47	102.9		68.3
A48	48	103.9		68.3
A49	49	104.9		68.2
A50	50	105.9		68.1
A51	51	106.9		68.1
A52	52	107.9		68.0
A53	53	108.9		68.0
A54	54	109.9		67.9
A55	55	110.9		67.8
A56	56	111.9		67.8
A57	67.7			
A58	67.7			
A59	59	114.9		67.6
A60	60	115.9		67.6
A61	61	116.9		67.5
A62	62	117.9		67.4
A63	63	118.9		67.4

Structure Related Noise Calculation Worksheet				
	K1978	36: I-205 Widening and S	Seismic Improvements	
		Southbound	Side	
Input Data:				
h: Height of str	ructure, from groun	d to underside of deck		50
Aref: Center p	oint between grour	nd and underside of strue	cture (h/2)	25
w: Width of St	ructure			100
Mw: Midpoint	of structure (w/2)	The underside of the dee	ck at this point is the	
assumed source	e of structure noise	e (S)		50
Dref: Reference	ce distance - from S	to Aref		55.9
Measured Nois	se Level at Drip Edg	e, dB(A)		72.3
Set-back Calcu	lations:	1	1	
			Measured Noise Level	Calculated Noise Level
	Distance from	Distance from Analysis	at Drip Edge Leq in	Drop-off Rate = 4.5
Analysis Point	Drip Edge (ft.)	Point (ft.)	dB(A)	dB/DD
A64	64	119.9		67.3
A65	65	120.9		67.3
A66	66	121.9		67.2
A67	67	122.9		67.2
A68	68	123.9		67.1
A69	69	124.9		67.1
A70	70	125.9		67.0
A71	71	126.9		67.0
A72	72	127.9		66.9
A73	73	128.9		66.9
A74	74	129.9		66.8
A75	75	130.9		66.8
A76	76	131.9		66.7
A77	77	132.9		66.7
A78	78	133.9		66.6
A79	79	134.9		66.6
A80	80	135.9		66.5
A81	81	136.9		66.5
A82	82	137.9		66.4
A83	83	138.9		66.4
A84	84	139.9		66.3
A85	85	140.9		66.3
A86	86	141.9		66.2
A87	87	142.9		66.2
A88	88	143.9		66.1
A89	66.1			
A90	66.1			
A91	91	146.9		66.0
A92	92	147.9		66.0
A93	93	148.9		65.9
A94	94	149.9		65.9
A95	95	150.9		65.8

Structure Related Noise Calculation Worksheet				
	K1978	36: I-205 Widening and S	Seismic Improvements	
		Southbound	Side	
Input Data:				
h: Height of str	ructure, from groun	d to underside of deck		50
Aref: Center p	oint between grour	nd and underside of strue	cture (h/2)	25
w: Width of St	ructure			100
Mw: Midpoint	of structure (w/2)	The underside of the dec	ck at this point is the	
assumed sourc	e of structure noise	e (S)		50
Dref: Reference	ce distance - from S	to Aref		55.9
Measured Nois	se Level at Drip Edg	e, dB(A)		72.3
Set-back Calcu	lations:		Ι	
			Measured Noise Level	Calculated Noise Level
	Distance from	Distance from Analysis	at Drip Edge Leq in	Drop-off Rate = 4.5
Analysis Point	Drip Edge (ft.)	Point (ft.)	dB(A)	dB/DD
A96	96	151.9		65.8
A97	97	152.9		65.7
A98	98	153.9		65.7
A99	99	154.9		65.7
A100	100	155.9		65.6
A101	101	156.9		65.6
A102	102	157.9		65.5
A103	103	158.9		65.5
A104	104	159.9		65.5
A105	105	160.9		65.4
A106	106	161.9		65.4
A107	107	162.9		65.3
A108	108	163.9		65.3
A109	109	164.9		65.3
A110	110	165.9		65.2
A111	111	166.9		65.2
A112	112	167.9		65.1
A113	113	168.9		65.1
A114	114	169.9		65.1
A115	115	170.9		65.0
A116	116	171.9		65.0
A117	117	172.9		64.9
A118	118	173.9		64.9
A119	119	174.9		64.9
A120	120	175.9		64.8
A121	64.8			
A122	64.8			
A123	123	178.9		64.7
A124	124	179.9		64.7
A125	125	180.9		64.6
A126	126	181.9		64.6
A127	127	182.9		64.6

Structure Related Noise Calculation Worksheet				
	K1978	36: I-205 Widening and S	Seismic Improvements	
		Southbound	Side	
Input Data:				
h: Height of str	ructure, from groun	d to underside of deck		50
Aref: Center p	oint between grour	nd and underside of strue	cture (h/2)	25
w: Width of St	ructure			100
Mw: Midpoint	of structure (w/2)	The underside of the dee	ck at this point is the	
assumed sourc	e of structure noise	e (S)		50
Dref: Reference	ce distance - from S	to Aref		55.9
Measured Nois	se Level at Drip Edg	e, dB(A)		72.3
Set-back Calcu	lations:			
			Measured Noise Level	Calculated Noise Level
	Distance from	Distance from Analysis	at Drip Edge Leq in	Drop-off Rate = 4.5
Analysis Point	Drip Edge (ft.)	Point (ft.)	dB(A)	dB/DD
A128	128	183.9		64.5
A129	129	184.9		64.5
A130	130	185.9		64.5
A131	131	186.9		64.4
A132	132	187.9		64.4
A133	133	188.9		64.4
A134	134	189.9		64.3
A135	135	190.9		64.3
A136	136	191.9		64.3
A137	137	192.9		64.2
A138	138	193.9		64.2
A139	139	194.9		64.2
A140	140	195.9		64.1
A141	141	196.9		64.1
A142	142	197.9		64.1
A143	143	198.9		64.0
A144	144	199.9		64.0
A145	145	200.9		64.0
A146	146	201.9		63.9
A147	147	202.9		63.9
A148	148	203.9		63.9
A149	149	204.9		63.8
A150	150	205.9		63.8
A151	151	206.9		63.8
A152	152	207.9		63.7
A153	63.7			
A154	63.7			
A155	155	210.9		63.7
A156	156	211.9		63.6
A157	157	212.9		63.6
A158	158	213.9		63.6
A159	159	214.9		63.5

Structure Related Noise Calculation Worksheet				
	K1978	36: I-205 Widening and S	Seismic Improvements	
		Southbound	Side	
Input Data:				
h: Height of str	ructure, from groun	d to underside of deck		50
Aref: Center p	oint between grour	nd and underside of strue	cture (h/2)	25
w: Width of St	ructure			100
Mw: Midpoint	of structure (w/2)	The underside of the dee	ck at this point is the	
assumed source	e of structure noise	e (S)		50
Dref: Reference	ce distance - from S	to Aref		55.9
Measured Nois	se Level at Drip Edg	e, dB(A)		72.3
Set-back Calcu	lations:			
			Measured Noise Level	Calculated Noise Level
	Distance from	Distance from Analysis	at Drip Edge Leq in	Drop-off Rate = 4.5
Analysis Point	Drip Edge (ft.)	Point (ft.)	dB(A)	dB/DD
A160	160	215.9		63.5
A161	161	216.9		63.5
A162	162	217.9		63.4
A163	163	218.9		63.4
A164	164	219.9		63.4
A165	165	220.9		63.3
A166	166	221.9		63.3
A167	167	222.9		63.3
A168	168	223.9		63.3
A169	169	224.9		63.2
A170	170	225.9		63.2
A171	171	226.9		63.2
A172	172	227.9		63.1
A173	173	228.9		63.1
A174	174	229.9		63.1
A175	175	230.9		63.1
A176	176	231.9		63.0
A177	177	232.9		63.0
A178	178	233.9		63.0
A179	179	234.9		62.9
A180	180	235.9		62.9
A181	181	236.9		62.9
A182	182	237.9		62.9
A183	183	238.9		62.8
A184	184	239.9		62.8
A185	62.8			
A186	62.8			
A187	187	242.9		62.7
A188	188	243.9		62.7
A189	189	244.9		62.7
A190	190	245.9		62.6
A191	191	246.9		62.6

Structure Related Noise Calculation Worksheet				
	K1978	36: I-205 Widening and S	Seismic Improvements	
		Southbound	Side	
Input Data:				
h: Height of str	ructure, from groun	d to underside of deck		50
Aref: Center p	oint between grour	nd and underside of strue	cture (h/2)	25
w: Width of St	ructure			100
Mw: Midpoint	of structure (w/2)	The underside of the dee	ck at this point is the	
assumed source	e of structure noise	e (S)		50
Dref: Reference	ce distance - from S	to Aref		55.9
Measured Nois	se Level at Drip Edg	e, dB(A)		72.3
Set-back Calcu	lations:			
			Measured Noise Level	Calculated Noise Level
	Distance from	Distance from Analysis	at Drip Edge Leq in	Drop-off Rate = 4.5
Analysis Point	Drip Edge (ft.)	Point (ft.)	dB(A)	dB/DD
A192	192	247.9		62.6
A193	193	248.9		62.6
A194	194	249.9		62.5
A195	195	250.9		62.5
A196	196	251.9		62.5
A197	197	252.9		62.5
A198	198	253.9		62.4
A199	199	254.9		62.4
A200	200	255.9		62.4
A201	201	256.9		62.4
A202	202	257.9		62.3
A203	203	258.9		62.3
A204	204	259.9		62.3
A205	205	260.9		62.3
A206	206	261.9		62.2
A207	207	262.9		62.2
A208	208	263.9		62.2
A209	209	264.9		62.2
A210	210	265.9		62.1
A211	211	266.9		62.1
A212	212	267.9		62.1
A213	213	268.9		62.1
A214	214	269.9		62.0
A215	215	270.9		62.0
A216	216	271.9		62.0
A217	62.0			
A218	61.9			
A219	219	274.9		61.9
A220	220	275.9		61.9
A221	221	276.9		61.9
A222	222	277.9		61.9
A223	223	278.9		61.8

Structure Related Noise Calculation Worksheet				
	K1978	36: I-205 Widening and S	Seismic Improvements	
		Southbound	Side	
Input Data:				
h: Height of str	ructure, from groun	d to underside of deck		50
Aref: Center p	oint between grour	nd and underside of strue	cture (h/2)	25
w: Width of St	ructure			100
Mw: Midpoint	t of structure (w/2)	The underside of the dee	ck at this point is the	
assumed source	e of structure noise	e (S)		50
Dref: Reference	ce distance - from S	to Aref		55.9
Measured Nois	se Level at Drip Edg	e, dB(A)		72.3
Set-back Calcu	lations:	r	r	r
			Measured Noise Level	Calculated Noise Level
	Distance from	Distance from Analysis	at Drip Edge Leq in	Drop-off Rate = 4.5
Analysis Point	Drip Edge (ft.)	Point (ft.)	dB(A)	dB/DD
A224	224	279.9		61.8
A225	225	280.9		61.8
A226	226	281.9		61.8
A227	227	282.9		61.7
A228	228	283.9		61.7
A229	229	284.9		61.7
A230	230	285.9		61.7
A231	231	286.9		61.6
A232	232	287.9		61.6
A233	233	288.9		61.6
A234	234	289.9		61.6
A235	235	290.9		61.6
A236	236	291.9		61.5
A237	237	292.9		61.5
A238	238	293.9		61.5
A239	239	294.9		61.5
A240	240	295.9		61.4
A241	241	296.9		61.4
A242	242	297.9		61.4
A243	243	298.9		61.4
A244	244	299.9		61.4
A245	245	300.9		61.3
A246	246	301.9		61.3
A247	247	302.9		61.3
A248	248	303.9		61.3
A249	61.2			
A250	61.2			
A251	251	306.9		61.2
A252	252	307.9		61.2
A253	253	308.9		61.2
A254	254	309.9		61.1
A255	255	310.9		61.1

Structure Related Noise Calculation Worksheet				
	K1978	36: I-205 Widening and S	Seismic Improvements	
		Southbound	Side	
Input Data:				
h: Height of str	ructure, from groun	d to underside of deck		50
Aref: Center p	oint between grour	nd and underside of strue	cture (h/2)	25
w: Width of Sti	ructure			100
Mw: Midpoint	t of structure (w/2)	The underside of the dee	ck at this point is the	
assumed sourc	e of structure noise	e (S)		50
Dref: Reference	ce distance - from S	to Aref		55.9
Measured Nois	se Level at Drip Edg	e, dB(A)		72.3
Set-back Calcu	lations:	Γ	Γ	
			Measured Noise Level	Calculated Noise Level
	Distance from	Distance from Analysis	at Drip Edge Leq in	Drop-off Rate = 4.5
Analysis Point	Drip Edge (ft.)	Point (ft.)	dB(A)	dB/DD
A256	256	311.9		61.1
A257	257	312.9		61.1
A258	258	313.9		61.1
A259	259	314.9		61.0
A260	260	315.9		61.0
A261	261	316.9		61.0
A262	262	317.9		61.0
A263	263	318.9		61.0
A264	264	319.9		60.9
A265	265	320.9		60.9
A266	266	321.9		60.9
A267	267	322.9		60.9
A268	268	323.9		60.9
A269	269	324.9		60.8
A270	270	325.9		60.8
A271	271	326.9		60.8
A272	272	327.9		60.8
A273	273	328.9		60.8
A274	274	329.9		60.7
A275	275	330.9		60.7
A276	276	331.9		60.7
A277	277	332.9		60.7
A278	278	333.9		60.7
A279	279	334.9		60.6
A280	280	335.9		60.6
A281	60.6			
A282	60.6			
A283	283	338.9		60.6
A284	284	339.9		60.5
A285	285	340.9		60.5
A286	286	341.9		60.5
A287	287	342.9		60.5

Structure Related Noise Calculation Worksheet				
	K1978	36: I-205 Widening and S	Seismic Improvements	
		Southbound	Side	
Input Data:				
h: Height of str	ructure, from groun	d to underside of deck		50
Aref: Center p	oint between grour	nd and underside of strue	cture (h/2)	25
w: Width of St	ructure			100
Mw: Midpoint	t of structure (w/2)	The underside of the dee	ck at this point is the	
assumed source	e of structure noise	e (S)		50
Dref: Reference	ce distance - from S	to Aref		55.9
Measured Nois	se Level at Drip Edg	e, dB(A)		72.3
Set-back Calcu	lations:	I	I	
			Measured Noise Level	Calculated Noise Level
	Distance from	Distance from Analysis	at Drip Edge Leq in	Drop-off Rate = 4.5
Analysis Point	Drip Edge (ft.)	Point (ft.)	dB(A)	dB/DD
A288	288	343.9		60.5
A289	289	344.9		60.4
A290	290	345.9		60.4
A291	291	346.9		60.4
A292	292	347.9		60.4
A293	293	348.9		60.4
A294	294	349.9		60.4
A295	295	350.9	60.3	
A296	296	351.9	60.3	
A297	297	352.9		60.3
A298	298	353.9		60.3
A299	299	354.9		60.3
A300	300	355.9		60.2
A301	301	356.9		60.2
A302	302	357.9		60.2
A303	303	250.9		60.2
A304	304	360.9		60.2
A305	305	361.9		60.2
A307	300	362.9		60.1
A308	307	363.9		60.1
A309	309	364.9		60.1
A310	310	365.9		60.1
A311	311	366.9		60.0
A312	312	367.9		60.0
A313	313	368.9		60.0
A314	314	369.9		60.0
A315	315	370.9		60.0
A316	316	371.9		60.0
A317	317	372.9		59.9
A318	318	373.9		59.9
A319	319	374.9		59.9

Structure Related Noise Calculation Worksheet				
	K1978	36: I-205 Widening and S	Seismic Improvements	
		Southbound	Side	
Input Data:				
h: Height of str	ructure, from groun	d to underside of deck		50
Aref: Center p	oint between grour	nd and underside of strue	cture (h/2)	25
w: Width of St	ructure			100
Mw: Midpoint	t of structure (w/2)	The underside of the dee	ck at this point is the	
assumed source	e of structure noise	e (S)		50
Dref: Reference	ce distance - from S	to Aref		55.9
Measured Nois	se Level at Drip Edg	e, dB(A)		72.3
Set-back Calcu	lations:	I	I	
			Measured Noise Level	Calculated Noise Level
	Distance from	Distance from Analysis	at Drip Edge Leq in	Drop-off Rate = 4.5
Analysis Point	Drip Edge (ft.)	Point (ft.)	dB(A)	dB/DD
A320	320	375.9		59.9
A321	321	376.9		59.9
A322	322	377.9		59.9
A323	323	378.9		59.8
A324	324	379.9		59.8
A325	325	380.9		59.8
A326	326	381.9		59.8
A327	327	382.9	59.8	
A328	328	383.9	59.7	
A329	329	384.9		59.7
A330	A330 330 385.9			
A331	331	386.9		59.7
A332	332	387.9		59.7
A333	333	388.9		59.7
A334	334	389.9		59.6
A335	335	390.9		59.6
A336	336	391.9		59.6
A337	337	392.9		59.6
A338	338	393.9		59.6
A339	339	394.9		59.6
A340	340	395.9		59.5
A341	341	396.9		59.5
A342	342	397.9		59.5
A343	343	398.9		59.5
A344	344	399.9		59.5
A345	345	400.9		59.5
A346	346	401.9		59.4
A347	347	402.9		59.4
A348	348	403.9		59.4
A349	349	404.9		59.4
A350	350	405.9		59.4
A351	351	406.9		59.4

Structure Related Noise Calculation Worksheet				
	K1978	36: I-205 Widening and S	Seismic Improvements	
		Southbound	Side	
Input Data:				
h: Height of str	ructure, from groun	d to underside of deck		50
Aref: Center p	oint between grour	nd and underside of strue	cture (h/2)	25
w: Width of St	ructure			100
Mw: Midpoint	of structure (w/2)	The underside of the dec	ck at this point is the	
assumed source	e of structure noise	e (S)		50
Dref: Reference	ce distance - from S	to Aref		55.9
Measured Nois	se Level at Drip Edg	e, dB(A)		72.3
Set-back Calcu	lations:		I	I
			Measured Noise Level	Calculated Noise Level
	Distance from	Distance from Analysis	at Drip Edge Leq in	Drop-off Rate = 4.5
Analysis Point	Drip Edge (ft.)	Point (ft.)	dB(A)	dB/DD
A352	352	407.9		59.4
A353	353	408.9		59.3
A354	354	409.9		59.3
A355	355	410.9		59.3
A356	356	411.9		59.3
A357	357	412.9		59.3
A358	358	413.9		59.3
A359	359	414.9	59.2	
A360	360	415.9	59.2	
A361	361	416.9		59.2
A362	A362 362 417.9			
A363	363	418.9		59.2
A364	364	419.9		59.2
A365	365	420.9		59.1
A366	366	421.9		59.1
A367	367	422.9		59.1
A368	368	423.9		59.1
A369	369	424.9		59.1
A370	370	425.9		59.1
A371	371	426.9		59.1
A372	372	427.9		59.0
A373	373	428.9		59.0
A374	374	429.9		59.0
A375	375	430.9		59.0
A376	376	431.9		59.0
A377	377	432.9		59.0
A378	378	433.9		59.0
A379	379	434.9		58.9
A380	380	435.9		58.9
A381	381	436.9		58.9
A382	382	437.9		58.9
A383	383	438.9		58.9

Structure Related Noise Calculation Worksheet				
	K1978	36: I-205 Widening and S	Seismic Improvements	
		Southbound	Side	
Input Data:				
h: Height of str	ructure, from groun	d to underside of deck		50
Aref: Center p	oint between grour	nd and underside of strue	cture (h/2)	25
w: Width of St	ructure			100
Mw: Midpoint	t of structure (w/2)	The underside of the dee	ck at this point is the	
assumed sourc	e of structure noise	e (S)		50
Dref: Reference	ce distance - from S	to Aref		55.9
Measured Nois	se Level at Drip Edg	e, dB(A)		72.3
Set-back Calcu	lations:	Ι		
			Measured Noise Level	Calculated Noise Level
	Distance from	Distance from Analysis	at Drip Edge Leq in	Drop-off Rate = 4.5
Analysis Point	Drip Edge (ft.)	Point (ft.)	dB(A)	dB/DD
A384	384	439.9		58.9
A385	385	440.9		58.8
A386	386	441.9		58.8
A387	387	442.9		58.8
A388	388	443.9		58.8
A389	389	444.9		58.8
A390	390	445.9		58.8
A391	391	446.9	58.8	
A392	392	392 447.9		
A393	393	448.9		58.7
A394	394	449.9		58.7
A395	395	450.9		58.7
A396	396	451.9		58.7
A397	397	452.9		58.7
A398	398	453.9		58.7
A399	399	454.9		58.6
A400	400	455.9		58.6
A401	401	456.9		58.6
A402	402	457.9		58.6
A403	403	458.9		58.6
A404	404	459.9		58.6
A405	405	460.9		58.6
A406	406	461.9		58.5
A407	407	462.9		58.5
A408	408	463.9		58.5
A409	409	464.9		58.5
A410	410	465.9		58.5
A411	411	466.9		58.5
A412	412	467.9		58.5
A413	413	468.9		58.4
A414	414	469.9		58.4
A415	415	470.9		58.4

Structure Related Noise Calculation Worksheet				
	K1978	36: I-205 Widening and S	Seismic Improvements	
		Southbound	Side	
Input Data:				
h: Height of str	ructure, from groun	d to underside of deck		50
Aref: Center p	oint between grour	nd and underside of strue	cture (h/2)	25
w: Width of St	ructure			100
Mw: Midpoint	t of structure (w/2)	The underside of the dee	ck at this point is the	
assumed source	e of structure noise	e (S)		50
Dref: Reference	ce distance - from S	to Aref		55.9
Measured Nois	se Level at Drip Edg	e, dB(A)		72.3
Set-back Calcu	lations:	I	I	
			Measured Noise Level	Calculated Noise Level
	Distance from	Distance from Analysis	at Drip Edge Leq in	Drop-off Rate = 4.5
Analysis Point	Drip Edge (ft.)	Point (ft.)	dB(A)	dB/DD
A416	416	471.9		58.4
A417	417	472.9		58.4
A418	418	473.9		58.4
A419	419	474.9		58.4
A420	420	475.9		58.3
A421	421	476.9		58.3
A422	422	477.9		58.3
A423	423	478.9	58.3	
A424	424	479.9	58.3	
A425	425	480.9		58.3
A426	426 426 481.9			
A427	427	482.9		58.3
A428	428	483.9		58.2
A429	429	484.9		58.2
A430	430	485.9		58.2
A431	431	486.9		58.2
A432	432	487.9		58.2
A433	433	488.9		58.2
A434	434	489.9		58.2
A435	435	490.9		58.1
A436	436	491.9		58.1
A437	437	492.9		58.1
A438	438	493.9		58.1
A439	439	494.9		58.1
A440	440	495.9		58.1
A441	441	496.9		58.1
A442	442	497.9		58.1
A443	443	498.9		58.0
A444	444	499.9		58.0
A445	445	500.9		58.0
A446	446	501.9		58.0
A447	447	502.9		58.0

Structure Related Noise Calculation Worksheet				
	K1978	36: I-205 Widening and S	Seismic Improvements	
		Southbound	Side	
Input Data:				
h: Height of str	ructure, from groun	d to underside of deck		50
Aref: Center p	oint between grour	nd and underside of strue	cture (h/2)	25
w: Width of Sti	ructure			100
Mw: Midpoint	of structure (w/2)	The underside of the dee	ck at this point is the	
assumed sourc	e of structure noise	e (S)		50
Dref: Reference	ce distance - from S	to Aref		55.9
Measured Nois	se Level at Drip Edg	e, dB(A)		72.3
Set-back Calcu	lations:			
			Measured Noise Level	Calculated Noise Level
	Distance from	Distance from Analysis	at Drip Edge Leq in	Drop-off Rate = 4.5
Analysis Point	Drip Edge (ft.)	Point (ft.)	dB(A)	dB/DD
A448	448	503.9		58.0
A449	449	504.9		58.0
A450	450	505.9		58.0
A451	451	506.9		57.9
A452	452	507.9		57.9
A453	453	508.9		57.9
A454	454	509.9	57.9	
A455	455	510.9		57.9
A456	456	511.9		57.9
A457	457	512.9		57.9
A458	458 458 513.9			
A459	459	514.9		57.8
A460	460	515.9		57.8
A461	461	516.9		57.8
A462	462	517.9		57.8
A463	463	518.9		57.8
A464	464	519.9		57.8
A465	465	520.9		57.8
A466	466	521.9		57.7
A467	467	522.9		57.7
A468	468	523.9		57.7
A469	469	524.9		57.7
A470	470	525.9		57.7
A471	471	526.9		57.7
A472	472	527.9		57.7
A473	473	528.9		57.7
A474	474	529.9		57.6
A475	475	530.9		57.6
A476	476	531.9		57.6
A477	477	532.9		57.6
A478	478	533.9		57.6
A479	479	534.9		57.6

	Stri	ucture Related Noise Cal	culation Worksheet	
	K1978	36: I-205 Widening and S	Seismic Improvements	
		Southbound	Side	
Input Data:				
h: Height of str	ucture, from groun	d to underside of deck		5
Aref: Center po	oint between grour	nd and underside of strue	cture (h/2)	2
w: Width of Str	ucture			10
Mw: Midpoint	of structure (w/2)	The underside of the dee	ck at this point is the	
assumed source	e of structure noise	e (S)		
Dref: Referenc	e distance - from S	to Aref		55
Measured Nois	e Level at Drip Edg	e, dB(A)		72
Set-back Calcul	ations:			
			Measured Noise Level	Calculated Noise Leve
	Distance from	Distance from Analysis	at Drip Edge Leq in	Drop-off Rate = 4.5
Analysis Point	Drip Edge (ft.)	Point (ft.)	dB(A)	dB/DD
A480	480	535.9		57
A481	481	536.9		57
A482	482	537.9	7.9	57
A483	483	538.9		57
A484	484	539.9		57
A485	485	540.9		57
A486	486	541.9		57
A487	487	542.9		57
A488	488	543.9		57
A489	489	544.9		57
A490	490	545.9		57
A491	491	546.9		57
A492	492	547.9		57
A493	493	548.9		57
A494	494	549.9		57
A495	495	550.9		57
A496	496	551.9		57
A497	497	552.9		57
A498	498	553.9		57
A499	499	554.9		57
A500	500	555.9		57

hmmh	PROJECT: I-20	scw + Abornethy Brielgot
	JOB NO.: 309 1	80
SHORT-	TERM NOISE M	EASUREMENT SITE LOG
ASSESSMENT AREA:	WL stele	MEASUREMENT SITE NO .: Wh & truchen Bere
ADDRESS:	west Linn (W	12) SAde of Abornethy Bordye Crossing
OWNER:	West Linn	· · · ·
DESCRIPTION:	Pod Trail /	ROW OBOT
NOISE SOURCES:	I-205	
NOISE MONITOR:	is the 2260	SIN: 41/1 4, 5, 6
MICROPHONE:	13+4	S/N:
CALIBRATOR:	13 HK	S/N:
TEMP. RANGE (°F):	650	WEATHER CONDITIONS: PART Cloud
SITE SKETCH: Show ro wind direction, where ro	oadway, homes, local adway is in cut, at gr	l roads, reference distances, arrows for North & ade, elevated, where direct lines of sight exist.
	J205	River Street River Street River Street River Street River Street River Street River Street
PHOTOS: / ES	GPS CO	ORDINATES: NA STE GAS MAP

•

HARRIS MILLER MILLER & HANSON INC.

NNNNN	SHORT-TERM NOISE ME			
	PROJECT:	K19786:I-205CW		
	JOB NO .:	309180.000		
	ENO · What I	mn Structure Bor		

MEASUREMENT DATA SHEET

Burne Noisei

PERSONNEL: SRN MEASUREMENT SITE NO .: Wes ADDRESS/DESCRIPTION: West Imm Side of Crossing DATE: 6/13/8-6/19/18

V 5 Minute Meas'd COMMENTS Medium Heavy Other Noise # (Include Calibration Period Lea Autos or Trucks Trucks Sources Starting (dBA) X Data) 2:14, - 2:51, 6/13 38 Drip Edg 67.1 1 2 2:14p - 251p 6/13 50 65.2 3 4 62.5 5 85124 2:14, - 2:51, 6/13 6 7 8 DAY Edye 11:52um - 12:11, 66.0 9 10 11: 52am -12:11p 150 SOI 63.7 11 12 11:52 am - 12:11p 1201 61 7 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 SUBSET Leq = TOTAL Leg =

 $\sqrt{1}$ = Other sources contributed to Leq X = Exclude period - contaminated by non-characteristic sources >> ADD SKETCH AND WEATHER CONDITIONS TO REVERSE OR OTHER SHEET <<

West Linn- Structure-Borne Noise Measurements



Drip Edge



Drip Edge View 2



50 Feet



85 feet



120 feet

9	Structure Relate	ed Noise Calcula	ation Workshee	t
K19	9786: I-205 Wid	dening and Seis	mic Improveme	ents
	West Linn Aber	nethy Bridge N	orthbound Side	<u> </u>
Input Data:				
h: Height of str	ructure, from gr	ound to unders	side of deck	85
Aref: Center p	oint between g	round and und	erside of	
structure (h/2)				42.5
w: Width of Sti	ructure			140
Mw: Midpoint	t of structure (w	ı/2) The unders	ide of the deck	
at this point is	the assumed so	ource of structu	re noise (S)	70
Dref: Reference	ce distance - fro	m S to Aref		81.9
Measured Nois	se Level at Drip	Edge, dB(A)		67.1
Set-back Calcu	lations:			
			Measured	Calculated
		Distance from	Noise Level at	Noise Level
	Distance from	Analysis Point	Drip Edge Leq	Drop-off Rate
Analysis Point	Drip Edge (ft.)	(ft.)	in dB(A)	= 3.0 dB/DD
Aref	0	81.9	67.1	
A25	25	106.9		65.9
A50	50	131.9		65.0
A85	85	166.9		64.0
A150	150	231.9		62.6
A200	200	281.9		61.7
A400	400	481.9		59.4
A500	500	581.9		58.6
			Measured	Calculated
		Distance from	Noise Level at	Noise Level
	Distance from	Analysis Point	Drip Edge Leq	Drop-off Rate
Analysis Point	Drip Edge (ft.)	(ft.)	in dB(A)	= 4.0 dB/DD
, Aref	0	81.9	67.1	
A25	25	106.9		65.4
A50	50	131.9		64.0
A85	85	166.9		62.5
A200	200	281.9		59.0
A400	400	481.9		55.6
A500	500	581.9		54.3
			Measured	Calculated
		Distance from	Noise Level at	Noise Level
	Distance from	Analysis Point	Drin Edge Leg	Drop-off Rate
Analysis Point	Drin Edge (ft)	(ft)	in $dB(\Delta)$	
Aref		<u> </u>	67 1	0.0 00/00
A25	25	106.9	07.1	65
A50	50	121 0		63
A85	20 25	166 0		61
A200	200	281 0		50
A/00	200	201.9 //01.0		50
7400	400	401.9		52
A 500	FOO	E01 0		FO

	Structure Related Noise Calculation Worksheet				
	K19786:	I-205 Widening and Seis	mic Improvements		
	West	Linn Abernethy Bridge N	orthbound Side		
Input Data:					
h: Height of structure,	, from ground to unc	lerside of deck		85	
Aref: Center point be	tween ground and u	nderside of structure (h/	2)	42.5	
w: Width of Structure				140	
Mw: Midpoint of stru	cture (w/2) The und	erside of the deck at this	point is the assumed		
source of structure no	oise (S)			70	
Dref: Reference dista	nce - from S to Aref			81.9	
Measured Noise Level	at Drip Edge, dB(A)			67.1	
Set-back Calculations:					
				Calculated Noise Level	
	Distance from Drin	Distance from Analysis	Measured Noise Level at	Dron-off Rate = 4.5	
Analysis Point	Edge (ft)	Point (ft)	Drin Edge Leg in $dB(\Delta)$		
Analysis Forne	0	81 Q	67 1	00/00	
A1C1	0	82.0	07.1	67.0	
A1 A2	2	83.0		66.9	
A2	2	03.9		66.0	
A3	3	04.9		00.9 66.9	
A4	4 5	05.9		00.0 66.7	
AS	5	00.9		00.7 66.6	
A6	0	87.9		00.0	
A7	/	88.9		00.0 CC F	
A8	8	89.9		66.5	
A9	9	90.9		66.4	
A10	10	91.9		66.3	
A11	11	92.9		66.3	
A12	12	93.9		66.2	
A13	13	94.9		66.1	
A14	14	95.9		66.1	
A15	15	96.9		66.0	
A16	16	97.9		65.9	
A17	1/	98.9		65.9	
A18	18	99.9		65.8	
A19	19	100.9		65.7	
A20	20	101.9		65.7	
A21	21	102.9		65.6	
A22	22	103.9		65.5	
A23	23	104.9		65.5	
A24	24	105.9		65.4	
A25	25	106.9		65.4	
A26	26	107.9		65.3	
A27	27	108.9		65.2	
A28	28	109.9		65.2	
A29	29	110.9		65.1	
A30	30	111.9		65.1	
A31	31	112.9		65.0	
A32	32	113.9		65.0	
A33	33	114.9		64.9	
A34	34	115.9		64.8	
A35	35	116.9		64.8	
A36	36	117.9		64.7	
A37	37	118.9		64.7	
A38	38	119.9		64.6	
A39	39	120.9		64.6	
A40	40	121.9		64.5	

Structure Related Noise Calculation Worksheet				
	K19786:	I-205 Widening and Seis	mic Improvements	
	West	Linn Abernethy Bridge N	orthbound Side	
Input Data:				
h: Height of structure	, from ground to und	lerside of deck		85
Aref: Center point be	tween ground and u	nderside of structure (h/	2)	42.5
w: Width of Structure				140
Mw: Midpoint of stru	icture (w/2) The und	erside of the deck at this	point is the assumed	
source of structure no	oise (S)			70
Dref: Reference dista	nce - from S to Aref			81.9
Measured Noise Leve	l at Drip Edge, dB(A)			67.1
Set-back Calculations:				
				Calculated Noise Level
	Distance from Drin	Distance from Analysis	Measured Noise Level at	Dron-off Rate = 4.5
Analysis Point	Edge (ft)	Point (ft)	Drin Edge Leg in dB(A)	dB/DD
		122.9		64 5
Δ42	41	122.9		64.4
Δ/3	42	123.5		64.4
	45	124.5		64.3
Δ45	44	125.5		64.2
A45 A46	45	120.5		64.2
A40 A47	40	127.5		64.1
A47 A48	47	120.5		64.1
A48	48	129.9		64.0
A49	49	121.0		64.0
A50	50	131.9		63.0
A51 A52	51	132.9		62.0
A52	52	133.9		63.9
A53	53	134.9		62.8
A54	54	135.9		63.8
A55	55	130.5		63.7
A50	57	137.9		63.7
A57	57	138.9		63.6
A58	50	135.5		63.6
A55	55	140.5		63.5
A61	61	141.5		63.5
A01 A62	62	142.5		63.4
A02 A63	63	143.5		63.4
A63	64	1/15.0		63.3
A65	65	145.5		63.3
A66	66	140.5		63.2
A67	67	147.5		63.2
A67	68	1/0.0		63.2
A69	69	149.9		63.1
A05	70	150.5		63.1
A70 A71	70	151.5		63.0
A71 A72	71	152.0		63.0
A72	72	153.9		62.0
Δ74	75	154.9		62.9
Δ75	74	155.9		62.9
A76	75	150.9		02.9 دعام
A70 A77	/0 רד	157.9		02.8 62.0
A78	// סד	100.9		02.0 בר ד
A70	78	129.9		02.7 د د ع
A80	/9	161.0		62.7 62.7
A81	00 Q1	162.0		62.7
	01	102.5		52.0

K19786: I-205 Widening and Sakmic Improvements West Linn Abernethy Bridge Northbound Side Input Data: Sature West Linn Abernethy Bridge Northbound Side Aref: Center point between ground and underside of structure (h/2) 425 Width of Structure (m/2) the underside of the deck at this point is the assumed Soture of structure (m/2) the underside of the deck at this point is the assumed Source of structure noise (S) Colspan="2">Calculated Noise Level at Drip Edge, dB(A) Calculated Noise Level at Drip Edge, dB(A) Deff: Reference distance - from Sto Aref Calculated Noise Level at Drip Edge, dB(A) Calculated Noise Level at Drip Edge (g1(1)) Measured Noise Level at Drip Edge (g1(1)) Distance from Analysis Measured Noise Level at Drop-off Rate = 4.5 Distance from Drip Distance from Analysis Measured Noise Level at Drop-off Rate = 4.5 d6/2.4 A82 83 166.9 Calculated Noise Level At Drop-off Rate = 4.5 Distance from Drip Distance from Analysis Measured Noise Level at Drop off Rate = 4.5 d6/2.4 A83 164.9 Calculated Noise Level at Drop off Rate = 4.5 d6/2.4 A84	Structure Related Noise Calculation Worksheet				
West Linn Abernethy Bridge Northbound Side Input Data: Second and underside of deck Second and underside of structure (h/2) Second and underside of the deck at this point is the assumed Wirdt in of structure (h/2) Image Second and Underside of the deck at this point is the assumed Tord Dref. Reference distance - from S to Aref Second Second Addition		K19786:	I-205 Widening and Seis	mic Improvements	
Input Data: (not Data: (3) Neight of Structure, from ground and underside of texture (h/2) 42.5 wr. Midpoint of Structure (w/2) The underside of the deck at this point is the assumed 140 Mix- Midpoint of Structure (w/2) The underside of the deck at this point is the assumed 70 Dreff: Reference distance - from S to Aref 81.9 Measured Noise Level at Drip Edge, dB(A) Point (fL) Measured Noise Level at Drip Edge, dB(A) Calculated Noise Level at Drip Edge, dB(A) ARalysis Point Edge (fL) Point (fL) Measured Noise Level at Drip Edge, dB(A) Calculated Noise Level at Drip Edge (fL) Calculated Noise Level at Drip Edge (fL) 0.62.5 A83 83 166.9 62.5 62.5 A84 86 167.9 62.2 A83 83 169.9 62.3 A84 88 169.9 62.3 A85 166.9 62.3 A86 167.9 62.2 A84 88 169.9 62.3 A85 166.9 62.3 A86 167.9 62.2		West	Linn Abernethy Bridge N	orthbound Side	
h: Height of structure, from ground to underside of deck 88 Aref: Center point between ground and underside of structure (h/2) 42.5 Width of structure (w/2) The underside of the deck at this point is the assumed source of structure noise (S) 700 Dref: Reference distance - from S to Aref 81.9 Messured Noise Level at Drip Edge, dB(A) 67.1 Set-back Calculations: 0 Analysis Point Distance from Drip Distance from Drip Measured Noise Level at Point (ft.) Calculated Noise Level at Drop-off Rate = 4.5 A83 164.9 62.6 A84 165.9 62.5 A85 166.9 62.2 A84 165.9 62.2 A85 166.9 62.2 A86 167.9 62.2 A88 168.9 62.2 A89 170.9 62.3 A90 90 171.9 62.2 A91 91 172.9 62.2 A92 173.9 62.2 A93 174.9 62.2 A94 175.9 62.2	Input Data:				
Aref: Center point between ground and underside of structure (h/2) 140 Mw: Midpoint of structure (w/2) The underside of the deck at this point is the assumed 70 Source of structure new (x/2) The underside of the deck at this point is the assumed 70 Dref: Reference elistance - from 5 to Aref 81.9 Measured Noise Level at Drip Edge, dB(A) Measured Noise Level at Drip Edge (ft) 0/10 Set-back Calculations: Distance from Drip Distance from Analysis Measured Noise Level at Drip Edge (ft) 0/16 (ft) A82 163.9 62.5 64.0 62.5 A84 83 166.9 62.5 64.2 A83 84 165.9 62.5 A84 88 166.9 62.3 A85 166.9 62.3 A89 89 170.9 62.2 A81 19.9 62.2 A82 88 169.9 62.2 A83 89 170.9 62.2 A84 105.9 62.2 A85 176.9 62.2	h: Height of structure,	from ground to und	lerside of deck		85
www.width of Structure (w/2) The underside of the deck at this point is the assumed source of structure noise (S) 70 Dref. Reference distance - from S to Aref 8119 Measured Noise Level at Drip Edge, dB(A) 67.1 Set-back Calculations: 0 Analysis Point Edge (ft.) Neasured Noise Level at Drip Edge Leq in dB(A) Calculated Noise Level at Drop-off Rate = 4.5 A82 163.9 0 62.5 A83 83 164.9 62.5 A84 84 165.9 62.5 A85 166.9 62.3 62.4 A84 84 165.9 62.5 A85 166.9 62.2 62.3 A86 167.9 62.2 A87 88 169.9 62.2 A88 189.9 62.2 62.2 A89 170.9 62.2 62.2 A89 170.9 62.2 62.2 A89 170.9 62.2 62.2 A91 9.3 172.9 62.2 A91	Aref: Center point be	tween ground and u	nderside of structure (h/	2)	42.5
Mw: Multipoint of structure (w/2) The underside of the deck at this point is the assumed point is the assumed point is the assumed at Drip Edge, dB(A) 70 Dref: Reference distance - from 5 to Aref 67.1 Measured Noise Level at Drip Edge, dB(A) 67.1 St-back Calculations: bistance from Drip Distance from Analysis Measured Noise Level at Drip Edge Leq in dB(A) Calculated Noise Level A Drop Edge Leq in dB(A) A82 82 163.9 62.5 68.5 68.6 62.5 A83 83 166.9 62.5 68.5 62.5 A84 88 166.9 62.5 62.5 A85 86 167.9 62.2 A86 88 160.9 62.2 A87 88 106.9 62.2 A88 88 106.9 62.2 A89 170.9 62.2 A90 90 171.9 62.2 A92 92 173.9 62.2 A93 174.9 62.2 A93 174.9 62.0	w: Width of Structure				140
source of structure noise (s) 70 Dref: Reference disance - from 5 to Aref 81.9 Measured Noise Level at Drip Edge, dB(A) 67.1 Set-back Calculations: Measured Noise Level at Drop Edge, dB(A) Calculated Noise Level at Drop-off Rate = 4.5 Analysis Point Edge (ft.) Distance from Analysis Measured Noise Level at Drop-off Rate = 4.5 A82 83 164.9 62.5 A83 83 164.9 62.5 A84 84 165.9 62.5 A85 86 167.9 62.4 A87 87 168.9 62.4 A88 88 169.9 62.3 A89 90 171.9 62.3 A90 90 171.9 62.2 A91 91 172.9 62.2 A92 93 174.9 62.2 A93 93 174.9 62.2 A94 94 175.9 62.0 A94 94 175.9 62.0 A97	Mw: Midpoint of stru	cture (w/2) The und	erside of the deck at this	point is the assumed	
Dref: Reference distance - from S to Aref 81.9 Measured Noise Level at Drip Edge, dB(A) G7.1 Set-back Calculations: Distance from Drip Distance from Analysis Measured Noise Level at Drip Edge (B(L) Calculated Noise Level at Drip Edge (B(L)	source of structure no	ise (S)			70
Measured Noise Level at Drip Edge, dB(A) G7.1 Set-back Calculations: Distance from Drip Distance from Analysis Measured Noise Level at Drip Edge Leq in dB(A) Calculated Noise Level At Drip Edge Leq in dB(A) A82 163.9 Measured Noise Level at Calculated Noise Level At Drip Edge Leq in dB(A) Calculated Noise Level At Drip Edge Leq in dB(A) A82 163.9 Measured Noise Level at Calculated Noise Level At Drip Edge Leq in dB(A) Calculated Noise Level At Drip Edge Leq in dB(A) A84 83 166.9 62.5 A85 85 166.9 62.25 A86 86 167.9 62.4 A88 88 169.9 62.3 A89 90 171.9 62.2 A91 91 172.9 62.2 A92 29.2 173.9 62.2 A93 93 174.9 62.2 A94 175.9 62.0 A95 176.9 62.0 A94 175.9 62.0 A95 176.9 62.0 A99 99 <	Dref: Reference dista	81.9			
Set-back Calculations: Distance from Drip Edge (ft.) Distance from Analysis Point (ft.) Measured Noise Level al Drip- Edge Leq in dB(A) Calculated Noise Level Drop-off Rate = 4.5 dB/DD A82 163.9 62.6 A83 83 164.9 62.5 A84 84 165.9 62.5 A85 85 166.9 62.5 A86 88 166.9 62.4 A87 87 168.9 62.4 A88 88 169.9 62.3 A89 90 017.9 62.3 A90 90 171.9 62.2 A91 91 172.9 62.2 A92 92 173.9 62.2 A93 93 174.9 62.2 A94 94 175.9 62.0 A95 95 176.9 62.0 A96 97.7 178.9 62.0 A98 99 179.9 62.0 A99 99 179.9 62.0 <td>Measured Noise Level</td> <td>at Drip Edge, dB(A)</td> <td></td> <td></td> <td>67.1</td>	Measured Noise Level	at Drip Edge, dB(A)			67.1
Jostance from Drip Distance from Analysis Measured Noise Level at Drip Edge Level at Drip	Set-back Calculations:	•			
Analysis PointDistance from Drip Edge (ft.)Distance from Analysis Point (ft.)Measured Noise Level at Drip Edge Leq in dB(A)Drop-off Rate = 4.5 dB/DDA8283163.962.5A8484165.962.5A8585166.962.5A8686167.962.4A8787168.962.3A8888169.962.3A8990171.962.3A9090171.962.3A9191172.962.2A9292173.962.2A9393174.962.2A9494175.962.1A9595176.962.0A9696177.962.0A9797178.962.0A9898170.962.0A9999180.961.9A100100181.961.8A103103184.961.8A104104185.961.7A106106187.961.7A107107188.961.6A103103184.961.6A114114195.961.6A114114195.961.5A1131113194.961.5A114114195.961.5A114114195.961.5A114114195.961.5A1131113194.961.5A114					Calculated Noise Level
Analysis Point Edge (ft.) Point (ft.) Drip Edge Leq in dB(A) dB/D0 A82 83 164.9 62.5 A84 84 165.9 62.5 A85 85 166.9 62.5 A86 86 167.9 62.4 A87 87 168.9 62.4 A88 88 169.9 62.3 A89 89 170.9 62.3 A80 90 171.9 62.3 A91 91 172.9 62.2 A93 93 174.9 62.2 A93 93 174.9 62.2 A94 94 175.9 62.1 A94 94 175.9 62.0 A94 94 175.9 62.0 A95 95 176.9 62.0 A96 96 177.9 62.0 A97 97 178.9 61.9 A100 100 181.9 6		Distance from Drip	Distance from Analysis	Measured Noise Level at	Drop-off Rate = 4.5
AB2 B2 D10 D11 D12 D11 D11 D12 D11 D10 D11 D11 <thd10< th=""> <thd10< th=""> <thd10< th=""></thd10<></thd10<></thd10<>	Analysis Point	Edge (ft.)	Point (ft.)	Drip Edge Leg in dB(A)	dB/DD
163 164.9 62.5 $A83$ 83 164.9 62.5 $A84$ 84 165.9 62.5 $A85$ 85 166.9 62.4 $A87$ 87 168.9 62.4 $A87$ 87 168.9 62.4 $A88$ 88 169.9 62.3 $A89$ 89 170.9 62.3 $A90$ 90 171.9 62.2 $A91$ 91 172.9 62.2 $A92$ 92 173.9 62.2 $A94$ 94 175.9 62.1 $A95$ 95 176.9 62.0 $A97$ 97 178.9 62.0 $A97$ 97 178.9 62.0 $A99$ 99 180.9 61.9 $A100$ 100 181.9 61.9 $A102$ 102 103 184.9 61.8	A82	82	163.9	2p 2686 269 62()	62.6
323 324 344 165.9 62.55 $A85$ 855 166.9 62.55 $A86$ 86 167.9 62.4 $A87$ 87 168.9 62.4 $A88$ 88 169.9 62.3 $A89$ 89 170.9 62.3 $A90$ 90 171.9 62.3 $A91$ 91 172.9 62.2 $A92$ 92 173.9 62.2 $A92$ 92 173.9 62.2 $A92$ 92 173.9 62.2 $A94$ 94 175.9 62.1 $A95$ 95 176.9 62.0 $A97$ 97 178.9 62.0 $A98$ 98 179.9 62.0 $A99$ 99 180.9 61.9 $A100$ 100 181.9 61.9 $A102$ 102 183.9	A83	83	164.9		62.5
λ λ λ λ A85 86 166.9 62.5 A86 86 167.9 62.4 A87 87 168.9 62.4 A88 88 169.9 62.3 A89 89 170.9 62.3 A90 90 171.9 62.2 A92 92 173.9 62.2 A93 93 174.9 62.2 A93 93 177.9 62.1 A94 94 175.9 62.1 A95 95 176.9 62.1 A96 96 177.9 62.0 A97 97 178.9 62.0 A98 98 179.9 62.0 A99 99 180.9 61.9 A100 100 181.9 61.9 A101 101 182.9 61.9 A102 1002 183.9 61.8 A103	A84	84	165.9		62.5
A86 $B6$ 167.9 62.4 $A87$ 87 168.9 62.4 $A87$ 87 168.9 62.4 $A88$ 88 169.9 62.3 $A90$ 90 171.9 62.3 $A91$ 91 172.9 62.2 $A92$ 92 173.9 62.2 $A93$ 93 174.9 62.2 $A94$ 94 175.9 62.1 $A95$ 95 176.9 62.1 $A96$ 96 177.9 62.0 $A97$ 97 178.9 62.0 $A97$ 99 180.9 61.9 $A100$ 100 181.9 61.9 $A101$ 101 182.9 61.9 $A102$ 102 183.9 61.8 $A103$ 103 184.9 61.8 $A104$ 104 185.9 61.7 $A106$ 106 187.9 61.7 $A107$ 107 188.9 61.7 $A106$ 106 187.9 61.7 $A112$ 112 193.9 61.6 $A113$ 113 194.9 61.5 $A114$ 114 195.9 61.4 $A114$ 114 195.9 61.4 $A114$ 114 195.9 61.4 $A114$ 114 195.9 61.4 $A114$ 111 192.9 61.5 $A113$ 113 194.9 61.5 $A114$ 111 192.9 61.5 <td>A85</td> <td>85</td> <td>166.9</td> <td></td> <td>62.5</td>	A85	85	166.9		62.5
300 301 301 301 301 A87 87 168.9 62.4 A88 88 169.9 62.3 A89 89 170.9 62.3 A90 90 171.9 62.2 A91 91 172.9 62.2 A92 92 173.9 62.2 A93 93 174.9 62.2 A93 93 174.9 62.2 A94 94 175.9 62.1 A95 95 176.9 62.1 A96 96 177.9 62.0 A98 98 179.9 62.0 A98 98 179.9 62.0 A99 99 180.9 61.9 A100 100 181.9 61.9 A101 101 182.9 61.8 A103 103 184.9 61.8 A104 104 185.9 61.7	A86	86	167.9		62.5
A88A88A89A88A60.9 62.3 A8990170.9 62.3 A9090171.9 62.3 A9191172.9 62.2 A9292173.9 62.2 A9393174.9 62.2 A9494175.9 62.1 A9595176.9 62.1 A9696177.9 62.0 A9797178.9 62.0 A9898179.9 62.0 A9999180.9 61.9 A100100181.9 61.9 A101101182.9 61.8 A104104185.9 61.8 A103103184.9 61.8 A104106187.9 61.7 A107107188.9 61.6 A109109190.9 61.6 A111111192.9 61.5 A112112193.9 61.5 A113113194.9 61.5 A114114195.9 61.7 A117117198.9 61.3 A118118199.9 61.3 A118118199.9 61.3 A118118199.9 61.3 A114116116197.9A115116197.9 61.4 A116116197.9 61.3 A113113194.9 61.5 A114114105.9 61.3 A11311	A87	87	168.9		62.4
1000 1000 1000 1000 $A89$ 89 170.9 62.3 $A91$ 91 172.9 62.2 $A92$ 92 173.9 62.2 $A93$ 93 174.9 62.2 $A94$ 94 175.9 62.2 $A94$ 94 175.9 62.1 $A95$ 95 176.9 62.0 $A96$ 96 177.9 62.0 $A97$ 97 178.9 62.0 $A98$ 98 179.9 62.0 $A99$ 99 180.9 61.9 $A100$ 100 181.9 61.9 $A101$ 101 182.9 61.9 $A102$ 102 183.9 61.8 $A103$ 103 184.9 61.8 $A104$ 104 185.9 61.7 $A105$ 105 186.9 61.7 $A106$ 106 187.9 61.7 $A107$ 107 188.9 61.7 $A108$ 108 189.9 61.6 $A110$ 110 191.9 61.6 $A111$ 111 192.9 61.5 $A112$ 112 193.9 61.5 $A114$ 114 195.9 61.4 $A116$ 116 197.9 61.4 $A116$ 116 197.9 61.5 $A112$ 112 193.9 61.5 $A114$ 114 195.9 61.5 $A114$ 114 195.9 61.6	A88	88	169.9		62.3
A90 30 171.9 62.3 A9191 172.9 62.2 A9292 173.9 62.2 A9393 174.9 62.2 A9494 175.9 62.1 A9595 176.9 62.1 A9696 177.9 62.0 A9797 178.9 62.0 A9898 179.9 62.0 A9999 180.9 61.9 A100100 181.9 61.9 A101101 182.9 61.8 A103103 184.9 61.8 A104104 185.9 61.7 A105105 186.9 61.7 A107107 188.9 61.6 A109109 190.9 61.6 A111111 192.9 61.5 A112112 193.9 61.5 A114114 194.9 61.5 A115115 196.9 61.4 A116116 197.9 61.6 A117117 198.9 61.6 A114 114 195.9 61.4 A115 113 194.9 61.5 A114 114 195.9 61.4 A115 115 196.9 61.4 A116 116 197.9 61.5 A113 113 194.9 61.5 A114 114 195.9 61.4 A115 115 196.9 61.4 A116 11	A89	89	170.9		62.3
A91 $B1$ 172.9 62.2 $A92$ 92 173.9 62.2 $A93$ 93 174.9 62.2 $A94$ 94 175.9 62.1 $A94$ 94 175.9 62.1 $A95$ 95 176.9 62.0 $A96$ 96 177.9 62.0 $A97$ 97 178.9 62.0 $A98$ 98 179.9 62.0 $A99$ 99 180.9 61.9 $A100$ 100 181.9 61.9 $A102$ 102 183.9 61.8 $A103$ 103 184.9 61.8 $A104$ 104 185.9 61.7 $A105$ 105 186.9 61.7 $A107$ 107 188.9 61.7 $A107$ 100 189.9 61.6 $A109$ 109 190.9 61.6 $A111$ 111 192.9 61.5 $A112$ 112 193.9 61.5 $A114$ 114 195.9 61.4 $A115$ 115 196.9 61.4 $A116$ 116 197.9 61.4 $A116$ 116 197.9 61.3 $A113$ 113 194.9 61.5 $A114$ 114 195.9 61.4 $A115$ 115 196.9 61.3 $A114$ 114 197.9 61.3 $A112$ 113 199.9 61.3 $A114$ 114 197.9 61	A90	90	170.5		62.3
A92 92 173.9 62.2 A93 93 174.9 62.2 A94 94 175.9 62.1 A95 95 176.9 62.0 A96 96 177.9 62.0 A97 97 178.9 62.0 A98 98 179.9 62.0 A99 99 180.9 62.0 A99 99 180.9 62.0 A99 99 180.9 61.9 A100 100 181.9 61.9 A101 101 182.9 61.9 A102 102 183.9 61.8 A103 103 184.9 61.8 A104 104 185.9 61.7 A105 105 186.9 61.7 A106 101 191.9 61.6 A107 107 188.9 61.6 A108 108 189.9 61.6 A110 110 191.9 61.6 A111 111 192.9	A91	91	171.5		62.2
A93 $D3$ 173.9 017.3 $A93$ 93 174.9 62.2 $A94$ 94 175.9 62.1 $A95$ 95 176.9 62.1 $A96$ 96 177.9 62.0 $A97$ 97 178.9 62.0 $A98$ 98 179.9 62.0 $A99$ 99 180.9 61.9 $A100$ 100 181.9 61.9 $A101$ 101 182.9 61.9 $A102$ 102 183.9 61.8 $A103$ 103 184.9 61.8 $A104$ 104 185.9 61.7 $A105$ 105 186.9 61.7 $A106$ 106 187.9 61.7 $A107$ 107 188.9 61.6 $A109$ 109 190.9 61.6 $A110$ 110 191.9 61.5 $A112$ 112 193.9 61.5 $A114$ 114 192.9 61.5 $A114$ 114 195.9 61.4 $A115$ 115 196.9 61.4 $A116$ 116 197.9 61.4 $A116$ 116 197.9 61.3 $A118$ 118 199.9 61.3 $A120$ 120 201.9 61.2 $A121$ 122 203.9 61.2	A91 A92	92	172.5		62.2
A94 $A94$ 173.9 041 $A95$ 95 176.9 62.1 $A96$ 96 177.9 62.0 $A97$ 97 178.9 62.0 $A98$ 98 179.9 62.0 $A99$ 99 180.9 61.9 $A100$ 100 181.9 61.9 $A102$ 102 183.9 61.9 $A102$ 102 183.9 61.8 $A103$ 103 184.9 61.8 $A104$ 104 185.9 61.7 $A105$ 105 186.9 61.7 $A106$ 106 187.9 61.7 $A107$ 107 188.9 61.6 $A109$ 109 190.9 61.6 $A110$ 110 191.9 61.6 $A111$ 111 192.9 61.5 $A114$ 114 195.9 61.7 $A114$ 114 195.9 61.5 $A114$ 114 195.9 61.5 $A114$ 114 195.9 61.4 $A115$ 115 196.9 61.4 $A116$ 116 197.9 61.3 $A118$ 118 199.9 61.3 $A120$ 120 201.9 61.2 $A121$ 121 202.9 61.2 $A122$ 122 203.9 61.2	A92	92	173.5		62.2
137 175.9 176.9 A9595 176.9 62.1 A9696 177.9 62.0 A9797 178.9 62.0 A9898 179.9 62.0 A9999 180.9 61.9 A100100 181.9 61.9 A101101 182.9 61.9 A102102 183.9 61.8 A103103 184.9 61.8 A104104 185.9 61.7 A105105 186.9 61.7 A106106 187.9 61.7 A107107 188.9 61.6 A109109190.9 61.6 A110110 91.99 61.5 A112112 193.9 61.5 A113113 194.9 61.4 A115115 196.9 61.4 A116116 197.9 61.3 A118118 199.9 61.3 A119119 200.9 61.3 A120120 201.9 61.2 A122122 203.9 61.2	A94	94	175.9		62.1
A96 35 17.5 62.0 $A97$ 97 178.9 62.0 $A98$ 98 179.9 62.0 $A99$ 99 180.9 61.9 $A100$ 100 181.9 61.9 $A101$ 101 182.9 61.9 $A102$ 102 183.9 61.8 $A103$ 103 184.9 61.8 $A104$ 104 185.9 61.7 $A105$ 105 186.9 61.7 $A106$ 106 187.9 61.7 $A107$ 107 188.9 61.6 $A109$ 109 190.9 61.6 $A110$ 110 91.9 61.5 $A112$ 112 193.9 61.5 $A114$ 114 192.9 61.5 $A114$ 114 195.9 61.4 $A115$ 115 196.9 61.4 $A116$ 116 197.9 61.5 $A113$ 113 194.9 61.5 $A114$ 114 195.9 61.4 $A115$ 115 196.9 61.3 $A114$ 118 199.9 61.3 $A113$ 113 199.9 61.3 $A114$ 114 199.9 61.3 $A112$ 112 202.9 61.2 $A122$ 122 203.9 61.2	A95	95	176.9		62.1
135 173.5 173.5 $A97$ 97 178.5 62.0 $A98$ 98 179.9 62.0 $A99$ 99 180.9 61.9 $A100$ 100 181.9 61.9 $A101$ 101 182.9 61.9 $A102$ 102 183.9 61.8 $A103$ 103 184.9 61.8 $A104$ 104 185.9 61.7 $A105$ 105 186.9 61.7 $A106$ 106 187.9 61.7 $A107$ 107 188.9 61.6 $A109$ 109 190.9 61.6 $A110$ 110 91.9 61.6 $A111$ 111 192.9 61.5 $A112$ 112 193.9 61.5 $A114$ 114 195.9 61.4 $A115$ 115 196.9 61.4 $A117$ 117 198.9 61.3 $A118$ 118 199.9 61.3 $A119$ 119 200.9 61.3 $A120$ 120 201.9 61.2 $A121$ 121 202.9 61.2	A96	96	170.5		62.0
A98 98 179.9 62.0 $A99$ 99 180.9 61.9 $A100$ 100 181.9 61.9 $A101$ 101 182.9 61.9 $A102$ 102 183.9 61.8 $A103$ 103 184.9 61.8 $A104$ 104 185.9 61.8 $A105$ 105 186.9 61.7 $A106$ 106 187.9 61.7 $A107$ 107 188.9 61.6 $A109$ 109 190.9 61.6 $A109$ 109 190.9 61.6 $A110$ 110 91.9 61.5 $A111$ 111 192.9 61.5 $A112$ 112 193.9 61.5 $A114$ 114 195.9 61.4 $A115$ 115 196.9 61.4 $A117$ 117 198.9 61.3 $A118$ 118 199.9 61.3 $A119$ 119 200.9 61.3 $A120$ 120 202.9 61.2 $A122$ 122 203.9 61.2	A97	97	178.9		62.0
Ass Ass Ass Ass Ass 99 180.9 61.9 A100 100 181.9 61.9 A101 101 182.9 61.9 A102 102 183.9 61.8 A103 103 184.9 61.8 A104 104 185.9 61.8 A105 105 186.9 61.7 A106 106 187.9 61.7 A107 107 188.9 61.6 A109 109 190.9 61.6 A109 109 190.9 61.6 A110 110 191.9 61.6 A111 111 192.9 61.5 A112 112 193.9 61.5 A113 113 194.9 61.4 A114 114 195.9 61.4 A115 115 196.9 61.4 A116 116 197.9 61.3	A98	98	179.9		62.0
A100 $B10$ $B10$ $B10$ $A101$ 100 181.9 61.9 $A101$ 101 182.9 61.9 $A102$ 102 183.9 61.8 $A103$ 103 184.9 61.8 $A104$ 104 185.9 61.7 $A106$ 106 187.9 61.7 $A106$ 106 187.9 61.7 $A107$ 107 188.9 61.7 $A108$ 108 189.9 61.6 $A109$ 109 190.9 61.6 $A110$ 110 191.9 61.6 $A111$ 111 192.9 61.5 $A112$ 112 193.9 61.5 $A114$ 114 195.9 61.4 $A115$ 115 196.9 61.4 $A116$ 116 197.9 61.4 $A118$ 118 199.9 61.3 $A120$ 120 201.9 61.2 $A122$ 122 203.9 61.2	A99	99	180.9		61.9
A100 100 101 182.9 61.9 $A102$ 102 183.9 61.8 $A103$ 103 184.9 61.8 $A104$ 104 185.9 61.8 $A105$ 105 186.9 61.7 $A106$ 106 187.9 61.7 $A107$ 107 188.9 61.7 $A108$ 108 189.9 61.6 $A109$ 109 190.9 61.6 $A110$ 110 191.9 61.6 $A111$ 111 192.9 61.5 $A112$ 112 193.9 61.5 $A114$ 114 195.9 61.4 $A116$ 116 197.9 61.4 $A117$ 117 198.9 61.3 $A118$ 118 199.9 61.3 $A120$ 120 201.9 61.2 $A121$ 121 202.9 61.2 $A122$ 122 203.9 61.2	A100	100	180.9		61.9
101 101 101 101 A102 102 183.9 61.8 A103 103 184.9 61.8 A104 104 185.9 61.8 A105 105 186.9 61.7 A106 106 187.9 61.7 A107 107 188.9 61.7 A108 108 189.9 61.6 A109 109 190.9 61.6 A110 110 191.9 61.6 A111 111 192.9 61.5 A112 112 193.9 61.5 A113 113 194.9 61.5 A114 114 195.9 61.4 A115 115 196.9 61.4 A116 116 197.9 61.3 A118 118 199.9 61.3 A118 118 199.9 61.3 A119 119 200.9 61.2	A101	101	182.9		61.9
A103 103 184.9 61.8 A104 104 185.9 61.8 A105 105 186.9 61.7 A106 106 187.9 61.7 A107 107 188.9 61.7 A108 108 189.9 61.7 A109 109 190.9 61.6 A110 110 191.9 61.6 A110 110 191.9 61.6 A111 111 192.9 61.5 A112 112 193.9 61.5 A113 113 194.9 61.5 A114 114 195.9 61.4 A115 115 196.9 61.4 A116 116 197.9 61.3 A118 118 199.9 61.3 A118 118 199.9 61.3 A119 119 200.9 61.3 A120 120 201.9 61.2	A102	102	183.9		61.8
A100 100 185.9 61.8 A104 104 185.9 61.8 A105 105 186.9 61.7 A106 106 187.9 61.7 A107 107 188.9 61.7 A108 108 189.9 61.6 A109 109 190.9 61.6 A110 110 191.9 61.6 A110 110 191.9 61.6 A111 111 192.9 61.5 A112 112 193.9 61.5 A113 113 194.9 61.5 A114 114 195.9 61.4 A115 115 196.9 61.4 A116 116 197.9 61.3 A118 118 199.9 61.3 A119 119 200.9 61.3 A120 120 201.9 61.2 A121 121 202.9 61.2	A103	103	184 9		61.8
A105 105 186.9 61.7 A106 106 187.9 61.7 A107 107 188.9 61.7 A108 108 189.9 61.6 A109 109 190.9 61.6 A110 110 191.9 61.6 A110 110 191.9 61.6 A111 111 192.9 61.5 A112 112 193.9 61.5 A113 113 194.9 61.5 A114 114 195.9 61.4 A115 115 196.9 61.4 A116 116 197.9 61.4 A117 117 198.9 61.3 A118 118 199.9 61.3 A119 119 200.9 61.3 A120 120 201.9 61.2 A121 121 202.9 61.2	A104	104	185.9		61.8
A106 106 187.9 61.7 A107 107 188.9 61.7 A108 108 189.9 61.6 A109 109 190.9 61.6 A110 110 191.9 61.6 A110 110 191.9 61.6 A111 111 192.9 61.5 A112 112 193.9 61.5 A113 113 194.9 61.5 A114 114 195.9 61.4 A115 115 196.9 61.4 A116 116 197.9 61.3 A118 118 199.9 61.3 A119 119 200.9 61.3 A120 120 201.9 61.2 A121 121 202.9 61.2 A122 122 203.9 61.2	A105	105	186.9		61.7
A107 107 188.9 61.7 A108 108 189.9 61.6 A109 109 190.9 61.6 A110 110 191.9 61.6 A110 110 191.9 61.6 A111 111 192.9 61.5 A112 112 193.9 61.5 A113 113 194.9 61.5 A114 114 195.9 61.4 A115 115 196.9 61.4 A116 116 197.9 61.4 A117 117 198.9 61.3 A118 118 199.9 61.3 A119 119 200.9 61.3 A120 120 201.9 61.2 A121 121 202.9 61.2 A122 122 203.9 61.2	A106	106	187.9		61.7
A108 108 189.9 61.6 A109 109 190.9 61.6 A110 110 191.9 61.6 A111 111 192.9 61.5 A112 112 193.9 61.5 A113 113 194.9 61.5 A114 114 195.9 61.4 A115 115 196.9 61.4 A116 116 197.9 61.3 A118 118 199.9 61.3 A119 119 200.9 61.3 A120 120 201.9 61.2 A121 121 202.9 61.2	A107	107	188.9		61.7
A109 109 190.9 61.6 A110 110 191.9 61.6 A111 111 192.9 61.5 A112 112 193.9 61.5 A113 113 194.9 61.5 A114 114 195.9 61.4 A115 115 196.9 61.4 A116 116 197.9 61.3 A117 117 198.9 61.3 A118 118 199.9 61.3 A119 119 200.9 61.2 A120 120 201.9 61.2 A121 121 202.9 61.2	A108	108	189.9		61.6
A110 110 191.9 61.6 A111 111 192.9 61.5 A112 112 193.9 61.5 A113 113 194.9 61.5 A114 114 195.9 61.4 A115 115 196.9 61.4 A116 116 197.9 61.4 A117 117 198.9 61.3 A118 118 199.9 61.3 A119 119 200.9 61.3 A120 120 201.9 61.2 A121 121 202.9 61.2 A122 122 203.9 61.2	A109	109	190.9		61.6
A111 111 192.9 61.5 A112 112 193.9 61.5 A113 113 194.9 61.5 A114 114 195.9 61.4 A115 115 196.9 61.4 A116 116 197.9 61.4 A117 116 197.9 61.3 A118 118 199.9 61.3 A120 120 201.9 61.2 A121 121 202.9 61.2 A122 122 203.9 61.2	A110	110	191.9		61.6
A112 112 193.9 61.5 A113 113 194.9 61.5 A114 114 195.9 61.4 A115 115 196.9 61.4 A116 116 197.9 61.4 A117 117 198.9 61.3 A118 118 199.9 61.3 A119 119 200.9 61.3 A120 120 201.9 61.2 A121 121 202.9 61.2 A122 122 203.9 61.2	A111	111	192.9		61.5
A113 113 194.9 61.5 A114 114 195.9 61.4 A115 115 196.9 61.4 A116 116 197.9 61.4 A117 117 198.9 61.3 A118 118 199.9 61.3 A120 120 201.9 61.2 A121 121 202.9 61.2 A122 122 203.9 61.2	A112	112	193.9		61.5
A114 114 195.9 61.4 A115 115 196.9 61.4 A116 115 196.9 61.4 A116 116 197.9 61.4 A117 117 198.9 61.3 A118 118 199.9 61.3 A120 120 201.9 61.2 A121 121 202.9 61.2 A122 122 203.9 61.2	A113	113	194.9		61.5
A115 115 196.9 61.4 A116 116 197.9 61.4 A117 116 197.9 61.3 A118 118 199.9 61.3 A119 119 200.9 61.3 A120 120 201.9 61.2 A121 121 202.9 61.2 A122 122 203.9 61.2	A114	114	195.9		61.4
A116 116 197.9 61.4 A117 117 198.9 61.3 A118 118 199.9 61.3 A119 119 200.9 61.3 A120 120 201.9 61.2 A121 121 202.9 61.2 A122 122 203.9 61.2	A115	115	196.9		61.4
A117 117 198.9 61.3 A118 118 199.9 61.3 A119 119 200.9 61.3 A120 120 201.9 61.2 A121 121 202.9 61.2 A122 122 203.9 61.2	A116	115	197.9		61.4
A118 118 199.9 61.3 A119 119 200.9 61.3 A120 120 201.9 61.2 A121 121 202.9 61.2 A122 122 203.9 61.2	A117	110	198.9		61 3
A119 119 200.9 61.3 A120 120 201.9 61.2 A121 121 202.9 61.2 A122 122 203.9 61.2	A118	117	199.9		61 3
A120 120 201.9 61.2 A121 121 202.9 61.2 A122 122 203.9 61.2	A119	110	200.9		61 3
A121 121 202.9 61.2 A122 122 203.9 61.2	A120	110	200.5		61 2
A122 122 203.9 61.2	A121	120	201.5		61.2
	A122	122	203.9		61.2

Nest Unn Abernethy Bridge Northbound Side Input Data: West Unn Abernethy Bridge Northbound Side 88 Aref. Center point between ground and underside of structure (h/2) 4225 w: Midpoint of structure (w/2) The underside of the deck at this point is the assumed 70 Dref. Reference distance - from S to Aref 819 Measured Noise Level at Drip Edge, dB(A) 6711 Sct. Cack Calculations: 6111 Aralysis Point Edge (t.) Distance from Analysis Measured Noise Level at Drop-off Rate = 4.5 Aralysis Point Edge (t.) Distance from Analysis Measured Noise Level at Drop-off Rate = 4.5 Aralysis Point Edge (t.) Distance from Analysis Measured Noise Level at Drop-off Rate = 4.5 Aralz 122 202.9 661.0 Araz 123 209.9 661.0 Araz 124 205.9 661.0 Araz 123 201.9 600.9 Araz 124 202.9 661.0 Araz 123 201.9 600.8 Araz		Structure Related Noise Calculation Worksheet				
West Linn Abernethy Bridge Northbound Side Input Data: 98 Aref: Center point between ground and underside of structure (h/2) 42.5 wildtin of Structure 140 Mw: Midpoint of Structure (w/2) The underside of the deck at this point is the assumed 70 Discree of structure onice (S) 70 Dref: Reference distance - from S to Aref 81.9 Measured Noise Level at Drip Edge, dB(A) 67.1 Set-back Calculations: 162.1 Analysis Point Edge (ft.) Point (ft.) Measured Noise Level at Drip Edge Leq in dB(A) 61.1 A123 122 206.9 61.1 61.1 A124 122 206.9 66.0 61.1 A125 122 206.9 66.0 60.9 A126 122 20.9 66.0 60.9 A128 123 213.9 60.9 61.0 A129 123 213.9 60.9 61.0 A126 123 213.9 60.9 61.0 A127 124 20.9		K19786:	I-205 Widening and Seis	mic Improvements		
Input Data: Imput Data:		West	Linn Abernethy Bridge N	orthbound Side		
h: Height of structure, from ground to underside of dext. 985 Aref: Center point between ground and underside of structure (h/2) 42.5 Width of structure (w/2) The underside of the deck at this point is the assumed source of structure noise (S) 700 Dref: Reference distance - from S to Aref 81.9 Massured Noise Level at Drip Edge, dB(A) 67.1 Set-back Calculations: 0istance from Drip Ners many structure, inclusion (C) 700 Analysis Point Edge (ft.) Distance from Analysis Measured Noise Level at Drop-off Rate = 4.5 70 A123 123 200.9 61.1 70 70 A124 124 205.9 61.1 70 70 A125 125 206.9 61.0 70 70 70 A126 126 207.9 61.0 70 70 70 A128 128 20.9 60.0 70 70 70 A130 131 21.29 70.0 70 70 70 A129 129 21.0.9 70	Input Data:					
Aref:Center point between ground and underside of structure (h/2)42.5Nw: Width of structure (w/2) The underside of the deck at this point is the assumed source of structure noise (s)70Dref:Reference elistance - from 5 to Aref81.9Measured Noise Level at Drip Edge. dB(A)67.1Set-back Calculations:015ance from Drip Distance from AnalysisMeasured Noise Level at Drip Edge Leq in dB(A)Calculated Noise Level Drip Edge Leq in dB(A)A123123204.961.1A124124205.961.1A125125206.961.1A126126207.961.0A127127208.960.0A128128209.961.0A129129211.960.9A130130211.960.9A131133212.960.8A134134215.960.8A135135216.960.8A136136217.960.7A137137218.960.6A140140221.960.6A141144225.960.6A144144225.960.6A145144225.960.6A144144225.960.6A144144225.960.6A145144225.960.6A146144225.960.6A147147228.960.6A148148224.960.6A1441	h: Height of structure,	from ground to und	lerside of deck		85	
wr. Width of Structure (w/2) The underside of the deck at this point is the assumed source of structure noise (S) 70 Dref. Reference distance - from S to Aref 8119 Measured Noise Level at Drig Edge, dB(A) 67.1 Set-back Calculations: 0 Analysis Point Edge (ft.) Measured Noise Level at Drig Edge Leq in dB(A) Calculated Noise Level at Drog-off Rate = 4.5 A123 122 204.9 61.1 A124 122 204.9 61.1 A125 125 206.9 61.1 A126 122 204.9 61.0 A127 122 208.9 61.0 A128 122 204.9 60.0 A129 122 20.0 60.0 A128 122 20.9 60.0 A129 129 20.0 60.0 A130 130 21.19 60.0 A131 121.9 60.0 60.8 A132 133 214.9 60.0 A133 1313 212.9 60.0	Aref: Center point be	tween ground and u	nderside of structure (h/	2)	42.5	
Mw: Mulpoint of structure (w/2) The underside of the deck at this point is the assumed source of structure noise (S) 70 Dref: Reference distance - from S to Aref 67.1 Measured Noise Level at Drip Edge. dB(A) 67.1 Set-back Calculations: 67.1 Analysis Point Edge (ft.) Point (ft.) A123 123 204.9 A124 124 205.9 6.1.1 A125 125 206.9 6.1.1 A126 126 207.9 6.1.0 A127 127 208.9 6.1.0 A128 128 209.9 6.1.0 A129 129 210.9 6.0.0 A130 131 21.1.9 6.0.0 A131 133 21.2.9 6.0.9 A132 133 21.2.9 6.0.0 A133 133 21.2.9 6.0.0 A134 134 21.5.9 6.0.0 A135 135 21.6.9 6.0.0 A134 134 <t< td=""><td>w: Width of Structure</td><td></td><td></td><td></td><td>140</td></t<>	w: Width of Structure				140	
Source of structure noise (s)70Dref: Reference distance - from s to Aref81.9Measured Noise Level at Drip Edge, dB(A)Calculated Noise Level Drop-off Rate = 4.5Distance from DripDistance from AnalysisCalculated Noise Level Drop-off Rate = 4.5Analysis PointCalculated Noise Level Drop-off Rate = 4.5Calculated Noise Level Drop-off Rate = 4.5A123204.9Calculated Noise Level Drop-off Rate = 4.5A124205.9Calculated Noise Level Drop-off Rate = 4.5A123Calculated Noise Level Drop-off Rate = 4.5A124205.9Calculated Noise Level Drop-off Rate = 4.5A123Calculated Noise Level Drop-off Rate = 4.5A124205.9Calculated Noise Level Drop-off Rate = 4.5Calculated Noise Level Drop-off Rate = 4.5Calculate Noise Level Drop-off Rate = 4.5Calculate Noise Level Drop-off Rate = 4.5 <td>Mw: Midpoint of stru</td> <td>cture (w/2) The und</td> <td>erside of the deck at this</td> <td>point is the assumed</td> <td></td>	Mw: Midpoint of stru	cture (w/2) The und	erside of the deck at this	point is the assumed		
Dref: Reference disance form S to Aref 67.1 Measured Noise Level at Drip Edge, dB(A) Distance from Analysis Measured Noise Level at Drip Edge (B(L) Calculations: Analysis Point Edge (tr.) Distance from Analysis Measured Noise Level at Drip Edge Leqin dB(A) Calculated Noise Level at Drip Edge Leqin dB(A) A123 123 204.9 6.11 A124 124 205.9 6.11 A125 125 206.9 6.10 A127 127 208.9 6.10 A128 128 209.9 6.00 A130 131 211.9 6.00 A131 133 211.9 6.08 A132 133 214.9 6.08 A133 133 214.9 6.08 A134 133 214.9 6.07 A137 133 214.9 6.07 A134 134 214.	source of structure no	ise (S)			70	
Measured Noise Level at Drip Edge, dB(A) G7.1 Set-back Calculations: Distance from Drip Distance from Analysis Measured Noise Level at Drip Edge Leq in dB(A) Calculated Noise Level At Drip Edge Leq in dB(A) A123 123 204 9 Measured Noise Level at Drip Edge Leq in dB(A) Calculated Noise Level At Drip Edge Leq in dB(A) A124 124 205.9 61.1 A125 125 206.9 61.1 A126 127 208.9 61.0 A127 127 208.9 61.0 A128 129 210.9 60.9 A130 1313 211.9 60.9 A131 131 212.9 60.8 A132 133 214.9 60.8 A134 134 215.9 60.8 A135 133 216.9 60.7 A136 133 217.9 60.7 A137 137 218.9 60.6 A136 134 225.9 60.6 A141 225.9 60.6 <td>Dref: Reference dista</td> <td>81.9</td>	Dref: Reference dista	81.9				
Set-back Calculations: Distance from Drip Edge (ft.) Distance from Analysis Point (ft.) Measured Noise Level at Drip-off Rate = 4.5 dB/DD Calculated Noise Level Drip-off Rate = 4.5 dB/DD A123 123 204.9 61.1 A124 123 206.9 61.1 A125 125 206.9 61.1 A126 126 207.9 61.0 A127 127 208.9 61.0 A128 129 210.9 60.0 A130 131 212.9 60.9 A131 133 212.9 60.9 A133 133 212.9 60.8 A134 133 212.9 60.8 A133 133 214.9 60.8 A134 134 215.9 60.8 A135 135 216.9 60.7 A137 137 213.9 60.7 A138 219.9 60.67 60.7 A138 219.9 60.67 60.7 A139	Measured Noise Level	at Drip Edge, dB(A)			67.1	
Distance from Drip Distance from Analysis Measured Noise Level at Drop off Rate = 4.5 (B/D) Calculated Noise Level at Drop off Rate = 4.5 (B/D) A123 123 204.9 61.1 A124 124 205.9 61.1 A125 125 200.9 61.1 A126 126 207.9 61.0 A127 127 208.9 61.0 A128 129 200.9 61.0 A129 129 200.9 60.9 A130 130 211.9 60.9 A131 131 212.9 60.9 A132 132 213.9 60.8 A133 133 214.9 60.8 A134 134 215.9 60.8 A135 135 216.9 60.7 A136 133 214.9 60.7 A137 133 214.9 60.7 A138 133 214.9 60.7 A139 20.09 60.6	Set-back Calculations:	•				
Distance from Drip Edge (ft.) Distance from Analysis Point (ft.) Measured Noise Level at Drip Edge Leq in dB(A) Drop off Rate = 4.5 dB/DD A123 123 204.9					Calculated Noise Level	
Analysis Point Edge (ft.) Point (ft.) Drip Edge Leq in dB(A) dB/D0 A123 123 204.9 61.1 A124 124 205.9 61.11 A125 125 206.9 61.11 A126 126 207.9 61.0 A127 127 208.9 61.0 A128 128 209.9 61.0 A129 129 210.9 60.9 A130 130 211.9 60.9 A131 131 212.9 60.9 A132 132 60.8 60.8 A133 133 214.9 60.8 A134 134 215.9 60.7 A135 135 216.9 60.7 A137 137 218.9 60.7 A138 138 219.9 60.6 A140 140 221.9 60.6 A141 141 222.9 60.5 A143 244.9		Distance from Drip	Distance from Analysis	Measured Noise Level at	Drop-off Rate = 4.5	
A123 123 204.9 $104.04.9$ $104.04.9$ $104.04.04.9$ A124 124 205.9 61.1 A125 125 206.9 61.1 A126 126 207.9 61.0 A127 1127 208.9 61.0 A128 128 209.9 61.0 A129 129 210.9 60.9 A130 130 211.9 60.9 A131 131 212.9 60.9 A132 133 214.9 60.9 A133 133 214.9 60.8 A134 134 215.9 60.8 A135 135 216.9 60.7 A136 136 217.9 60.7 A137 137 218.9 60.7 A138 138 219.9 60.6 A141 141 222.9 60.6 A142 142 223.9 60.5 A144 144 225.9 60.5 A144 144 225.9 60.5 A145 145 226.9 60.5 A144 144 225.9 60.5 A145 145 226.9 60.5 A146 150 231.9 60.7 A151 151 232.9 60.7 A152 152 233.9 60.7 A153 153 234.9 60.7 A154 145 226.9 60.5 A145 145 226.9 60.5 A146 146 227.9 <	Analysis Point	Edge (ft.)	Point (ft.)	Drip Edge Leg in dB(A)	dB/DD	
A124124205.961.1A125125206.961.1A126126207.961.0A127127208.961.0A128128209.960.9A130130211.960.9A131131212.960.9A132132213.960.8A134133214.960.8A135135216.960.8A134134215.960.8A135135216.960.7A137137218.960.7A138138219.960.7A137137218.960.7A138138220.960.6A141141222.960.6A141141222.960.6A141144225.960.5A144144225.960.5A145145226.960.5A14614627.960.7A151151226.960.5A146145226.960.5A14614627.960.4A147147228.960.3A15115123.960.3A15115123.960.3A151155236.960.2A15415423.960.3A155155236.960.2A15415423.960.3A155155236.960.2A156156<	A123	123	204.9	5.1b 1686 16d 65(1)	61.1	
Al25 125 206.9 61.1 Al26126 207.9 61.0 Al27127 208.9 61.0 Al28128 209.9 61.0 Al29129 210.9 60.9 Al30130 211.9 60.9 Al31131 212.9 60.9 Al32132 213.9 60.8 Al33133 214.9 60.8 Al34134 215.9 60.8 Al35135 216.9 60.8 Al36136 217.9 60.7 Al37137 218.9 60.7 Al38138 219.9 60.7 Al39139 220.9 60.6 Al40140 221.9 60.6 Al41141 222.9 60.5 Al44144 225.9 60.5 Al44144 225.9 60.5 Al44144 225.9 60.5 Al45145 226.9 60.5 Al46146 27.9 60.4 Al47147 228.9 60.5 Al46146 27.9 60.4 Al47147 23.9 60.3 Al50150 23.9 60.3 Al51151 232.9 60.3 Al52152 233.9 60.3 Al53153 234.9 60.2 Al54154 235.9 60.3 Al55155 236.9 60.2 Al56156	A124	123	201.9		61.1	
A126 126 207.9 61.0 A127127 208.9 61.0 A128128 209.9 61.0 A129129 210.9 60.9 A130130 211.9 60.9 A131131 212.9 60.9 A132132 213.9 60.8 A133133 214.9 60.8 A134134 215.9 60.8 A135135 216.9 60.8 A136136 217.9 60.7 A137137 218.9 60.7 A138138 220.9 60.6 A140140 221.9 60.6 A141141 222.9 60.6 A142142 223.9 60.5 A143143 224.9 60.5 A144144 225.9 60.5 A145145 226.9 60.5 A144144 22.9 60.5 A145145 226.9 60.5 A1461446 27.9 60.4 A147147 228.9 60.4 A148148 229.9 60.4 A149149 230.9 60.3 A151151 232.9 60.3 A152152 233.9 60.3 A153153 234.9 60.3 A154154 235.9 60.2 A155155 236.9 60.2 A154154 235.9 60.2 A155	A125	125	205.5		61.1	
A127127208.961.0A128128209.961.0A129129210.960.9A130130211.960.9A131131212.960.9A132132213.960.8A133133214.960.8A134134215.960.8A135135216.960.7A137137218.960.7A138138219.960.7A139139220.960.6A141141222.960.6A142142223.960.5A144144225.960.5A144144225.960.5A145145226.960.5A146146227.960.4A147147228.960.5A148148229.960.4A149150231.960.3A150150231.960.3A151151232.960.3A15215223.960.3A153153234.960.2A154154235.960.5A155155236.960.2A154154235.960.2A155155236.960.2A154154235.960.2A155155236.960.2A154154235.960.2A155155236.960.2A154156<	A126	125	200.5		61.0	
A128 128 2009 61.0 $A128$ 129 2109 66.9 $A130$ 130 211.9 60.9 $A131$ 131 121.2 60.9 $A132$ 132 213.9 60.8 $A133$ 133 214.9 60.8 $A134$ 134 215.9 60.8 $A135$ 135 216.9 60.8 $A136$ 136 217.9 60.7 $A137$ 137 218.9 60.7 $A138$ 138 219.9 60.7 $A137$ 137 220.9 60.6 $A140$ 140 221.9 60.6 $A141$ 141 222.9 60.6 $A142$ 142 223.9 60.5 $A144$ 144 225.9 60.5 $A144$ 144 225.9 60.5 $A144$ 144 225.9 60.5 $A146$ 146 227.9 60.4 $A147$ 147 228.9 60.5 $A146$ 146 227.9 60.4 $A147$ 147 228.9 60.4 $A148$ 148 229.9 60.3 $A150$ 150 231.9 60.3 $A151$ 155 236.9 60.2 $A155$ 155 236.9 60.2 $A154$ 155 236.9 60.2 $A155$ 155 236.9 60.1 $A152$ 155 236.9 60.1 $A154$ 156	Δ127	120	207.5		61.0	
A129129210.961.9A130130211.9 60.9 A131131212.9 60.9 A132132213.9 60.8 A133133214.9 60.8 A134134215.9 60.8 A135135216.9 60.7 A136136217.9 60.7 A137137218.9 60.7 A138138219.9 60.6 A140140221.9 60.6 A141141222.9 60.6 A142142223.9 60.5 A143143224.9 60.5 A144144225.9 60.5 A145145226.9 60.5 A146146227.9 60.4 A147147228.9 60.5 A150150231.9 60.3 A151151232.9 60.3 A152152233.9 60.3 A153153234.9 60.3 A151151232.9 60.3 A152152233.9 60.3 A153153234.9 60.2 A154154235.9 60.2 A155155236.9 60.2 A154156237.9 60.2 A155155236.9 60.2 A154158235.9 60.2 A155155236.9 60.2 A154156237.9 60.2 A15515	A128	128	200.9		61.0	
A130A130A130A131A130A131131212.9 60.9 A132132213.9 60.8 A133133214.9 60.8 A134134215.9 60.8 A135135216.9 60.8 A136136217.9 60.7 A137137218.9 60.7 A138138219.9 60.7 A138139220.9 60.6 A140140221.9 60.6 A141141222.9 60.6 A142142223.9 60.5 A143143224.9 60.5 A144144225.9 60.5 A145145226.9 60.5 A146146227.9 60.4 A147147228.9 60.4 A148148229.9 60.4 A149149230.9 60.3 A150150231.9 60.3 A151151232.9 60.3 A152155236.9 60.2 A154154235.9 60.3 A155155236.9 60.2 A154154235.9 60.2 A155155236.9 60.2 A154154235.9 60.2 A155155236.9 60.2 A154154235.9 60.2 A155155236.9 60.2 A154154235.9 60.2 A1	A129	120	209.9		60.9	
A130 130 211.3 60.9 A131 131 212.9 60.9 A132 132 213.9 60.8 A133 133 214.9 60.8 A134 134 215.9 60.8 A135 135 216.9 60.8 A136 136 217.9 60.7 A137 137 218.9 60.7 A138 138 219.9 60.7 A139 139 220.9 60.6 A140 140 221.9 60.6 A140 140 221.9 60.5 A141 141 222.9 60.5 A143 143 224.9 60.5 A144 144 225.9 60.5 A144 144 225.9 60.4 A145 145 226.9 60.4 A146 146 227.9 60.4 A147 147 228.9 60.4 A148 148 229.9 60.3 A150 151	A130	120	210.5		60.9	
A132 132 213.9 60.8 A133 133 214.9 60.8 A134 134 215.9 60.8 A135 135 216.9 60.8 A136 136 217.9 60.7 A137 137 218.9 60.7 A138 138 210.9 60.7 A138 139 220.9 60.6 A140 140 221.9 60.6 A141 141 222.9 60.6 A142 142 223.9 60.5 A143 143 224.9 60.5 A144 144 225.9 60.5 A145 145 226.9 60.5 A146 146 227.9 60.4 A147 147 228.9 60.4 A148 148 229.9 60.4 A147 147 228.9 60.3 A150 150 231.9 60.3 A151 151 232.9 60.3 A152 152 233.9 60.3 A153 153 234.9 60.2 A154 154 235.9 60.2 A155 155 236.9 60.2 A154 158 239.9 60.1 A155 155 236.9 60.2 A156 156 237.9 60.2 A156 156 237.9 60.2 A156 156 237.9 60.2 A156 156 237.9 60.2 A156 156 <	A130 A131	130	211.5		60.9	
A132133213.30A133133214.960.8A134134215.960.8A135135216.960.8A136136217.960.7A137137218.960.7A138138219.960.6A140140221.960.6A141141222.960.6A142142223.960.5A143143224.960.5A144144225.960.5A145145226.960.5A1461446227.960.4A147147228.960.5A148148229.960.4A149149230.960.3A151151232.960.3A152155236.960.3A153153234.960.2A154154235.960.2A155155236.960.2A156156237.960.1A158158239.960.1A159159240.960.1A150156237.960.2A151158239.960.1A152156237.960.2A154158239.960.1A155156237.960.2A156156237.960.2A156156237.960.1A156156237.960.2A156156 </td <td>Δ132</td> <td>131</td> <td>212.5</td> <td></td> <td>60.8</td>	Δ132	131	212.5		60.8	
A133133214.560.8A134134215.960.8A135135216.960.7A137137218.960.7A138138219.960.7A139139220.960.6A140140221.960.6A141141222.960.6A142142223.960.5A143143224.960.5A144144225.960.5A145145226.960.5A146146227.960.4A147147228.960.5A146150231.960.3A150150231.960.3A151151232.960.3A152155236.960.2A153153234.960.2A154154235.960.2A155155236.960.2A156156237.960.1A159159240.960.1A159159240.960.1A159159240.960.1A159159240.960.1A150160241.960.0A151151232.960.1A152155236.960.2A154158239.960.1A155155236.960.2A156156237.960.1A159159240.960.0A159159	Δ133	132	213.5		60.8	
A135 123 123 0000 A135135 216.9 60.8 A136136 217.9 60.7 A137137 218.9 60.7 A138138 219.9 60.6 A140140 221.9 60.6 A141141 222.9 60.6 A142142 223.9 60.5 A143143 224.9 60.5 A144144 225.9 60.5 A145145 226.9 60.5 A146146 227.9 60.5 A147147 228.9 60.5 A148148 229.9 60.4 A147147 228.9 60.4 A148148 229.9 60.3 A150150 231.9 60.3 A151151 232.9 60.3 A152152 233.9 60.3 A153153 234.9 60.2 A154154 235.9 60.2 A155155 236.9 60.2 A156156 237.9 60.1 A158158 239.9 60.1 A159159 240.9 60.1 A150160 241.9 60.0 A150160 241.9 60.0 A151154 245.9 60.1 A152155 236.9 60.1 A154158 239.9 60.1 A155155 236.9 60.1 A156 <td< td=""><td>A134</td><td>133</td><td>214.5</td><td></td><td>60.8</td></td<>	A134	133	214.5		60.8	
A136 $A136$ $A136$ $A137$ $A138$ $A107$ $A007$ $A138$ $A138$ $A138$ 219.9 60.7 60.7 $A139$ $A139$ $A139$ 220.9 60.6 $A140$ $A140$ 221.9 60.6 $A141$ $A141$ 222.9 60.6 $A142$ 142 223.9 60.5 $A143$ $A143$ 224.9 60.5 $A144$ 144 225.9 60.5 $A145$ 1445 226.9 60.5 $A144$ 144 225.9 60.4 $A145$ 1445 226.9 60.4 $A146$ 1446 227.9 60.4 $A147$ 147 228.9 60.4 $A148$ 148 229.9 60.4 $A149$ 149 230.9 60.3 $A150$ 150 231.9 60.3 $A151$ 151 232.9 60.3 $A152$ 155 235.9 60.3 $A153$ 153 234.9 60.2 $A154$ 154 235.9 60.2 $A155$ 155 236.9 60.2 $A156$ 156 237.9 60.1 $A157$ 158 239.9 60.1 $A159$ 159 240.9 60.1 $A150$ 160 241.9 60.0 $A162$ 162 <	A135	134	215.5		60.8	
A130 130 213.9 00.7 $A137$ 137 218.9 60.7 $A138$ 138 219.9 60.6 $A140$ 140 221.9 60.6 $A141$ 141 222.9 60.6 $A142$ 142 223.9 60.5 $A143$ 143 224.9 60.5 $A144$ 144 225.9 60.5 $A144$ 144 225.9 60.5 $A145$ 145 226.9 60.5 $A146$ 146 227.9 60.4 $A147$ 147 228.9 60.4 $A147$ 147 228.9 60.4 $A149$ 149 230.9 60.3 $A150$ 150 231.9 60.3 $A151$ 151 232.9 60.3 $A152$ 152 233.9 60.3 $A153$ 153 234.9 60.2 $A154$ 154 235.9 60.2 $A155$ 155 236.9 60.2 $A156$ 156 237.9 60.1 $A157$ 157 238.9 60.1 $A158$ 158 239.9 60.1 $A159$ 159 240.9 60.1 $A160$ 160 241.9 60.0 $A161$ 161 242.9 60.0 $A162$ 162 243.9 60.0	A136	135	210.5		60.7	
133 138 219.9 60.7 $A139$ 139 220.9 60.6 $A140$ 140 221.9 60.6 $A141$ 141 222.9 60.6 $A142$ 142 223.9 60.5 $A143$ 143 224.9 60.5 $A144$ 144 225.9 60.5 $A144$ 144 225.9 60.5 $A144$ 144 225.9 60.5 $A145$ 145 226.9 60.5 $A146$ 146 227.9 60.4 $A147$ 147 228.9 60.4 $A148$ 148 229.9 60.4 $A149$ 149 230.9 60.3 $A150$ 150 231.9 60.3 $A151$ 151 232.9 60.3 $A152$ 152 233.9 60.3 $A153$ 153 234.9 60.2 $A154$ 154 235.9 60.2 $A155$ 155 236.9 60.2 $A156$ 156 237.9 60.2 $A157$ 157 238.9 60.1 $A158$ 158 239.9 60.1 $A159$ 159 240.9 60.1 $A161$ 161 242.9 60.0 $A162$ 162 243.9 60.0	A137	130	217.5		60.7	
1130 1130 121.5 100 $A139$ 139 220.9 60.6 $A140$ 140 221.9 60.6 $A141$ 141 222.9 60.6 $A142$ 142 223.9 60.5 $A143$ 143 224.9 60.5 $A144$ 144 225.9 60.5 $A145$ 145 226.9 60.5 $A146$ 146 227.9 60.4 $A147$ 147 228.9 60.4 $A148$ 148 229.9 60.4 $A149$ 149 230.9 60.3 $A150$ 150 231.9 60.3 $A151$ 151 232.9 60.3 $A152$ 155 235.9 60.2 $A154$ 154 235.9 60.2 $A155$ 155 236.9 60.2 $A156$ 156 237.9 60.2 $A157$ 157 238.9 60.2 $A158$ 158 239.9 60.1 $A159$ 158 239.9 60.1 $A159$ 159 240.9 60.1 $A160$ 160 241.9 60.0 $A161$ 161 242.9 60.0	A138	138	210.5		60.7	
1135 1235 1223.9 60.6 $A140$ 140 221.9 60.6 $A141$ 141 222.9 60.5 $A142$ 142 223.9 60.5 $A143$ 143 224.9 60.5 $A144$ 144 225.9 60.5 $A145$ 145 226.9 60.5 $A146$ 146 227.9 60.4 $A147$ 147 228.9 60.4 $A148$ 148 229.9 60.4 $A149$ 149 230.9 60.3 $A150$ 150 231.9 60.3 $A151$ 151 232.9 60.3 $A152$ 152 233.9 60.3 $A153$ 153 234.9 60.2 $A154$ 154 235.9 60.2 $A155$ 155 236.9 60.2 $A156$ 156 237.9 60.1 $A157$ 157 238.9 60.1 $A158$ 158 239.9 60.1 $A159$ 159 240.9 60.1 $A150$ 160 241.9 60.0 $A161$ 161 242.9 60.0 $A162$ 162 243.9 60.0	A139	130	219.9		60.6	
110 110 1210 0000 1141 1210 0000 1141 111 222.9 0000 1142 1142 223.9 0000 1143 1143 224.9 00005 1144 1144 225.9 0005 1145 1145 226.9 0005 1146 1146 227.9 000.4 1147 1147 228.9 000.4 1148 1148 229.9 000.4 1148 1148 229.9 000.4 1148 1149 230.9 000.3 1150 150 231.9 000.3 1151 232.9 000.3 1152 1151 232.9 000.3 1152 1152 233.9 000.3 1153 1153 234.9 000.2 1154 1154 235.9 000.2 1155 1155 236.9 000.2 1156 1156 237.9 000.2 1157 1157 238.9 000.1 1158 1158 239.9 000.1 1159 1159 240.9 000.1 1159 1159 240.9 000.1 1160 1161 242.9 000.0 1163 244.9 000.0 000.0	A140	140	220.5		60.6	
A142 142 223.9 60.5 A143 143 224.9 60.5 A144 144 225.9 60.5 A145 145 226.9 60.5 A146 146 227.9 60.4 A147 147 228.9 60.4 A148 148 229.9 60.4 A149 149 230.9 60.3 A150 150 231.9 60.3 A151 151 232.9 60.3 A152 152 233.9 60.3 A153 153 234.9 60.2 A154 154 235.9 60.2 A155 155 236.9 60.2 A156 156 237.9 60.2 A157 155 236.9 60.1 A158 158 239.9 60.1 A159 159 240.9 60.1 A159 159 240.9 60.0 A160 160 241.9 60.0 A161 161 242.9 60.0 A162 162 243.9 60.0	A141	141	222.9		60.6	
112 123 123 103 1143 1243 224.9 60.5 $A144$ 144 225.9 60.5 $A145$ 1445 226.9 60.5 $A146$ 146 227.9 60.4 $A147$ 147 228.9 60.4 $A148$ 148 229.9 60.4 $A149$ 149 230.9 60.3 $A150$ 150 231.9 60.3 $A151$ 151 232.9 60.3 $A152$ 152 233.9 60.3 $A153$ 153 234.9 60.2 $A154$ 154 235.9 60.2 $A155$ 155 236.9 60.2 $A156$ 156 237.9 60.1 $A157$ 157 238.9 60.1 $A158$ 158 239.9 60.1 $A159$ 159 240.9 60.1 $A160$ 160 241.9 60.0 $A161$ 161 242.9 60.0 $A163$ 163 244.9 60.0	A142	142	222.3		60.5	
A144 144 225.9 60.5 A145 145 226.9 60.5 A146 146 227.9 60.4 A147 147 228.9 60.4 A148 148 229.9 60.4 A149 149 230.9 60.3 A150 150 231.9 60.3 A151 151 232.9 60.3 A152 152 233.9 60.3 A153 153 234.9 60.2 A154 154 235.9 60.2 A155 155 236.9 60.2 A156 156 237.9 60.2 A156 156 237.9 60.2 A157 157 238.9 60.1 A158 158 239.9 60.1 A157 157 238.9 60.1 A158 158 239.9 60.1 A159 159 240.9 60.1 A158 158 239.9 60.1 A159 159	A143	143	224.9		60.5	
A145 145 226.9 60.5 A146 146 227.9 60.4 A147 147 228.9 60.4 A148 148 229.9 60.4 A149 149 230.9 60.3 A150 150 231.9 60.3 A151 151 232.9 60.3 A152 152 233.9 60.3 A153 153 234.9 60.2 A154 154 235.9 60.2 A155 155 236.9 60.2 A155 155 236.9 60.2 A155 155 236.9 60.2 A156 156 237.9 60.2 A157 157 238.9 60.1 A158 158 239.9 60.1 A160 160 241.9 60.0 A161 161 242.9 60.0 A162 162 243.9 60.0	A144	144	225.9		60.5	
A146 146 227.9 60.4 $A147$ 147 228.9 60.4 $A148$ 148 229.9 60.4 $A149$ 149 230.9 60.3 $A150$ 150 231.9 60.3 $A151$ 151 232.9 60.3 $A152$ 152 233.9 60.3 $A153$ 153 234.9 60.2 $A154$ 154 235.9 60.2 $A155$ 155 236.9 60.2 $A156$ 156 237.9 60.2 $A157$ 157 238.9 60.1 $A158$ 158 239.9 60.1 $A160$ 160 241.9 60.0 $A161$ 161 242.9 60.0 $A163$ 163 244.9 60.0	A145	145	226.9		60.5	
A147 147 228.9 60.4 A148 148 229.9 60.4 A149 149 230.9 60.3 A150 150 231.9 60.3 A151 151 232.9 60.3 A152 152 233.9 60.3 A153 151 232.9 60.3 A152 152 233.9 60.3 A153 153 234.9 60.2 A154 154 235.9 60.2 A155 155 236.9 60.2 A156 156 237.9 60.2 A157 157 238.9 60.1 A158 158 239.9 60.1 A159 159 240.9 60.1 A160 160 241.9 60.0 A161 161 242.9 60.0 A162 162 243.9 60.0	A146	146	227.9		60.4	
A148 148 229.9 60.4 A149 149 230.9 60.3 A150 150 231.9 60.3 A151 151 232.9 60.3 A152 152 233.9 60.3 A153 151 232.9 60.3 A152 152 233.9 60.3 A153 153 234.9 60.2 A154 154 235.9 60.2 A155 155 236.9 60.2 A156 156 237.9 60.2 A157 157 238.9 60.1 A158 158 239.9 60.1 A159 159 240.9 60.1 A160 160 241.9 60.0 A161 161 242.9 60.0 A162 162 243.9 60.0	A147	147	228.9		60.4	
A149 149 230.9 60.3 A150 150 231.9 60.3 A151 151 232.9 60.3 A152 152 233.9 60.3 A153 153 234.9 60.2 A154 154 235.9 60.2 A155 155 236.9 60.2 A156 156 237.9 60.2 A157 155 236.9 60.2 A158 156 237.9 60.1 A159 156 237.9 60.1 A158 158 239.9 60.1 A159 159 240.9 60.1 A160 160 241.9 60.0 A161 161 242.9 60.0 A162 162 243.9 60.0 A163 163 244.9 60.0	A148	148	229.9		60.4	
A150 150 231.9 60.3 A151 151 232.9 60.3 A152 152 233.9 60.3 A153 153 234.9 60.2 A154 154 235.9 60.2 A155 155 236.9 60.2 A156 156 237.9 60.2 A157 157 238.9 60.1 A158 158 239.9 60.1 A159 159 240.9 60.1 A160 160 241.9 60.0 A161 161 242.9 60.0 A162 162 243.9 60.0	A149	149	230.9		60.3	
A151 151 232.9 60.3 A152 152 233.9 60.3 A153 152 233.9 60.2 A153 153 234.9 60.2 A154 154 235.9 60.2 A155 155 236.9 60.2 A156 156 237.9 60.2 A156 156 237.9 60.2 A156 156 237.9 60.2 A157 157 238.9 60.1 A158 158 239.9 60.1 A159 159 240.9 60.1 A160 160 241.9 60.0 A161 161 242.9 60.0 A162 162 243.9 60.0	A150	150	231.9		60.3	
A152 152 233.9 60.3 A153 153 234.9 60.2 A154 154 235.9 60.2 A155 155 236.9 60.2 A156 156 237.9 60.2 A157 157 238.9 60.1 A158 158 239.9 60.1 A159 159 240.9 60.1 A160 160 241.9 60.0 A161 161 242.9 60.0 A162 162 243.9 60.0 A163 163 244.9 60.0	A151	151	232.9		60.3	
A153 153 234.9 60.2 A154 154 235.9 60.2 A155 155 236.9 60.2 A156 156 237.9 60.2 A157 157 238.9 60.1 A158 158 239.9 60.1 A159 159 240.9 60.1 A160 160 241.9 60.0 A161 161 242.9 60.0 A162 162 243.9 60.0 A163 163 244.9 60.0	A152	152	233.9		60.3	
A154 154 235.9 60.2 A155 155 236.9 60.2 A156 156 237.9 60.2 A157 157 238.9 60.1 A158 158 239.9 60.1 A159 159 240.9 60.1 A160 160 241.9 60.0 A161 161 242.9 60.0 A162 162 243.9 60.0 A163 163 244.9 60.0	A153	153	234.9		60.2	
A155 157 236.9 60.2 A156 156 237.9 60.2 A156 156 237.9 60.2 A157 157 238.9 60.1 A158 158 239.9 60.1 A159 159 240.9 60.1 A160 160 241.9 60.0 A161 161 242.9 60.0 A162 162 243.9 60.0 A163 163 244.9 60.0	A154	154	235.9		60.2	
A150 150 2000 1000 0010 A156 156 237.9 60.2 A157 157 238.9 60.1 A158 158 239.9 60.1 A159 159 240.9 60.1 A160 160 241.9 60.0 A161 161 242.9 60.0 A162 162 243.9 60.0 A163 163 244.9 60.0	A155	155	236.9		60.2	
A157 157 238.9 60.1 A158 158 239.9 60.1 A159 159 240.9 60.1 A160 160 241.9 60.0 A161 161 242.9 60.0 A162 162 243.9 60.0 A163 163 244.9 60.0	A156	156	237.9		60.2	
A158 158 239.9 60.1 A159 159 240.9 60.1 A160 160 241.9 60.0 A161 161 242.9 60.0 A162 162 243.9 60.0 A163 163 244.9 60.0	A157	157	238.9		60.1	
A159 159 240.9 60.1 A160 160 241.9 60.0 A161 161 242.9 60.0 A162 162 243.9 60.0 A163 163 244.9 60.0	A158	158	239.9		60.1	
A160 160 241.9 60.1 A161 161 242.9 60.0 A162 162 243.9 60.0 A163 163 244.9 60.0	A159	159	240.9		60.1	
A161 161 242.9 60.0 A162 162 243.9 60.0 A163 163 244.9 60.0	A160	160	241 9		60.0	
A162 162 243.9 60.0 A163 163 244.9 60.0	A161	160	242.9		60.0	
A163 163 244.9 60.0	A162	162	2 12.5		60.0	
	A163	163	244.9		60.0	

Structure Related Noise Calculation Worksheet				
	K19786:	I-205 Widening and Seis	mic Improvements	
	West	Linn Abernethy Bridge N	orthbound Side	
Input Data:				
h: Height of structure,	, from ground to und	lerside of deck		85
Aref: Center point be	tween ground and u	nderside of structure (h/	2)	42.5
w: Width of Structure				140
Mw: Midpoint of stru	cture (w/2) The und	erside of the deck at this	point is the assumed	
source of structure no	oise (S)			70
Dref: Reference dista	81.9			
Measured Noise Level	at Drip Edge, dB(A)			67.1
Set-back Calculations:				
				Calculated Noise Level
	Distance from Drin	Distance from Analysis	Measured Noise Level at	Dron-off Rate = 4.5
Analysis Point	Edge (ft)	Point (ft)	Drin Edge Leg in dB(A)	dB/DD
A164	164	245.9		59.9
A165	165	246.9		59.9
A166	165	240.9		59.9
A167	167	247.5		59.9
A168	168	240.5		59.5
A169	160	249.9		59.0
A109	105	250.5		59.0
Δ171	170	251.5		59.0
Δ172	171	252.5		59.0
Δ173	172	253.5		59.7
Δ174	173	254.5		59.7
Δ175	174	255.5		59.7
A175	175	250.5		59.6
A177	170	258.9		59.6
Δ178	177	250.5		59.6
Δ179	170	260.9		59.6
A175 A180	175	260.9		59.5
A181	180	262.9		59.5
A182	181	262.9		59.5
A183	183	263.9		59.5
A184	183	265.9		59.4
A185	185	265.9		59.4
A186	186	267.9		59.4
A187	187	268.9		59.4
A188	188	269.9		59.3
A189	189	270.9		59.3
A190	190	271.9		59.3
A191	191	272.9		59.3
A192	192	273.9		59.2
A193	193	274.9		59.2
A194	194	275.9		59.2
A195	195	276.9		59.2
A196	196	277.9		59.1
A197	190	277.9		59.1
A198	198	273.5		59.1
A199	190	275.5		59.1
A200	200	230.5		59.1
A201	200	201.9		59.0
A202	201	232.5		59.0
A203	202	283.5		59.0
A204	203	285.9		59.0
	-			1

	Structure Related Noise Calculation Worksheet				
	K19786:	I-205 Widening and Seis	mic Improvements		
	West	Linn Abernethy Bridge N	orthbound Side		
Input Data:					
h: Height of structure,	from ground to und	lerside of deck		85	
Aref: Center point be	tween ground and u	nderside of structure (h/	2)	42.5	
w: Width of Structure				140	
Mw: Midpoint of stru	cture (w/2) The und	erside of the deck at this	point is the assumed		
source of structure no	oise (S)			70	
Dref: Reference dista	81.9				
Measured Noise Level	at Drip Edge, dB(A)			67.1	
Set-back Calculations:					
				Calculated Noise Level	
	Distance from Drip	Distance from Analysis	Measured Noise Level at	Drop-off Rate = 4.5	
Analysis Point	Edge (ft.)	Point (ft.)	Drip Edge Leg in dB(A)	dB/DD	
A205	205	286.9	5.1b 1080 100 11 05(1)	58.9	
A206	205	280.5		58.9	
A207	207	288.9		58.9	
A208	207	280.5		58.9	
A209	209	200.9		58.8	
A210	205	290.9		58.8	
Δ210	210	291.9		58.8	
Δ212	211	292.9		58.8	
Δ212	212	293.9		58.8	
Δ213	213	294.9		58.7	
Δ215	214	295.9		58.7	
A216	215	290.9		58.7	
Δ210	210	297.5		58.7	
Δ218	217	299.9		58.6	
A219	210	300.9		58.6	
A220	220	301.9		58.6	
Δ220	220	302.9		58.6	
Δ222	222	303.9		58.6	
A223	223	304.9		58.5	
A223	223	305.9		58.5	
A225	225	306.9		58.5	
A226	226	307.9		58.5	
A227	227	308.9		58.5	
A228	228	309.9		58.4	
A229	229	310.9		58.4	
A230	230	311.9		58.4	
A231	231	312.9		58.4	
A232	232	313.9		58.3	
A233	233	314.9		58.3	
A234	234	315.9		58.3	
A235	235	316.9		58.3	
A236	236	317.9		58.3	
A237	237	318.9		58.2	
A238	238	319.9		58.2	
A239	230	320.9		58.2	
A240	235	321.9		58.2	
A241	240	322.9		58.2	
A242	241	323.9		58.1	
A243	242	324.9		58.1	
A244	243	325.9		58.1	
A245	245	326.9		58.1	
		2=910		2.512	

Structure Related Noise Calculation Worksheet				
	K19786:	I-205 Widening and Seis	mic Improvements	
	West	Linn Abernethy Bridge N	orthbound Side	
Input Data:				
h: Height of structure,	from ground to und	lerside of deck		85
Aref: Center point be	tween ground and u	nderside of structure (h/	2)	42.5
w: Width of Structure				140
Mw: Midpoint of stru	cture (w/2) The und	erside of the deck at this	point is the assumed	
source of structure no	ise (S)			70
Dref: Reference dista	81.9			
Measured Noise Level	at Drip Edge, dB(A)			67.1
Set-back Calculations:	1			
				Calculated Noise Level
	Distance from Drip	Distance from Analysis	Measured Noise Level at	Drop-off Rate = 4.5
Analysis Point	Edge (ft.)	Point (ft.)	Drip Edge Lea in dB(A)	dB/DD
A246	246	327.9		58.1
A247	247	328.9		58.0
A248	248	329.9		58.0
A249	249	330.9		58.0
A250	250	331.9		58.0
A251	251	332.9		58.0
A252	252	333.9		57.9
A253	253	334.9		57.9
A254	253	335.9		57.9
A255	255	336.9		57.9
A256	256	337.9		57.9
A257	257	338.9		57.8
A258	258	339.9		57.8
A259	259	340.9		57.8
A260	260	341.9		57.8
A261	261	342.9		57.8
A262	262	343.9		57.8
A263	263	344.9		57.7
A264	264	345.9		57.7
A265	265	346.9		57.7
A266	266	347.9		57.7
A267	267	348.9		57.7
A268	268	349.9		57.6
A269	269	350.9		57.6
A270	270	351.9		57.6
A271	271	352.9		57.6
A272	272	353.9		57.6
A273	273	354.9		57.5
A274	274	355.9		57.5
A275	275	356.9		57.5
A276	276	357.9		57.5
A277	277	358.9		57.5
A278	278	359.9		57.5
A279	279	360.9		57.4
A280	280	361.9		57.4
A281	281	362.9		57.4
A282	282	363.9		57.4
A283	283	364.9		57.4
A284	284	365.9		57.3
A285	285	366.9		57.3
A286	286	367.9		57.3

	Structure Related Noise Calculation Worksheet				
	K19786:	I-205 Widening and Seis	mic Improvements		
	West	Linn Abernethy Bridge N	orthbound Side		
Input Data:					
h: Height of structure,	from ground to und	lerside of deck		85	
Aref: Center point be	tween ground and u	nderside of structure (h/	2)	42.5	
w: Width of Structure				140	
Mw: Midpoint of stru	cture (w/2) The und	erside of the deck at this	point is the assumed		
source of structure no	ise (S)			70	
Dref: Reference dista	81.9				
Measured Noise Level	at Drip Edge, dB(A)			67.1	
Set-back Calculations:	•				
				Calculated Noise Level	
	Distance from Drip	Distance from Analysis	Measured Noise Level at	Drop-off Rate = 4.5	
Analysis Point	Edge (ft.)	Point (ft.)	Drip Edge Leg in dB(A)	dB/DD	
A287	287	368.9	5.1b 1686 164 65(14)	57.3	
A288	287	369.9		57.3	
A289	289	370.9		57.3	
A290	290	371.9		57.3	
Δ291	290	372.9		57.2	
Δ292	291	372.9		57.2	
Δ293	292	374.9		57.2	
Δ294	293	375.9		57.2	
Δ295	295	376.9		57.2	
A295	295	377.9		57.2	
Δ297	250	378.9		57.1	
Δ298	297	379.9		57.1	
Δ299	290	380.9		57.1	
A300	300	381.9		57.1	
A300	301	382.9		57.1	
A302	302	383.9		57.0	
A303	302	384.9		57.0	
A304	304	385.9		57.0	
A305	305	386.9		57.0	
A306	306	387.9		57.0	
A307	307	388.9		57.0	
A308	308	389.9		56.9	
A309	309	390.9		56.9	
A310	310	391.9		56.9	
A311	311	392.9		56.9	
A312	312	393.9		56.9	
A313	313	394.9		56.9	
A314	314	395.9		56.8	
A315	315	396.9		56.8	
A316	316	397.9		56.8	
A317	317	398.9		56.8	
A318	318	399.9		56.8	
A319	319	400.9		56.8	
A320	320	401 9		56.7	
A321	321	402.9		56.7	
A322	322	403.9		56.7	
A323	323	404 9		56.7	
A324	324	405.9		56.7	
A325	325	406.9		56.7	
A326	325	407 9		56.6	
A327	327	408.9		56.6	
	5-1				

	Structure Related Noise Calculation Worksheet				
	K19786:	I-205 Widening and Seis	mic Improvements		
	West	Linn Abernethy Bridge N	orthbound Side		
Input Data:					
h: Height of structure,	from ground to und	lerside of deck		85	
Aref: Center point be	tween ground and u	nderside of structure (h/	2)	42.5	
w: Width of Structure	0	()	,	140	
Mw: Midpoint of stru	cture (w/2) The und	erside of the deck at this	point is the assumed		
source of structure no	ise (S)			70	
Dref: Reference dista	nce - from S to Aref			81.9	
Measured Noise Level	at Drip Edge, dB(A)			67.1	
Set-back Calculations:					
				Calculated Noise Level	
	Distance from Drin	Distance from Analysis	Measured Noise Level at	Dron-off Rate = 4.5	
Analysis Point	Edge (ft)	Point (ft)	Drin Edge Leg in $dB(\Delta)$		
Δ328	378	409.9		56.6	
A329	320	409.9		56.6	
A330	320	410.9		56.6	
A331	330	412.9		56.6	
A332	331	413.9		56.5	
A333	333	414 9		56.5	
A334	333	415.9		56.5	
A335	335	416.9		56.5	
A336	336	417.9		56.5	
A337	330	418.9		56.5	
A338	338	419.9		56.5	
A339	330	420.9		56.4	
A340	340	421.9		56.4	
A341	341	422.9		56.4	
A342	342	423.9		56.4	
A343	343	424.9		56.4	
A344	344	425.9		56.4	
A345	345	426.9		56.3	
A346	346	427.9		56.3	
A347	347	428.9		56.3	
A348	348	429.9		56.3	
A349	349	430.9		56.3	
A350	350	431.9		56.3	
A351	351	432.9		56.3	
A352	352	433.9		56.2	
A353	353	434.9		56.2	
A354	354	435.9		56.2	
A355	355	436.9		56.2	
A356	356	437.9		56.2	
A357	357	438.9		56.2	
A358	358	439.9		56.1	
A359	359	440.9		56.1	
A360	360	441.9		56.1	
A361	361	442.9		56.1	
A362	362	443.9		56.1	
A363	363	444.9		56.1	
A364	364	445.9		56.1	
A365	365	446.9		56.0	
A366	366	447.9		56.0	
A367	367	448.9		56.0	
A368	368	449.9		56.0	

Structure Related Noise Calculation Worksheet				
	K19786:	I-205 Widening and Seis	mic Improvements	
	West	Linn Abernethy Bridge N	orthbound Side	
Input Data:				
h: Height of structure,	from ground to und	lerside of deck		85
Aref: Center point be	tween ground and u	nderside of structure (h/	2)	42.5
w: Width of Structure				140
Mw: Midpoint of stru	cture (w/2) The und	erside of the deck at this	point is the assumed	
source of structure no	ise (S)			70
Dref: Reference dista	81.9			
Measured Noise Level	at Drip Edge, dB(A)			67.1
Set-back Calculations:				_
				Calculated Noise Level
	Distance from Drin	Distance from Analysis	Measured Noise Level at	Dron-off Rate = 4.5
Analysis Point	Edge (ft)	Point (ft)	Drin Edge Leg in dB(A)	
A369	369	450.9		56.0
A370	370	451.9		56.0
A370	370	452.9		56.0
Δ372	371	453.9		55.9
Δ372	372	454.9		55.9
A373	373	455.9		55.9
A375	374	456.9		55.9
A376	375	457.9		55.9
A370 A377	370	458.9		55.9
A378	377	450.5		55.9
A378 A379	378	455.5		55.8
A380	380	400.5		55.8
A380 A381	380	401.5		55.8
A382	382	463.9		55.0
A382	302	464.9		55.8
A384	384	465.9		55.0
A385	385	465.9		55.0
A386	386	467.9		55.0
A387	387	468.9		55.7
A388	388	469.9		55.7
A389	389	409.9		55.7
A390	390	471.9		55.7
A391	390	472.9		55.7
Δ392	392	473.9		55.7
A393	393	474.9		55.6
A394	394	475.9		55.6
A395	395	476.9		55.6
A396	396	477.9		55.6
A397	397	478.9		55.6
A398	398	479.9		55.6
A399	390	480.9		55.6
A400	400	480.9		55.6
A400	400	481.5		55.0
A402	401	-02.5 Δ83 Q		55.5
A403	402 202	403.9 <u>1</u> 84 Q		55.5
A404	403	404.9 /\Q5.0		55.5
A405	404	403.9 126 Q		55.5
A406	405	430.9 197 Q		55.5
A407	400	437.9 //22 Q		55.5
A408	407	/20.9		55.5
A409	408 209	<u>4</u> 09.9 Δαη α		55.4
	_ 1 05	+50.5		55.4

Structure Related Noise Calculation Worksheet							
	K19786:	I-205 Widening and Seis	mic Improvements				
	West	Linn Abernethy Bridge N	orthbound Side				
Input Data:							
h: Height of structure,	, from ground to und	lerside of deck		85			
Aref: Center point be	tween ground and u	nderside of structure (h/	2)	42.5			
w: Width of Structure				140			
Mw: Midpoint of stru	cture (w/2) The und	erside of the deck at this	point is the assumed				
source of structure no	oise (S)			70			
Dref: Reference dista	81.9						
Measured Noise Level	at Drip Edge, dB(A)			67.1			
Set-back Calculations:							
				Calculated Noise Level			
	Distance from Drin	Distance from Analysis	Measured Noise Level at	Dron-off Rate = 4.5			
Analysis Point	Edge (ft)	Point (ft)	Drin Edge Leg in $dB(\Delta)$				
Analysis Forne	/10	/01.0		55 /			
A410 A/11	410	491.9		55.4			
A411 A/12	411	492.9		55.4			
A412 A/12	412	453.5		55.4			
A413	413	494.9		55.4			
A414	414	495.9		55.4			
A415	415	490.9		55.4			
A410	410	497.9					
A417	417	498.9					
A410	418	499.9		55.5			
A419	419	500.9					
A420	420	501.9					
A421	421	502.9					
A422	422	503.9		55.5			
A425	423	504.9					
A424	424	505.9		55.2			
A425	425	500.9		55.2			
A420	420	507.9		55.2			
A4Z7	427	508.9		55.2			
A420	428	509.9		55.2			
A429	429	510.9		55.2			
A430	430	511.9					
A431	431	512.9		55.1			
A432	432	513.9		55.1			
A433	433	514.9		55.1			
A434	434	515.9		55.1			
A435	435	516.9		55.1			
A430	430	517.9		55.1			
A437	437	518.9		55.1			
A438	438	519.9		55.1			
A439	439	520.9		55.0			
A440	440	521.9		55.0			
A441	441	522.9		55.0			
A442	442	523.9		55.0			
A443	443	524.9		55.0			
A444	444	525.9		55.0			
A445	445	526.9		55.0			
A44b	446	527.9		55.0			
A447	447	528.9		54.9			
A448	448	529.9		54.9			
A449	449	530.9		54.9			
A450	450	531.9		54.9			
Nest Lina Abernethy Bridge Northbound Side Input Data: 1h: Height of structure, from ground and underside of structure (h/2) 425. w: Midh of Structure 140 Mix: Midpoint of structure (m/2) the underside of the deck at this point is the assumed 70 Dref: Reference distance - from S to Aref 81.9 Measured Noise Level at Drip Edge, dB(A) 67.1 Set-back Calculations: 0 Distance from Drip Distance from Analysis Measured Noise Level at Drip Edge (gt (t.) 0 A451 451 532.9 64.9 64.9 A453 454 535.9 54.9 A453 454 535.9 54.9 A455 455 536.9 54.9 A456 537.9 64.8 A457 457 54.9 A458 539.9 54.8 A459 459 54.9 A451 456 547.9 A452 459 54.9 A455 54.8 54.9 A456 542.9	Structure Related Noise Calculation Worksheet						
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West Linn Abernethy Bridge Northbound Side Input Data: 385 Aref: Center point between ground and underside of structure (h/2) 425.6 Width of Structure 180 Miser, Midpoint of structure (h/2) The underside of the deck at this point is the assumed source of structure onks (S) 700 Dref. Reference distance - from S to Aref 81.9 Massure Moise Level at Drip Edge, dB(A) 67.1 Set-back Calculations: Distance from Analysis Measured Noise Level at Drop-off Rate = 4.5 Analysis Point Edge (ft.) Point (ft.) Distance from Analysis Calculated Noise Level at Drop-off Rate = 4.5 A451 532.9 53.9 54.9 A452 453 535.9 54.9 A453 453 535.9 54.9 A454 535.9 54.9 A455 459 54.9 A451 54.9 54.8 A452 459 54.9 A453 54.9 54.8 A454 54.9 54.8 A455 54.9 54.8	K19786: I-205 Widening and Seismic Improvements						
input Data: 885 Aref: Center point between ground and underside of structure (h/2) 42.5 w: Midpoint of Structure (w/2) The underside of the deck at this point is the assumed 140 Mix: Midpoint of Structure (w/2) The underside of the deck at this point is the assumed 70 Deff: Reference distance - from S to Aref 81.9 Measured Noise Level at Drip Edge, dB(A) 62.1 Deff: Reference distance - from S to Aref 84.9 Analysis Point Edge (ft.) Point (ft.) Ads1 451 532.9 63.9 Ads2 452 533.9 64.9 Ads3 454 533.9 64.9 Ads5 536.9 54.9 64.9 Ads4 454 533.9 64.8 Ads5 536.9 54.9 64.8 Ads6 456 537.9 54.8 Ads7 457 538.9 64.8 Ads6 456 54.9 54.8 Ads6 466 54.9 54.8 Ads6 54.9 54.8 <t< td=""><td></td><td>West</td><td>Linn Abernethy Bridge N</td><td>orthbound Side</td><td></td></t<>		West	Linn Abernethy Bridge N	orthbound Side			
h: Height of structure, from ground to underside of structure (h/2) 485 Aref: Center point between ground and underside of structure (h/2) 42.5 w: Width of Structure (w/2) The underside of the deck at this point is the assumed source of structure noise (S) 700 Dref: Reference distance - from S to Aref 88.9 Massured Noise Level at Drip Edge, dB(A) 66.10 Set-back Calculations: 100 Assi 453 532.9 Assi 453 533.9 Assi 455 536.9 Assi 455 536.9 Assi 459 540.9 Assi 459 540.9 Assi 459 540.9 Assi 459 540.9 Assi 548 539.9 Assi 548.9 54	Input Data:						
Aref: center point between ground and underside of structure (h/2) 442.5 Mwr. Midpoint of structure (w/2) The underside of the deck at this point is the assumed 70 Dref: Reference distance - from 5 to Aref 81.9 Measured Noise Level at Drip Edge, dB(A) 67.1 Set-back Calculations: 0 0 Analysis Point Edge (ft.) Point (ft.) 0 Point (ft.) Edge (ft.) Point (ft.) 0 0 A451 453 534.9 64.9 A452 453 54.9 64.9 A453 454 54.9 64.9 A452 533.9 54.9 64.9 A453 455 536.9 54.9 A456 456 537.9 54.8 A457 458 530.9 64.8 A450 456 54.9 64.8 A461 544.9 54.8 64.8 A452 54.9 54.8 64.8 A451 54.9 54.8 64.8	h: Height of structure,	from ground to und	lerside of deck		85		
ww. Widph of structure1100Nowr. Midphoin of structure (w/2) The underside of the deck at this point is the assumed70Dref. Reference distance - from S to Aref81.9Messured Noise Level at Drip Edge, dB(A)67.1Set-back Calculations:10Distance from DripDistance from AnalysisMeasured Noise Level at Drop-off Rate = 4.5Analysis PointEdge (tt.)10A451532.964.9A452452533.964.9A453453534.964.9A4544545536.954.9A455455536.954.9A456456537.954.8A457457538.964.8A458458539.964.8A459460541.954.8A450461542.954.8A460460541.954.8A461462543.954.8A462462543.954.8A463463544.954.8A464464545.954.7A465466544.954.7A466545.954.7A467467548.9A463468549.9A464545.954.7A465466544.9A464545.954.7A465466547.9A466545.954.7A467467559.9A468569.954.7 <trr>A467467559.9<td>Aref: Center point be</td><td>tween ground and u</td><td>nderside of structure (h/</td><td>2)</td><td>42.5</td></trr>	Aref: Center point be	tween ground and u	nderside of structure (h/	2)	42.5		
Mix: Midpoint of structure (w/2) The underside of the deck at this point is the assumed source of structure noise (S) 70 Dref: Reference distance - from S to Aref 67.1 Measured Noise Level at Drip Edge, dB(A) 67.1 Set-back Calculations: Distance from Drip Distance from Analysis Measured Noise Level at Drip Edge Leq in dB(A) Drip Edge Leq in dB(A) B/DO A451 452 532.9 64.2 67.1 A452 452 533.9 64.9 64.9 A453 455 536.9 64.9 64.9 A454 455 536.9 54.9 64.8 A455 455 536.9 54.9 64.8 A456 456 537.9 54.8 64.8 A457 457 538.9 64.8 54.8 A450 459 540.9 54.8 54.8 A461 461 542.9 54.8 54.8 A462 462 543.9 54.8 54.8 A463 544.9 54.8 <t< td=""><td>w: Width of Structure</td><td></td><td></td><td></td><td>140</td></t<>	w: Width of Structure				140		
source of structure noise (s)	Mw: Midpoint of stru	cture (w/2) The und	erside of the deck at this	point is the assumed			
Dref: Reference disance form Sto Aref 81.9 Measured Noise Level at Drip Edge, dB(A) Distance from Drip Distance from Analysis Measured Noise Level at Drip Edge (B(L) Calculated Noise Level at Drip E	source of structure no	oise (S)			70		
Measured Noise Level at Drip Edge, dB(A) G7.1 Set-back Calculations: Distance from Drip Distance from Analysis Measured Noise Level at Drip Edge Len in dB(A) Calculated Noise Level At Drip Edge Len in dB(A) A451 451 532.9 Measured Noise Level at Drip Edge Len in dB(A) G4.9 A452 453 534.9 G5.4.9 G5.4.9 A454 454 535.9 G5.4.9 G5.4.9 A455 455 536.9 G5.4.9 G5.4.9 A456 455 537.9 G5.4.9 G5.4.8 A457 457 538.9 G5.4.8 G5.4.8 A459 459 540.9 G5.4.8 G5.4.8 A450 460 541.9 G5.4.8 G5.4.8 A461 462 543.9 G5.4.8 G5.4.8 A462 462 543.9 G5.4.7 G5.4.8 A463 466 545.9 G5.4.7 G5.4.7 A464 466 547.9 G5.4.7 G4.7 A465 546.9	Dref: Reference dista	nce - from S to Aref			81.9		
Set-back Calculations: Distance from Drip Edge (ft.) Distance from Analysis Point (ft.) Measured Noise Level at Drip Edge Leq in dB(A) Calculated Noise Level Ass A451 451 532.9 54.9 A452 453 533.9 54.9 A453 453 535.9 54.9 A454 455 536.9 54.9 A455 455 536.9 54.9 A456 456 537.9 54.8 A457 457 538.9 54.8 A458 458 539.9 54.8 A450 459 540.9 54.8 A461 461 542.9 54.8 A462 462 543.9 54.8 A461 461 542.9 54.8 A462 462 543.9 54.7 A463 463 544.9 54.7 A464 464 545.9 54.7 A463 466 547.9 54.7 A464 549.9	Measured Noise Level	at Drip Edge, dB(A)			67.1		
Distance from Drip Distance from Analysis Measured Noise Level at Drip Edge Levi	Set-back Calculations:						
Distance from Drip Ad51 Distance from Analysis Edge (ft.) Measured Noise Level at Drip Edge Leq in dB(A) Drop-off Rate = 4.5 dB/DD A451 451 532.9 534.9 A452 452 533.9 54.9 A453 453 534.9 54.9 A454 454 535.9 54.9 A455 455 536.9 54.9 A456 456 537.9 54.8 A457 457 538.9 54.8 A458 459 540.9 54.8 A457 457 538.9 54.8 A459 459 540.9 54.8 A460 460 541.9 54.8 A461 461 542.9 54.8 A462 462 543.9 54.7 A461 464 545.9 54.7 A462 462 543.9 54.7 A462 462 543.9 54.7 A462 466 547.9 54.7 <t< td=""><td></td><td></td><td></td><td></td><td>Calculated Noise Level</td></t<>					Calculated Noise Level		
Analysis Point Edge (ft.) Point (ft.) Drip Edge Leq in dB(A) dB/DD A451 451 532.9 453 54.9 A452 452 533.9 54.9 A453 453 534.9 54.9 A454 453 535.9 54.9 A455 455 536.9 54.9 A456 456 537.9 54.8 A457 457 538.9 54.8 A458 458 539.9 54.8 A459 459 540.9 54.8 A460 460 541.9 54.8 A461 462 543.9 54.8 A462 462 543.9 54.8 A461 464 545.9 54.7 A462 463 544.9 54.7 A464 464 545.9 54.7 A464 464 545.9 54.7 A465 546.9 54.7 A466 466		Distance from Drip	Distance from Analysis	Measured Noise Level at	Drop-off Rate = 4.5		
A451 0 451 532.9 54.9 A452 452 533.9 54.9 A453 453 534.9 54.9 A454 454 535.9 54.9 A455 455 536.9 54.9 A456 457 538.9 54.8 A455 455 536.9 54.8 A457 457 538.9 54.8 A459 459 540.9 54.8 A459 459 540.9 54.8 A450 461 542.9 54.8 A451 461 542.9 54.8 A460 461 542.9 54.8 A461 461 542.9 54.8 A462 462 543.9 54.7 A462 462 543.9 54.7 A464 464 545.9 54.7 A465 465 546.9 54.7 A466 466 547.9 54.7 A466 468 549.9 54.7 A470 <t< td=""><td>Analysis Point</td><td>Edge (ft.)</td><td>Point (ft.)</td><td>Drip Edge Lea in dB(A)</td><td>dB/DD</td></t<>	Analysis Point	Edge (ft.)	Point (ft.)	Drip Edge Lea in dB(A)	dB/DD		
A452 452 533.9 \$4.9 A453 453 534.9 54.9 A454 454 535.9 \$4.9 A455 455 536.9 \$4.9 A456 456 537.9 \$4.8 A456 456 537.9 \$4.8 A457 457 538.9 \$4.8 A458 458 539.9 \$4.8 A459 459 \$40.9 \$4.8 A460 460 \$41.9 \$4.8 A461 461 \$42.9 \$4.8 A462 462 \$43.9 \$4.8 A463 463 \$54.9 \$4.8 A464 464 \$45.9 \$4.7 A465 466 \$47.9 \$4.7 A465 466 \$47.9 \$4.7 A466 466 \$47.9 \$4.7 A467 469 \$50.9 \$4.7 A468 468 \$49.9 \$4.7 A470 470 \$51.9 \$4.6 A471 471	A451	451	532.9		54.9		
A453 453 534.9 544.9 A454 454 535.9 54.9 A455 455 536.9 54.9 A456 456 537.9 54.8 A457 457 538.9 54.8 A458 458 539.9 54.8 A459 459 540.9 54.8 A450 460 541.9 54.8 A460 460 541.9 54.8 A461 461 542.9 54.8 A462 462 543.9 54.8 A463 461 542.9 54.8 A462 462 543.9 54.8 A463 463 544.9 54.8 A464 464 545.9 54.7 A465 546.9 54.7 54.7 A466 466 547.9 54.7 A468 468 549.9 54.7 A469 469 550.9 54.7 A470 470 551.9 54.7 A471 473	A452	452	533.9		54.9		
A454 454 535.9 54.9 A455 455 536.9 54.9 A456 456 537.9 54.8 A457 457 538.9 54.8 A458 458 539.9 54.8 A459 459 540.9 54.8 A450 460 541.9 54.8 A460 460 541.9 54.8 A461 461 542.9 54.8 A462 462 543.9 54.8 A461 461 542.9 54.8 A462 462 543.9 54.8 A463 463 544.9 54.8 A464 464 545.9 54.7 A465 466 547.9 54.7 A466 466 547.9 54.7 A467 467 548.9 54.7 A469 468 549.9 54.7 A470 469 550.9 54.7 A471 471 551.9 54.6 A473 473	A453	453	534.9		54.9		
A455 455 536.9 54.9 A456 456 537.9 54.8 A457 457 538.9 54.8 A458 458 539.9 54.8 A459 459 540.9 54.8 A460 460 541.9 54.8 A461 461 542.9 54.8 A462 462 543.9 54.8 A462 462 543.9 54.8 A462 462 543.9 54.8 A462 462 543.9 54.8 A463 463 544.9 54.8 A464 464 545.9 54.7 A465 465 546.9 54.7 A466 466 549.9 54.7 A466 466 549.9 54.7 A466 466 549.9 54.7 A469 468 549.9 54.7 A470 470 551.9 54.7 A472 472 553.9 54.6 A473 473	A454	454	535.9		54.9		
A456 537.9 548 A457 457 538.9 548 A458 458 539.9 548 A459 459 540.9 548 A460 460 541.9 548.8 A461 461 542.9 548.8 A462 462 543.9 548.8 A461 461 542.9 548.8 A462 462 543.9 548.8 A463 463 544.9 548.8 A464 464 545.9 547.7 A465 465 546.9 547.7 A466 466 547.9 547.7 A467 467 548.9 547.7 A468 468 549.9 547.7 A469 469 550.9 547.7 A470 470 551.9 547.7 A471 471 552.9 547.7 A472 472 553.9 544.6 A473 474 555.9 546.6 A474 474 555	A455	455	536.9		54.9		
A457 A57 538.9 548.8 A458 458 539.9 548.8 A459 459 540.9 548.8 A460 460 541.9 548.8 A461 461 542.9 548.8 A462 462 543.9 548.8 A463 463 544.9 548.8 A464 464 545.9 548.8 A464 464 545.9 544.7 A465 465 544.9 54.7 A465 465 544.9 54.7 A466 466 547.9 54.7 A466 466 547.9 54.7 A467 466 540.9 54.7 A469 469 550.9 54.7 A470 471 552.9 54.7 A471 471 552.9 54.6 A473 473 554.9 54.6 A474 474 555.9 54.6	A456	456	537.9		54.8		
A458 458 533.9 54.8 A459 459 540.9 54.8 A460 460 541.9 54.8 A461 461 542.9 54.8 A462 462 543.9 54.8 A463 463 544.9 54.8 A464 464 545.9 54.7 A465 465 546.9 54.7 A466 466 547.9 54.7 A469 469 550.9 54.7 A469 469 550.9 54.7 A470 471 551.9 54.7 A471 471 552.9 54.6 A473 473 554.9 54.6 A474 474 555.9 54.6 A475 577.9 54.6 54.6 A476 577.9	A457	457	538.9		54.8		
A459 459 50.0 54.8 A460 460 541.9 54.8 A461 461 542.9 54.8 A462 462 543.9 54.8 A463 443 544.9 54.8 A463 443 544.9 54.8 A464 464 545.9 54.7 A465 465 546.9 54.7 A466 466 547.9 54.7 A466 466 547.9 54.7 A467 467 548.9 54.7 A468 468 549.9 54.7 A469 469 550.9 54.7 A470 470 551.9 54.7 A471 471 552.9 54.6 A472 472 555.9 54.6 A473 473 556.9 54.6 A476 476 557.9 54.6 A476 476 557.9 54.6 A477 477 558.9 54.6 A478 478 <	A458	458	539.9		54.8		
A460 A60 541.9 54.8 A461 461 542.9 54.8 A462 462 543.9 54.8 A463 463 544.9 54.8 A464 464 545.9 54.7 A465 465 546.9 54.7 A466 466 547.9 54.7 A466 466 549.9 54.7 A466 466 549.9 54.7 A467 4667 548.9 54.7 A468 468 549.9 54.7 A469 469 550.9 54.7 A470 470 551.9 54.7 A471 471 552.9 54.7 A472 472 553.9 54.6 A473 473 554.9 54.6 A474 474 555.9 54.6 A475 475 556.9 54.6 A476 476 557.9 54.6 A476 478 559.9 54.6 A478 478	A459	459	540.9		54.8		
AddiDiskDiskAddi461542.954.8Addi462543.954.8Ad63463544.954.8Ad64464545.954.7Ad65465546.954.7Ad66466547.954.7Ad66466547.954.7Ad67467548.954.7Ad68468549.954.7Ad69469550.954.7A470470551.954.7A471471552.954.7A472472553.954.6A473473554.954.6A474474555.954.6A475475556.954.6A476476557.954.6A478478559.954.6A479479560.954.6A478481562.954.5A480480561.954.5A481481562.954.5A482482563.954.5A483483564.954.5A484484565.954.5A485488569.954.5A484484565.954.5A485488569.954.5A484488565.954.5A485488569.954.5A484488565.954.5A485488569.954.5A486488569.	A460	460	541.9		54.8		
A462 A62 543.9 54.8 A463 463 544.9 54.8 A464 464 545.9 54.7 A465 465 546.9 54.7 A466 466 547.9 54.7 A467 466 547.9 54.7 A468 468 549.9 54.7 A469 469 550.9 54.7 A470 470 551.9 54.7 A471 471 552.9 54.7 A472 472 553.9 54.7 A473 473 554.9 54.6 A473 473 554.9 54.6 A474 474 555.9 54.6 A475 556.9 54.6 54.6 A476 476 557.9 54.6 A477 477 558.9 54.6 A478 478 559.9 54.6 A479 479 560.9 54.6 A480 480 561.9 54.5 A481 562.9	A461	461	542.9		54.8		
A463 A63 544.9 544.8 A464 464 545.9 547.9 A465 465 546.9 547.7 A466 466 547.9 54.7 A466 466 547.9 54.7 A466 466 547.9 54.7 A466 466 549.9 54.7 A468 468 549.9 54.7 A469 469 550.9 54.7 A470 470 551.9 54.7 A471 471 552.9 54.7 A472 472 553.9 54.6 A473 473 554.9 54.6 A474 474 555.9 54.6 A475 475 556.9 54.6 A476 476 557.9 54.6 A478 478 559.9 54.6 A478 478 559.9 54.6 A478 478 559.9 54.6 A479 479 560.9 54.5 A480 480	A462	462	543.9		54.8		
A464 A464 54.5 54.7 A465 465 546.9 54.7 A466 466 547.9 54.7 A466 466 547.9 54.7 A467 467 548.9 54.7 A468 468 549.9 54.7 A469 469 550.9 54.7 A470 470 551.9 54.7 A470 470 551.9 54.7 A471 471 552.9 54.7 A472 472 553.9 54.6 A473 473 554.9 54.6 A474 474 555.9 54.6 A475 475 556.9 54.6 A476 476 557.9 54.6 A477 477 558.9 54.6 A478 478 559.9 54.6 A479 479 560.9 54.6 A480 480 561.9 54.6	A463	463	544.9		54.8		
A465 546.9 547.7 A466 466 547.9 547.7 A467 467 548.9 54.7 A468 468 549.9 54.7 A469 469 550.9 54.7 A470 470 551.9 54.7 A471 471 552.9 54.7 A472 472 553.9 54.6 A473 473 554.9 54.6 A474 474 555.9 54.6 A473 473 554.9 54.6 A474 474 555.9 54.6 A475 475 556.9 54.6 A476 476 557.9 54.6 A477 477 558.9 54.6 A478 478 559.9 54.6 A479 479 560.9 54.6 A480 661.9 54.5 564.9 A481 481 562.9 54.5 A482 <td>A464</td> <td>464</td> <td>545.9</td> <td></td> <td>54.7</td>	A464	464	545.9		54.7		
A466 A466 547.9 54.7 A467 467 548.9 54.7 A468 468 549.9 54.7 A469 469 550.9 54.7 A470 470 551.9 54.7 A470 471 552.9 54.7 A471 471 552.9 54.7 A472 472 553.9 54.6 A473 473 554.9 54.6 A474 474 555.9 54.6 A475 475 555.9 54.6 A476 476 557.9 54.6 A476 476 557.9 54.6 A476 477 558.9 54.6 A476 478 559.9 54.6 A478 478 559.9 54.6 A479 479 560.9 54.6 A480 480 561.9 54.5 A481 562.9 54.5 54.5	A465	465	546.9		54.7		
A467 A67 548.9 547.7 A468 468 549.9 54.7 A469 469 550.9 54.7 A470 470 551.9 54.7 A471 471 552.9 54.7 A472 472 553.9 54.7 A473 473 555.9 54.6 A473 473 555.9 54.6 A474 474 555.9 54.6 A475 475 556.9 54.6 A476 476 557.9 54.6 A476 476 557.9 54.6 A477 477 558.9 54.6 A478 478 559.9 54.6 A479 479 560.9 54.6 A478 478 559.9 54.6 A479 479 560.9 54.6 A480 480 561.9 54.5 A481 481 562.9 54.5 A482 482 563.9 54.5 A483 483	A466	466	547.9		54.7		
A468 468 549.9 54.7 A469 469 550.9 54.7 A470 470 551.9 54.7 A471 471 552.9 54.7 A472 472 553.9 54.6 A473 473 554.9 54.6 A473 473 554.9 54.6 A474 474 555.9 54.6 A475 475 556.9 54.6 A476 476 557.9 54.6 A477 477 558.9 54.6 A476 476 557.9 54.6 A477 477 558.9 54.6 A478 478 559.9 54.6 A479 479 560.9 54.6 A480 480 561.9 54.6 A481 481 562.9 54.5 A482 482 563.9 54.5 A483 564.9 54.5 54.5	A467	467	548.9		54.7		
A469 A59 550.9 54.7 A470 470 551.9 54.7 A471 471 552.9 54.7 A472 472 553.9 54.6 A473 473 554.9 54.6 A474 474 555.9 54.6 A473 473 554.9 54.6 A474 474 555.9 54.6 A475 475 556.9 54.6 A476 476 557.9 54.6 A477 477 558.9 54.6 A478 559.9 54.6 54.6 A477 477 558.9 54.6 A478 478 559.9 54.6 A479 479 560.9 54.6 A480 480 561.9 54.6 A481 481 562.9 54.5 A482 482 563.9 54.5 A483 483 564.9 54.5 A484 484 565.9 54.5 A485 566.9	A468	468	549.9		54.7		
A470 470 551.9 54.7 A471 471 552.9 54.7 A472 472 553.9 54.6 A473 473 554.9 54.6 A474 474 555.9 54.6 A475 475 556.9 54.6 A476 476 557.9 54.6 A477 477 558.9 54.6 A476 476 557.9 54.6 A477 477 558.9 54.6 A478 478 559.9 54.6 A479 477 558.9 54.6 A478 478 559.9 54.6 A479 479 560.9 54.6 A480 480 561.9 54.6 A481 481 562.9 54.5 A482 482 563.9 54.5 A483 483 564.9 54.5 A484 484 565.9 54.5 A485 485 566.9 54.5 A486 486	A469	469	550.9		54.7		
A471 A71 552.9 54.7 A472 472 553.9 54.6 A473 473 554.9 54.6 A474 474 555.9 54.6 A475 475 556.9 54.6 A476 476 557.9 54.6 A477 476 557.9 54.6 A478 478 559.9 54.6 A479 479 560.9 54.6 A480 480 561.9 54.6 A481 481 562.9 54.5 A482 482 563.9 54.5 A483 483 564.9 54.5 A484 484 565.9 54.5 A485 485 566.9 54.5 A486 486 567.9 54.5 A486 488 566.9 54.5 A486 488 566.9 54.5 A486 488 566.9 54.5 A486 488 569.9 54.5 A488 488	A470	470	551.9		54.7		
A472 472 553.9 54.6 A473 473 554.9 54.6 A474 474 555.9 54.6 A475 475 556.9 54.6 A476 476 557.9 54.6 A477 476 557.9 54.6 A476 476 557.9 54.6 A477 477 558.9 54.6 A478 478 559.9 54.6 A479 479 560.9 54.6 A480 480 561.9 54.6 A481 481 562.9 54.6 A482 482 563.9 54.5 A483 483 564.9 54.5 A483 483 564.9 54.5 A484 484 565.9 54.5 A485 566.9 54.5 54.5 A486 486 567.9 54.5 A486 486 567.9 54.5 A486 488 569.9 54.5 A487 487	A471	471	552.9		54.7		
A473 473 554.9 54.6 A474 474 555.9 54.6 A475 475 556.9 54.6 A476 476 557.9 54.6 A477 477 558.9 54.6 A476 476 557.9 54.6 A477 477 558.9 54.6 A478 478 559.9 54.6 A479 479 560.9 54.6 A480 480 561.9 54.6 A480 480 561.9 54.6 A481 481 562.9 54.5 A482 482 563.9 54.5 A483 483 564.9 54.5 A484 484 565.9 54.5 A485 485 566.9 54.5 A486 486 567.9 54.5 A487 487 568.9 54.5 A488 488 569.9 54.5 A489 489 570.9 54.5 A490 490	A472	472	553.9		54.6		
AA74 A74 55.9 54.6 A474 474 55.9 54.6 A475 475 556.9 54.6 A476 476 557.9 54.6 A477 477 558.9 54.6 A478 478 559.9 54.6 A479 477 558.9 54.6 A479 479 560.9 54.6 A480 478 559.9 54.6 A480 480 561.9 54.6 A481 481 562.9 54.5 A482 482 563.9 54.5 A483 483 564.9 54.5 A484 484 565.9 54.5 A485 485 566.9 54.5 A486 486 567.9 54.5 A486 488 569.9 54.5 A488 488 569.9 54.5 A489 489 570.9 54.5 A490 490 571.9 54.4	A473	473	554.9		54.6		
A475 A75 556.9 54.6 A476 476 557.9 54.6 A477 477 558.9 54.6 A478 478 559.9 54.6 A479 479 560.9 54.6 A480 478 559.9 54.6 A480 480 561.9 54.6 A481 481 562.9 54.5 A482 482 563.9 54.5 A483 483 561.9 54.5 A484 481 565.9 54.5 A483 563.9 54.5 54.5 A484 483 565.9 54.5 A483 483 565.9 54.5 A484 484 565.9 54.5 A485 566.9 54.5 54.5 A486 567.9 54.5 54.5 A487 486 567.9 54.5 A488 488 569.9 54.5 A489 489 570.9 54.5 A489 489	A474	474	555.9		54.6		
A476476557.954.6A477477558.954.6A478478559.954.6A479479560.954.6A480480561.954.6A481481562.954.5A482482563.954.5A483483564.954.5A484484565.954.5A485485566.954.5A486486567.954.5A487487568.954.5A488488569.954.5A489489570.954.5A490490571.954.4A491491572.954.4	A475	475	556.9		54.6		
A477 477 558.9 54.6 A478 478 559.9 54.6 A479 479 560.9 54.6 A480 480 561.9 54.6 A480 480 561.9 54.6 A481 481 562.9 54.5 A482 482 563.9 54.5 A483 483 564.9 54.5 A484 484 565.9 54.5 A485 485 566.9 54.5 A486 486 567.9 54.5 A487 487 568.9 54.5 A488 488 569.9 54.5 A488 488 569.9 54.5 A489 489 570.9 54.5 A489 489 570.9 54.5 A490 490 571.9 54.4	A476	476	557.9		54.6		
A478478559.954.6A479479560.954.6A480480561.954.6A481481562.954.5A482482563.954.5A483483564.954.5A484484565.954.5A485485566.954.5A486486567.954.5A487487568.954.5A488488569.954.5A489489570.954.5A490490571.954.4A491491572.954.4	A477	477	558.9		54.6		
A479 A79 560.9 54.6 A480 480 561.9 54.6 A481 481 562.9 54.5 A482 482 563.9 54.5 A483 483 564.9 54.5 A484 484 565.9 54.5 A484 484 565.9 54.5 A485 484 565.9 54.5 A486 486 567.9 54.5 A487 486 567.9 54.5 A488 488 569.9 54.5 A489 489 570.9 54.5 A490 490 571.9 54.4 A491 491 572.9 54.4	A478	478	559.9		54.6		
A480 480 561.9 54.6 A481 481 562.9 54.5 A482 482 563.9 54.5 A483 483 564.9 54.5 A484 484 565.9 54.5 A485 484 565.9 54.5 A486 484 565.9 54.5 A486 486 567.9 54.5 A487 486 567.9 54.5 A488 488 569.9 54.5 A489 489 570.9 54.5 A489 489 570.9 54.5 A490 490 571.9 54.4	A479	479	560.9		54.6		
A481 A81 562.9 54.5 A482 482 563.9 54.5 A483 483 564.9 54.5 A483 483 564.9 54.5 A484 484 565.9 54.5 A485 485 566.9 54.5 A486 486 567.9 54.5 A487 486 567.9 54.5 A488 486 567.9 54.5 A488 486 567.9 54.5 A488 488 569.9 54.5 A488 488 569.9 54.5 A489 489 570.9 54.5 A490 490 571.9 54.4 A491 491 572.9 54.4	A480	480	561.9		54.6		
A482 482 563.9 54.5 A483 483 564.9 54.5 A483 483 565.9 54.5 A484 484 565.9 54.5 A485 485 566.9 54.5 A486 486 567.9 54.5 A487 487 568.9 54.5 A488 569.9 54.5 A488 569.9 54.5 A489 489 570.9 54.5 A490 490 571.9 54.4 A491 491 572.9 54.4	A481	481	562.9		54.5		
A483 A483 564.9 54.5 A483 484 565.9 54.5 A484 484 565.9 54.5 A485 485 566.9 54.5 A486 486 567.9 54.5 A487 487 568.9 54.5 A488 488 569.9 54.5 A489 489 570.9 54.5 A490 490 571.9 54.4 A491 491 572.9 54.4	A482	482	563.9		54.5		
A484 A484 565.9 54.5 A485 485 566.9 54.5 A486 486 567.9 54.5 A486 486 567.9 54.5 A487 487 568.9 54.5 A488 488 569.9 54.5 A489 489 570.9 54.5 A490 490 571.9 54.4 A491 491 572.9 54.4	A483	483	564 9		54 5		
A485 A485 566.9 54.5 A486 486 567.9 54.5 A487 487 568.9 54.5 A488 488 569.9 54.5 A489 489 570.9 54.5 A490 490 571.9 54.4 A491 491 572.9 54.4	A484	484	565.9		54 5		
A486 486 567.9 54.5 A487 487 568.9 54.5 A488 488 569.9 54.5 A489 489 570.9 54.5 A490 490 571.9 54.4 A491 491 572.9 54.4	A485	485	566.9		54.5		
A487 487 568.9 54.5 A488 488 569.9 54.5 A489 489 570.9 54.5 A490 490 571.9 54.4 A491 491 572.9 54.4	A486	486	567 9		54.5		
A488 A488 569.9 54.5 A489 489 570.9 54.5 A490 490 571.9 54.4 A491 491 572.9 54.4	A487	487	568.9		54 5		
A489 A89 570.9 54.5 A490 490 571.9 54.4 A491 491 572.9 54.4	A488	488	569.9		54 5		
A490 490 571.9 54.4 A491 491 572.9 54.4	A489	489	570.9		54 5		
A491 491 572.9 54.4	A490	490	571 9		54.5		
	A491	491	572.9		54.4		

	Struct	ure Related Noise Calcul	ation Worksheet	
	K19786:	I-205 Widening and Seis	mic Improvements	
	West	Linn Abernethy Bridge N	orthbound Side	
Input Data:				
h: Height of structur	e, from ground to und	lerside of deck		8
Aref: Center point b	etween ground and u	nderside of structure (h/	2)	42.
w: Width of Structur	e			14
Mw: Midpoint of str	ucture (w/2) The und	erside of the deck at this	point is the assumed	
source of structure r	noise (S)			7
Dref: Reference dist	ance - from S to Aref			81.
Measured Noise Lev	el at Drip Edge, dB(A)			67.
Set-back Calculation	s:			1
				Calculated Noise Leve
	Distance from Drip	Distance from Analysis	Measured Noise Level at	Drop-off Rate = 4.5
Analysis Point	Edge (ft.)	Point (ft.)	Drip Edge Leq in dB(A)	dB/DD
A492	492	573.9		54.
A493	493	574.9		54.
A494	494	575.9		54.
A495	495	576.9		54.
A496	496	577.9		54.
A497	497	578.9		54.
A498	498	579.9		54.
A499	499	580.9		54.
A500	500	581.9		54.

Structure Related Noise Calculation Worksheet					
K19	9786: I-205 Wid	dening and Seis	mic Improveme	ents	
	West Linn Aber	nethy Bridge N	orthbound Side		
Input Data:					
h: Height of sti	ucture, from gi	round to under	side of deck	85	
Aref: Center p	oint between g	round and und	erside of		
structure (h/2)				42.5	
w: Width of St	ructure			140	
Mw: Midpoint	of structure (w	v/2) The unders	ide of the		
deck at this po	int is the assum	ned source of st	ructure noise	70	
Dref: Reference	ce distance - fro	om S to Aref		81.9	
Measured Nois	se Level at Drip	Edge, dB(A)		66.01737413	
Set-back Calcu	lations:				
			Measured	Calculated	
		Distance from	Noise Level at	Noise Level	
	Distance from	Analysis Point	Drip Edge Leq	Drop-off Rate	
Analysis Point	Drip Edge (ft.)	(ft.)	in dB(A)	= 3.0 dB/DD	
Aref	0	81.9	66.01737413		
A25	25	106.9		64.9	
A50	50	131.9		63.9	
A120	120	201.9		62.1	
A150	150	231.9		61.5	
A200	200	281.9		60.6	
A400	400	58.3			
A500	500	581.9		57.5	
Analysis Point	Distance from Drip Edge (ft.)	Distance from Analysis Point (ft.)	Measured Noise Level at Drip Edge Leq in dB(A)	Calculated Noise Level Drop-off Rate = 4.5 dB/DD	
Analysis Point Aref	Distance from Drip Edge (ft.) 0	Distance from Analysis Point (ft.) 81.9	Measured Noise Level at Drip Edge Leq in dB(A) 66.01737413	Calculated Noise Level Drop-off Rate = 4.5 dB/DD	
Analysis Point Aref A25	Distance from Drip Edge (ft.) 0 25	Distance from Analysis Point (ft.) 81.9 106.9	Measured Noise Level at Drip Edge Leq in dB(A) 66.01737413	Calculated Noise Level Drop-off Rate = 4.5 dB/DD 64.3	
Analysis Point Aref A25 A50	Distance from Drip Edge (ft.) 0 25 50	Distance from Analysis Point (ft.) 81.9 106.9 131.9	Measured Noise Level at Drip Edge Leq in dB(A) 66.01737413	Calculated Noise Level Drop-off Rate = 4.5 dB/DD 64.3 62.9	
Analysis Point Aref A25 A50 A120	Distance from Drip Edge (ft.) 0 25 50 120	Distance from Analysis Point (ft.) 81.9 106.9 131.9 201.9	Measured Noise Level at Drip Edge Leq in dB(A) 66.01737413	Calculated Noise Level Drop-off Rate = 4.5 dB/DD 64.3 62.9 60.1	
Analysis Point Aref A25 A50 A120 A150	Distance from Drip Edge (ft.) 0 25 50 120 150	Distance from Analysis Point (ft.) 81.9 106.9 131.9 201.9 231.9	Measured Noise Level at Drip Edge Leq in dB(A) 66.01737413	Calculated Noise Level Drop-off Rate = 4.5 dB/DD 64.3 62.9 60.1 59.2	
Analysis Point Aref A25 A50 A120 A150 A200	Distance from Drip Edge (ft.) 0 25 50 120 150 200	Distance from Analysis Point (ft.) 81.9 106.9 131.9 201.9 231.9 281.9	Measured Noise Level at Drip Edge Leq in dB(A) 66.01737413	Calculated Noise Level Drop-off Rate = 4.5 dB/DD 64.3 62.9 60.1 59.2 58.0	
Analysis Point Aref A25 A50 A120 A150 A200 A400	Distance from Drip Edge (ft.) 0 25 50 120 150 200 400	Distance from Analysis Point (ft.) 81.9 106.9 131.9 201.9 231.9 281.9 481.9	Measured Noise Level at Drip Edge Leq in dB(A) 66.01737413	Calculated Noise Level Drop-off Rate = 4.5 dB/DD 64.3 62.9 60.1 59.2 58.0 54.5	
Analysis Point Aref A25 A50 A120 A150 A200 A400 A500	Distance from Drip Edge (ft.) 0 25 50 120 150 200 400 500	Distance from Analysis Point (ft.) 81.9 106.9 131.9 201.9 231.9 281.9 481.9 581.9	Measured Noise Level at Drip Edge Leq in dB(A) 66.01737413	Calculated Noise Level Drop-off Rate = 4.5 dB/DD 64.3 62.9 60.1 59.2 58.0 54.5 53.2	
Analysis Point Aref A25 A50 A120 A150 A200 A400 A500 Analysis Point	Distance from Drip Edge (ft.) 0 25 50 120 150 200 400 500 Distance from Drip Edge (ft.)	Distance from Analysis Point (ft.) 81.9 106.9 131.9 201.9 231.9 281.9 481.9 581.9 Distance from Analysis Point (ft.)	Measured Noise Level at Drip Edge Leq in dB(A) 66.01737413 	Calculated Noise Level Drop-off Rate = 4.5 dB/DD 64.3 62.9 60.1 59.2 58.0 54.5 53.2 Calculated Noise Level Drop-off Rate = 6.0 dB/DD	
Analysis Point Aref A25 A50 A120 A150 A200 A400 A500 Analysis Point Aref	Distance from Drip Edge (ft.) 0 25 50 120 150 200 400 500 Distance from Drip Edge (ft.)	Distance from Analysis Point (ft.) 81.9 106.9 131.9 201.9 231.9 281.9 281.9 581.9 Distance from Analysis Point (ft.) 81.9	Measured Noise Level at Drip Edge Leq in dB(A) 66.01737413 Measured Noise Level at Drip Edge Leq in dB(A) 66.01737413	Calculated Noise Level Drop-off Rate = 4.5 dB/DD 64.3 62.9 60.1 59.2 58.0 54.5 53.2 Calculated Noise Level Drop-off Rate = 6.0 dB/DD	
Analysis Point Aref A25 A50 A120 A120 A200 A400 A500 A500 Analysis Point Aref A25	Distance from Drip Edge (ft.) 0 25 50 120 150 200 400 500 Distance from Drip Edge (ft.) 0 25	Distance from Analysis Point (ft.) 81.9 106.9 131.9 201.9 231.9 281.9 481.9 581.9 Distance from Analysis Point (ft.) 81.9 106 9	Measured Noise Level at Drip Edge Leq in dB(A) 66.01737413 Measured Noise Level at Drip Edge Leq in dB(A) 66.01737413	Calculated Noise Level Drop-off Rate = 4.5 dB/DD 64.3 62.9 60.1 59.2 58.0 54.5 53.2 Calculated Noise Level Drop-off Rate = 6.0 dB/DD	
Analysis Point Aref A25 A50 A120 A150 A200 A400 A500 A500 Analysis Point Aref A25 A50	Distance from Drip Edge (ft.) 0 25 50 120 150 200 400 500 Distance from Drip Edge (ft.) 0 25 50	Distance from Analysis Point (ft.) 81.9 106.9 131.9 201.9 231.9 281.9 281.9 481.9 581.9 Distance from Analysis Point (ft.) 81.9 106.9 131.9	Measured Noise Level at Drip Edge Leq in dB(A) 66.01737413 Measured Noise Level at Drip Edge Leq in dB(A) 66.01737413	Calculated Noise Level Drop-off Rate = 4.5 dB/DD 64.3 62.9 60.1 59.2 59.2 58.0 54.5 53.2 Calculated Noise Level Drop-off Rate = 6.0 dB/DD 64 64	
Analysis Point Aref A25 A50 A120 A150 A200 A400 A500 A400 A500 Analysis Point Aref A25 A50 A120	Distance from Drip Edge (ft.) 0 25 50 120 150 200 400 500 Distance from Drip Edge (ft.) 0 25 50 120	Distance from Analysis Point (ft.) 81.9 106.9 201.9 231.9 281.9 281.9 481.9 581.9 Distance from Analysis Point (ft.) 81.9 106.9 131.9	Measured Noise Level at Drip Edge Leq in dB(A) 66.01737413 Measured Noise Level at Drip Edge Leq in dB(A) 66.01737413	Calculated Noise Level Drop-off Rate = 4.5 dB/DD 64.3 62.9 60.1 59.2 58.0 54.5 53.2 Calculated Noise Level Drop-off Rate = 6.0 dB/DD 64 64 62	
Analysis Point Aref A25 A50 A120 A120 A200 A400 A500 A400 A500 A120 Aref A25 A50 A120 A150	Distance from Drip Edge (ft.) 0 255 500 1200 2000 4000 5000 Distance from Drip Edge (ft.) 0 255 500 1200	Distance from Analysis Point (ft.) 81.9 106.9 231.9 231.9 281.9 281.9 281.9 581.9 Distance from Analysis Point (ft.) 81.9 106.9 131.9 201.9	Measured Noise Level at Drip Edge Leq in dB(A) 66.01737413 Measured Noise Level at Drip Edge Leq in dB(A) 66.01737413	Calculated Noise Level Drop-off Rate = 4.5 dB/DD 64.3 62.9 60.1 59.2 58.0 54.5 53.2 Calculated Noise Level Drop-off Rate = 6.0 dB/DD 64 64 62 58	
Analysis Point Aref A25 A50 A120 A120 A200 A400 A500 A500 A500 Analysis Point Aref A25 A50 A120 A150 A120 A150	Distance from Drip Edge (ft.) 0 255 50 120 200 400 500 0 500 Distance from Drip Edge (ft.) 0 255 50 120 150 200	Distance from Analysis Point (ft.) 81.9 106.9 231.9 231.9 281.9 281.9 481.9 581.9 Distance from Analysis Point (ft.) 81.9 106.9 131.9 201.9 231.9	Measured Noise Level at Drip Edge Leq in dB(A) 66.01737413 Measured Noise Level at Drip Edge Leq in dB(A) 66.01737413	Calculated Noise Level Drop-off Rate = 4.5 dB/DD 64.3 62.9 60.1 59.2 58.0 54.5 53.2 Calculated Noise Level Drop-off Rate = 6.0 dB/DD 64 64 62 58 57 55	
Analysis Point Aref A25 A50 A120 A150 A200 A400 A500 A500 Analysis Point Aref A25 A50 A120 A150 A120 A150 A200 A400	Distance from Drip Edge (ft.) 0 255 500 120 200 400 500 Distance from Drip Edge (ft.) 0 255 50 120 150 200 400	Distance from Analysis Point (ft.) 81.9 106.9 231.9 231.9 281.9 281.9 481.9 581.9 581.9 0581.9 0581.9 106.9 131.9 201.9 231.9 231.9 281.9	Measured Noise Level at Drip Edge Leq in dB(A) 66.01737413 Measured Noise Level at Drip Edge Leq in dB(A) 66.01737413	Calculated Noise Level Drop-off Rate = 4.5 dB/DD 64.3 62.9 60.1 59.2 59.2 59.2 53.2 Calculated Noise Level Drop-off Rate = 6.0 dB/DD 64 64 62 58 57 55 55	
Analysis Point Aref A25 A50 A120 A120 A200 A400 A500 A400 A500 Aref A25 A50 A120 A150 A150 A150 A150 A200 A400 A500	Distance from Drip Edge (ft.) 0 255 500 1200 4000 5000 Distance from Drip Edge (ft.) 0 255 500 1200 1500 2000 4000 5000	Distance from Analysis Point (ft.) 81.9 106.9 231.9 231.9 281.9 281.9 481.9 581.9 Distance from Analysis Point (ft.) 81.9 106.9 131.9 201.9 231.9 231.9 281.9 481.9	Measured Noise Level at Drip Edge Leq in dB(A) 66.01737413 Measured Noise Level at Drip Edge Leq in dB(A) 66.01737413	Calculated Noise Level Drop-off Rate = 4.5 dB/DD 64.3 62.9 60.1 59.2 53.2 Calculated Noise Level Drop-off Rate = 6.0 dB/DD 64 64 62 58 55 55 55	

Appendix B. Calibration Certificates





Calibration Certificate No.38800

Instrument:	Sound Level Meter		
Model:	2250		
Manufacturer:	Brüel and Kjær		
Serial number:	2579777		
Tested with:	Microphone 4189 s/n 2589635		
	Preamplifier ZC0032 s/n 7764		
Type (class):	1		
Customer:	Harris Miller Miller & Hanson Inc.		
Tel/Fax:	781-229-0707 x3119 / 781-229-7939		

 Date Calibrated:6/28/2017
 Cal Due:

 Status:
 Received
 Sent

 In tolerance:
 X
 X

 Out of tolerance:
 See comments:
 See contains non-accredited tests: __Yes X_No

 Calibration service:
 Basic X_Standard

 Address:
 77 South Bedford Street

 Burlington, MA 01803

Tested in accordance with the following procedures and standards: Calibration of Sound Level Meters, Scantek Inc., Rev. 6/26/2015 SLM & Dosimeters – Acoustical Tests, Scantek Inc., Rev. 7/6/2011

Instrumentation used for calibration: Nor-1504 Norsonic Test System:

Instrument Manufactures	Bernhatler	C /N	Cal Data	Traceability evidence	Cal. Due
Instrument - Manufacturer	Description	5/11	Cal. Date	Cal. Lab / Accreditation	
483B-Norsonic	SME Cal Unit	31061	Jul 27, 2016	Scantek, Inc./ NVLAP	Jul 27, 2017
DS-360-SRS	Function Generator	88077	Sep 15, 2016	ACR Env./ A2LA	Sep 15, 2018
34401A-Agilent Technologies	Digital Voltmeter	MY47011118	Sep 15, 2016	ACR Env./ A2LA	Sep 15, 2017
HM30-Thommen	Meteo Station	1040170/39633	Nov 1, 2016	ACR Env./ A2LA	Nov 1, 2017
PC Program 1019 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	-
1251-Norsonic	Calibrator	30878	Nov 10, 2016	Scantek, Inc./ NVLAP	Nov 10, 2017

Instrumentation and test results are traceable to SI (International System of Units) through standards maintained by NIST (USA) and NPL (UK).

Environmental conditions:

Temperature (°C)	Barometric pressure (kPa)	Relative Humidity (%)
22.7	100.58	47.4

Calibrated by:	Jeremy Gotwalt	Authorized signatory:	/William D. Gallagher
Signature	Junit Linn	Signature	William D Ball
Date	6/28/17	Date	6/28/2017

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Calibration Certificate No.38801

Instrument:	
Model:	
Manufacturer:	
Serial number:	
Composed of:	

Microphone 4189 Brüel & Kjær 2589635

Date Calibrated: 6/	26/2017 Cal D	ue:
Status:	Received	Sent
In tolerance:	х	Х
Out of tolerance:		
See comments:		
Contains non-accre	dited tests. V	es X No

Customer: Tel/Fax:

Harris Miller Miller & Hanson Inc. 781-229-0707 x3119/781-229-7939

Address: 77 South Bedford Street, Burlington, MA 01803

Tested in accordance with the following procedures and standards: Calibration of Measurement Microphones, Scantek, Inc., Rev. 2/25/2015

Instrumentation used for calibration: N-1504 Norsonic Test System:

Instrument - Manufacturer	Description	s/n	Cal. Date	Traceability evidence	Cal. Due
				Cal. Lab / Accreditation	
483B-Norsonic	SME Cal Unit	25747	Jul 6, 2016	Scantek, inc./ NVLAP	Jul 6, 2017
DS-360-SRS	Function Generator	61646	Aug 12, 2015	ACR Env./ A2LA	Aug 12, 2017
34401A-Agilent Technologies	Digital Voltmeter	MY41022043	Aug 16, 2016	ACR Env. / A2LA	Aug 16, 2017
DPI 141-Druck	Pressure Indicator	790/00-04	Dec 22, 2016	ACR Env./ A2LA	Dec 22, 2018
HMP233-Vaisala Oyj	Humidity & Temp. Transmitter	V3820001	Apr 19, 2017	ACR Env./ A2LA	Apr 19, 2018
PC Program 1017 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	
1253-Norsonic	Calibrator	28326	Nov 10, 2016	Scantek, Inc./ NVLAP	Nov 10, 2017
1203-Norsonic	Preamplifier	21270	May 24, 2017	Scantek, Inc./ NVLAP	May 24, 2018
4180-Brüel&Kjær	Microphone	2246115	Oct 26, 2015	NPL-UK / UKAS	Oct 26, 2017

Instrumentation and test results are traceable to SI - BIPM through standards maintained by NPL (UK) and NIST (USA)

Calibrated by:	/ Lydon Dawkins /	Authorized signatory:	, William D. Gallagher
Signature	Lendon Daue Rea	Signature	Willin W Bally
Date	6126/2017	Date	6/28/2017

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Calibration Certificate No.38809

Instrument: Model: Manufacturer: Serial number: Class (IEC 60942): Barometer type: Barometer s/n: Customer: Tel/Fax: Acoustical Calibrator 4231 Brüel and Kjær 2579293 1 Harris Miller Miller & Hanson Inc. 781-229-0707 x3119 / 781-229-7939

Date Calibrated: 6/	26/2017 Cal Du	e:
Status:	Received	Sent
In tolerance:	x	х
Out of tolerance:		
See comments:		
Contains non-accred	dited tests: Ye	s X No

77 South Bedford Street, Burlington, MA 01803

Tested in accordance with the following procedures and standards: Calibration of Acoustical Calibrators, Scantek Inc., Rev. 10/1/2010

Instrumentation used for calibration: Nor-1504 Norsonic Test System:

Instrument Manufactures	Description	Description S/N Cal. Date Traceability evidence Cal. Due			
instrument - Manufacturer	Description	5/11	Cal. Date	Cal. Lab / Accreditation	Cal. Due
483B-Norsonic	SME Cal Unit	31052	Oct 26, 2016	Scantek, Inc./ NVLAP	Oct 26, 2017
DS-360-SRS	Function Generator	33584	Oct 20, 2015	ACR Env./ A2LA	Oct 20, 2017
34401A-Agilent Technologies	Digital Voltmeter	US36120731	Oct 12, 2016	ACR Env. / A2LA	Oct 12, 2017
HM30-Thommen	Meteo Station	1040170/39633	Nov 1, 2016	ACR Env./ A2LA	Nov 1, 2017
140-Norsonic	Real Time Analyzer	1406423	Oct 29, 2016	Scantek / NVLAP	Oct 29, 2017
PC Program 1018 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	-
4134-Brüel&Kjær	Microphone	173368	Nov 10, 2016	Scantek, Inc. / NVLAP	Nov 10, 2017
1203-Norsonic	Preamplifier	14059	Feb 13, 2017	Scantek, Inc./ NVLAP	Feb 13, 2018

Address:

Instrumentation and test results are traceable to SI (International System of Units) through standards maintained by NIST (USA) and NPL (UK)

Calibrated by:	/ Lydon/Dawkins/	Authorized signatory:	William D. Gallagher
Signature	Tyden Daukeis	Signature	Willich Dallah
Date	6/26/2017	Date	4/28/20178

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ISO 17025: 2005, ANSI/NCSL Z540:1994 Part 1 ACCREDITED by NVLAP (an ILAC MRA signatory)



Calibration Certificate No.38852

Instrument:	Sound Level Meter
Model:	820
Manufacturer:	Larson Davis
Serial number:	1286
Tested with:	Microphone 40AQ s/n 23040
	Preamplifier PRM828 s/n 1833
Type (class):	1
Customer:	Harris Miller Miller & Hanson Inc.
Tel/Fax:	781-229-0707 x3119 / 781-229-7939

Tested in accordance with the following procedures and standards: Calibration of Sound Level Meters, Scantek Inc., Rev. 6/26/2015 SLM & Dosimeters – Acoustical Tests, Scantek Inc., Rev. 7/6/2011

Instrumentation used for calibration: Nor-1504 Norsonic Test System:

Instrument - Manufacturer	Description	intion S/N Cal Date Traceability evidence		Traceability evidence	Cal Due	
Instrument - Manufacturer	Description	3/14	Cal. Date	Cal. Lab / Accreditation	cal. Due	
483B-Norsonic	SME Cal Unit	25747	Jul 6, 2016	Scantek, Inc./ NVLAP	Jul 6, 2017	
DS-360-SRS	Function Generator	61646	Aug 12, 2015	ACR Env./ A2LA	Aug 12, 2017	
34401A-Agilent Technologies	Digital Voltmeter	MY41022043	Aug 16, 2016	ACR Env. / A2LA	Aug 16, 2017	
DPI 141-Druck	Pressure Indicator	790/00-04	Dec 22, 2016	ACR Env./ A2LA	Dec 22, 2018	
HMP233-Vaisala Oyj	Humidity & Temp. Transmitter	V3820001	Apr 19, 2017	ACR Env./ A2LA	Apr 19, 2018	
PC Program 1019 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	-	
1251-Norsonic	Calibrator	30878	Nov 10, 2016	Scantek, Inc./ NVLAP	Nov 10, 2017	

Instrumentation and test results are traceable to SI (International System of Units) through standards maintained by NIST (USA) and NPL (UK).

Environmental conditions:

Temperature (°C)	Barometric pressure (kPa)	Relative Humidity (%)
22.3	100.52	59.5

 Calibrated by:	/ Lydon Dawkins	Authorized signatory:	Steven E. Marshall
Signature	Linden Dawkus	Signature	Steven & Marshall
Date	7/6/2017	Date	7/7/2017

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Calibration Certificate No.38853

CANV (MCANV 11/CANV 11/CANV

Instrument: M Model: 4 Manufacturer: 6 Serial number: 2 Composed of:

Microphone 40AQ GRAS 23040

Status:	Received	Sent
In tolerance:	X	Х
Out of tolerance:		
See comments:		
Contains non-accr	edited tests: Y	es X No

Customer: Tel/Fax:

Harris Miller Miller & Hanson Inc. 781-229-0707 x3119/781-229-7939

Address: 77 South Bedford Street, Burlington, MA 01803

Tested in accordance with the following procedures and standards: Calibration of Measurement Microphones, Scantek, Inc., Rev. 2/25/2015

Instrumentation used for calibration: N-1504 Norsonic Test System:

Instrument - Manufacturer	Description	S/N	Cal Date	Traceability evidence	Cal Due	
Instrument - Manufacturer	Description	3/14	cal. Date	Cal. Lab / Accreditation	cal. Due	
483B-Norsonic	SME Cal Unit	31052	Oct 26, 2016	Scantek, Inc./ NVLAP	Oct 26, 2017	
DS-360-SRS	Function Generator	33584	Oct 20, 2015	ACR Env./ A2LA	Oct 20, 2017	
34401A-Agilent Technologies	Digital Voltmeter	US36120731	Oct 12, 2016	ACR Env. / A2LA	Oct 12, 2017	
HM30-Thommen	Meteo Station	1040170/39633	Nov 1, 2016	ACR Env./ A2LA	Nov 1, 2017	
PC Program 1017 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.		
1253-Norsonic	Calibrator	28326	Nov 10, 2016	Scantek, Inc./ NVLAP	Nov 10, 2017	
1203-Norsonic	Preamplifier	14059	Feb 13, 2017	Scantek, Inc./ NVLAP	Feb 13, 2018	
4180-Brüel&Kjær	Microphone	2246115	Oct 26, 2015	NPL-UK / UKAS	Oct 26, 2017	

Instrumentation and test results are traceable to SI - BIPM through standards maintained by NPL (UK) and NIST (USA)

Calibrated by:	/ Lydop Dawkins	Authorized signatory:	Steven E. Marshall
Signature	Ludin Daullus	Signature	Steven & Marshall
Date	715/2017	Date	7/7/2017

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Calibration Certificate No.38854

Instrument: Model: Manufacturer: Serial number: Class (IEC 60942): Barometer type: Barometer s/n: Customer: Tel/Fax: Acoustical Calibrator CAL250 Larson Davis 2368 1L Harris Miller Miller & Hanson Inc. 781-229-0707 x3119 / 781-229-7939

Date Calibrated: 6/	30/2017 Cal Du	е:
Status:	Received	Sent
n tolerance:	х	х
Out of tolerance:		
See comments:	х	
Contains non-accret	dited tests: Ye	s X No

77 South Bedford Street, Burlington, MA 01803

Tested in accordance with the following procedures and standards: Calibration of Acoustical Calibrators, Scantek Inc., Rev. 10/1/2010

Instrumentation used for calibration: Nor-1504 Norsonic Test System:

Instrument Manufactures	Description	C /21	Col Data	Traceability evidence		
nistrument - Manufacturer	Description	5/14	Cal. Date	Cal. Lab / Accreditation	cal. Due	
483B-Norsonic	SME Cal Unit	31052	Oct 26, 2016	Scantek, Inc./ NVLAP	Oct 26, 2017	
DS-360-SRS	Function Generator	33584	Oct 20, 2015	ACR Env./ A2LA	Oct 20, 2017	
34401A-Agilent Technologies	Digital Voltmeter	US36120731	Oct 12, 2016	ACR Env. / A2LA	Oct 12, 2017	
HM30-Thommen	Meteo Station	1040170/39633	Nov 1, 2016	ACR Env./ A2LA	Nov 1, 2017	
140-Norsonic	Real Time Analyzer	1406423	Oct 29, 2016	Scantek / NVLAP	Oct 29, 2017	
PC Program 1018 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	-	
4134-Brüel&Kjær	Microphone	173368	Nov 10, 2016	Scantek, Inc. / NVLAP	Nov 10, 2017	
1203-Norsonic	Preamplifier	14059	Feb 13, 2017	Scantek, Inc./ NVLAP	Feb 13, 2018	

Address:

Instrumentation and test results are traceable to SI (International System of Units) through standards maintained by NIST (USA) and NPL (UK)

Calibrated by:	// Lydon Dawkins	Authorized signatory:	Steven E. Marshall
 Signature	Undon Davelleon	Signature	Steren Marshall
Date	613012017	Date	7/5/2017

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Calibration Certificate No.40280

nstrument:	Sound Level Meter
Model:	2250
Manufacturer:	Brüel and Kjær
Serial number:	2579777
ested with:	Microphone 4189 s/n 2589635
M 25%	Preamplifier ZC0032 s/n 7764
ype (class):	1
Customer:	Harris Miller Miller & Hanson Inc.
el/Fax:	781-229-0707 x3119 / 781-229-7939

Received	Sent
X	X
e:	
A Dearson Will	N.W. X
ccredited tests:	Yes X No
vice:Basic X	Standard
South Bedford Str	eet,
rlington, MA 0180	3
	Received X x ccredited tests: vice:Basic X South Bedford Str rlington, MA 0180

Tested in accordance with the following procedures and standards: Calibration of Sound Level Meters, Scantek Inc., Rev. 6/26/2015 SLM & Dosimeters – Acoustical Tests, Scantek Inc., Rev. 7/6/2011

Instrumentation used for calibration: Nor-1504 Norsonic Test System:

	Description	S/N	Cal Data	Traceability evidence	SUM W
instruitent - Manulatturer	Description		Cal. Date	Cal. Lab / Accreditation	Car. Due
483B-Norsonic	SME Cal Unit	31052	Oct 30, 2017	Scantek, Inc./ NVLAP	Oct 30, 2018
DS-360-SRS	Function Generator	33584	Oct 24, 2017	ACR Env./ A2LA	Oct 24, 2019
34401A-Agilent Technologies	Digital Voltmeter	US36120731	Oct 25, 2017	ACR Env. / A2LA	Oct 25, 2018
HM30-Thommen	Meteo Station	1040170/39633	Oct 25, 2017	ACR Env./ AZLA	Oct 25, 2018
PC Program 1019 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	
1251-Norsonic	Calibrator	30878	Nov 10, 2017	Scantek, Inc./ NVLAP	Nov 10, 2018

Instrumentation and test results are traceable to SI (International System of Units) through standards maintained by NIST (USA) and NPL (UK).

Environmental conditions:

Temperature (°C)	Barometric pressure (kPa)	Relative Humidity (%)
23.6	99.19	38.2

	Calibrated by:	/ Lydon Dawking	Authorized signatory:	Steven E. Marshall
No.	Signature	Lidon Jaullus	Signature 🥢 y	Steven & Marshall
All	Date	3/14/2018	Date	3/15/2018

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Calibration Certificate No.40281

Instrument:	
Model:	
Monufacturer:	
Serial number:	
Composed of:	

Microphone 4189 Brüel & Kjær 2589635

Date cumprater	. 3/13/2018 Cuil	ue.
Status:	Received	Sent
In tolerance:	X	X
Out of toleran	ce: X	
See comments		2.6
Contains non-	accredited tests:Y	es X No
Address: 77	South Bedford Stre	et.

Customer: Tel/Fax:

Harris Miller Miller & Hanson Inc. 781-229-0707 x3119/781-229-7939

77 South Bedford Street, Burlington, MA 01803

Tested in accordance with the following procedures and standards: Calibration of Measurement Microphones, Scantek, Inc., Rev. 2/25/2015

Instrumentation used for calibration: N-1504 Norsonic Test System:

Instrument - Manufacturer	Description	C/M	Cal Data	Traceability evidence	Cal. Due
		3/14	Cal. Date	Cal. Lab / Accreditation	
4838-Norsonic	SME Cal Unit	31052	Oct 30, 2017	Scantek, Inc./ NVLAP	Oct 30, 2018
DS-360-SRS	Function Generator	33584	Oct 24, 2017	ACR Env./ A2LA	Oct 24, 2019
34401A-Agilent Technologies	Digital Voltmeter	US36120731	Oct 25, 2017	ACR Env. / AZLA	Oct 25, 2018
KM30-Thommen	Meteo Station	1040170/39633	Oct 25, 2017	ACR Env./ A2LA	Oct 25, 2018
PC Program 1017 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	
1253-Norsonic	Calibrator	28326	Nov 10, 2017	Scantek, Inc./ NVLAP	Nov 10, 2018
1203-Norsonic	Preamplifier	14059	Feb 12, 2018	Scantek, Inc./ NVLAP	Feb 12, 2019
4180-Brüel&Kjær	Microphone	2246115	Oct 24, 2017	DANAK / DPLA	Oct 24, 2019

Instrumentation and test results are traceable to SI - BIPM through standards maintained by NPL (UK) and NIST (USA)

	Calibrated by:	/ Lydon Dawkins/	Authorized signatory:	Steven E. Marshall
PS.	Signature	Judon Davekuns	Signature	Steven E Marshall
25	Date	3/13/2018	Date	3/15/2018

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Calibration Certificate No.40282

Instrument: Model: Manufacturer: Serial number: Class (IEC 60942): Barometer type: Barometer s/n: Customer: Tel/Fax: Acoustical Calibrator 4231 Brüel and Kjær 2579293 1 Harris Miller Miller & Hanson Inc.

Contains Harris Miller Miller & Hanson Inc. Address: 781-229-0707 x3119 / 781-229-7939

Status:	Received	Sent
In tolerance:	X	X
Out of tolerance:	Zomen all	No and a second
See comments:		An Me
Contains non-accre	dited tests: Ye	es X No

77 South Bedford Street, Burlington, MA 01803

Tested in accordance with the following procedures and standards: Calibration of Acoustical Calibrators, Scantek Inc., Rev. 10/1/2010

Instrumentation used for calibration: Nor-1504 Norsonic Test System:

Instrument - Manufacturer	Description	S/N	Cal. Date	Traceability evidence	Cal. Due	
4838-Norsonic	SME Cal Unit	31052	Oct 30, 2017	Scantek, Inc./ NVLAP	Oct 30, 2018	
DS-360-SR5	Function Generator	33584	Oct 24, 2017	ACR Env./ A2LA	Oct 24, 2019	
34401A-Agilent Technologies	Digital Voltmeter	U\$36120731	Oct 25, 2017	ACR Env. / A2LA	Oct 25, 2018	
HM30-Thommen	Meteo Station	1040170/39633	Oct 25, 2017	ACR Env./ A2LA	Oct 25, 2018	
140-Norsonic	Real Time Analyzer	1406423	Oct 31, 2017	Scantek / NVLAP	Oct 31, 2018	
PC Program 1018 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	XC	
4134-Brüel&Kjær	Microphone	173368	Nov 10, 2017	Scantek, Inc. / NVLAP	Nov 10, 2018	
1203-Norsonic	Preamplifier	14059	Feb 12, 2018	Scantek, Inc./ NVLAP	Feb 12, 2019	

Instrumentation and test results are traceable to SI (International System of Units) through standards maintained by NIST (USA) and NPL (UK)

Calibrated by:	/ Lydon Dawkins,	Authorized signatory:	Steven E. Marshall
Signature	Ludon Dauchen	Signature 🔰 🕻	teren E Marshall
Date	3/12/2018	Date	3/15/2018

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Document stored as: Z:\Calibration Lab\Cal 2018\BNK4231_2579293_M1.doc





Calibration Certificate No.40291

Instrument:	Sound Level Meter		
Model:	2250		
Manufacturer:	Brüel and Kjær		
Serial number:	2619791		
Tested with:	Microphone 4189 s/n 2616506		
	Preamplifier ZC0032 s/n 11159		
Type (class):	1		
Customer:	Harris Miller Miller & Hanson Inc.		
Tel/Fax:	781-229-0707 x3119 / 781-229-7939		

Status:		Received	Sent
In tolerance	e:	X	X
Out of tole	rance:	Sim Mill	※
See comme	ents:	None Con	
Contains no	on-accrea	dited tests:	Yes <u>X</u> No
Calibration	service:	Basic X_S	tandard
Address:	77 Sout	h Bedford Stre	et
	Burlingt	on. MA 01803	Mall

Tested in accordance with the following procedures and standards: Calibration of Sound Level Meters, Scantek Inc., Rev. 6/26/2015 SLM & Dosimeters – Acoustical Tests, Scantek Inc., Rev. 7/6/2011

Instrumentation used for calibration: Nor-1504 Norsonic Test System:

- All Carrowski - A	120000000	Zata	S	Traceability evidence	200887
Instrument - Manufacturer	Description	S/N	Cal, Date	Cal. Lab / Accreditation	Cal. Due
483B-Norsonic	SME Cal Unit	31061	Jul 28, 2017	Scantek, Inc./ NVLAP	Jul 28, 2018
DS-360-SRS	Function Generator	88077	Sep 15, 2016	ACR Env./ A2LA	Sep 15, 2018
34401A-Agilent Technologies	Digital Voltmeter	MY47011118	Sep 20, 2017	ACR Env./ A2LA	Sep 20, 2018
HM30-Thommen	Meteo Station	1040170/39633	Oct 25, 2017	ACR Env./ A2LA	Oct 25, 2018
PC Program 1019 Norsonic	Calibration software	v.6.17	Validated Nov 2014	Scantek, Inc.	
1251-Norsonic	Calibrator	30878	Nov 10, 2017	Scantek, Inc./ NVLAP	Nov 10, 2018

Instrumentation and test results are traceable to SI (International System of Units) through standards maintained by NIST (USA) and NPL (UK).

Environmental conditions:

Temperature (°C)	Barometric pressure (kPa)	Relative Humidity (%)
22.9	99.31	38.8

Calibrated by:	Jeremy Gotwalt	Authorized signatory:	Steven E. Marshall
Signature	1 41/1th	Signature	Stoven EMarihal
Date	1 3/14/18	Date	3/15/2018

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Calibration Certificate No.40292

Instrument: Model: Manufacturer: Serial number: Composed of: Microphone 4189 Brüel & Kjær 2616506

Status:	Received	Sent
In tolerance:	x	X
Out of tolerance	· / X 200 /	
See comments:	2018/1/ WW	S. Mah
Contains non-ac	credited tests:Y	es <u>X</u> No
Address 77 S	outh Redford Stre	at

Customer: Tel/Fax: Harris Miller Miller & Hanson Inc. 781-229-0707 x3119/781-229-7939 77 South Bedford Street Burlington, MA 01803

Tested in accordance with the following procedures and standards: Calibration of Measurement Microphones, Scantek, Inc., Rev. 2/25/2015

Instrumentation used for calibration: N-1504 Norsonic Test System:

Instrument - Manufacturer	Description	S/N	Cal. Date	Traceability evidence	Cal. Due	
a COLLARD AD Arms NO		5693 (BAS) - 2014	1 - 10 - 10 V	Cal. Lab / Accreditation	WI MERSON	
483B-Norsonic	SME Cal Unit	31061	Jul 28, 2017	Scantek, Inc./ NVLAP	Jul 28, 2018	
DS-360-SRS	Function Generator	88077	Sep 15, 2016	ACR Env./ A2LA	Sep 15, 2018	
34401A-Agilent Technologies	Digital Voltmeter	MY47011118	Sep 20, 2017	ACR Env./ A2LA	Sep 20, 2018	
HM30-Thommen	Meteo Station	1040170/39633	Oct 25, 2017	ACR Env./ A2LA	Oct 25, 2018	
PC Program 1017 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.		
1253-Norsonic	Calibrator	28326	Nov 10, 2017	Scantek, Inc./ NVLAP	Nov 10, 2018	
1203-Norsonic	Preamplifier	92268	Oct 18, 2017	Scantek, Inc./ NVLAP	Oct 18, 2018	
4180-Brüel&Kjær	Microphone	2246115	Oct 24, 2017	DANAK / DPLA	Oct 24, 2019	

Instrumentation and test results are traceable to SI - BIPM through standards maintained by NPL (UK) and NIST (USA)

Calibrated by:	Jeremy Gotwalt	Authorized signatory:	Steven E Marshall
Signature	Mallita	Signature	Setten Sharsing
Date	0/3/12/18	Date	3/13/2018

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Calibration Certificate No.40293

Address:

Instrument: Model: Manufacturer: Serial number: Class (IEC 60942): Barometer type: Barometer s/n: Customer: Tel/Fax: Acoustical Calibrator 4231 Brüel and Kjær 2579294 1

Harris Miller Miller & Hanson Inc. 781-229-0707 x3119 / 781-229-7939

Status:	Received	Sent
in tolerance:	X	X
Out of tolerance:	Auges Mary	- WY
See comments:	WI WW.	- Mille
Contains non-accred	dited tests: Ye	s X No

77 South Bedford Street Burlington, MA 01803

Tested in accordance with the following procedures and standards: Calibration of Acoustical Calibrators, Scantek Inc., Rev. 10/1/2010

Instrumentation used for calibration: Nor-1504 Norsonic Test System:

Instrument - Manufacturer	Description	S/N	Cal. Date	Traceability evidence	Cal. Due
				Cal. Lab / Accreditation	
483B-Norsonic	SME Cal Unit	31061	Jul 28, 2017	Scantek, Inc./ NVLAP	Jul 28, 2018
DS-360-SRS	Function Generator	88077	Sep 15, 2016	ACR Env./ A2LA	Sep 15, 2018
34401A-Agilent Technologies	Digital Voltmeter	MY47011118	Sep 20, 2017	ACR Env./ A2LA	Sep 20, 2018
HM30-Thommen	Meteo Station	1040170/39633	Oct 25, 2017	ACR Env./ A2LA	Oct 25, 2018
140-Norsonic	Real Time Analyzer	1403978	Mar 22, 2017	Scantek, Inc. / NVLAP	Mar 22, 2018
PC Program 1018 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	Mar
4192-Brüel&Kjær	Microphone	2854675	Nov 11, 2017	Scantek, Inc. / NVLAP	Nov 11, 2018
1203-Norsonic	Preamplifier	92268	Oct 18, 2017	Scantek, Inc./ NVLAP	Oct 18, 2018

Instrumentation and test results are traceable to SI (International System of Units) through standards maintained by NIST (USA) and NPL (UK)

Calibrated by:	Jeremy Gotwalt	Authorized signatory:	Steven E. Marshalj
Signature	and left	Signature	Steen Ellassand
Date	3/12/18	Date	3/15/2018

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Calibration Certificate No.40294

Instrument:	Sound Level Meter		
Model:	2250		
Manufacturer:	Brüel and Kjær		
Serial number:	2579776		
Tested with:	Microphone 4189 s/n 2616507		
	Preamplifier ZC0032 s/n 18967		
Type (class):	1		
Customer:	Harris Miller Miller & Hanson Inc.		
Tel/Fax:	781-229-0707 x3119 / 781-229-7939		

Status:		Received	Sent
in toleran	ce:	X	X
Out of tol	erance:		
See comm	ents:	North Mr.	N XC
Contains I	non-accred	ited tests:Y	es X No
Calibratio	n service:	Basic X_ St	andard
Address:	77 South	Bedford Stre	et 🔪 🔀
	BALL MILL	A STATE OF A	

Tested in accordance with the following procedures and standards: Calibration of Sound Level Meters, Scantek Inc., Rev. 6/26/2015 SLM & Dosimeters – Acoustical Tests, Scantek Inc., Rev. 7/6/2011

Instrumentation used for calibration: Nor-1504 Norsonic Test System:

- AM Constant Marsh			Cal Data	Traceability evidence	Cal. Due	
instrument - Manufacturer	Description	5/N	Cal, Date	Cal. Lab / Accreditation		
483B-Norsonic	SME Cal Unit	31061	Jul 28, 2017	Scantek, Inc./ NVLAP	Jul 28, 2018	
DS-360-SRS	Function Generator	88077	Sep 15, 2016	ACR Env./ A2LA	Sep 15, 2018	
34401A-Agilent Technologies	Digital Voltmeter	MY47011118	Sep 20, 2017	ACR Env./ A2LA	Sep 20, 2018	
HM30-Thommen	Meteo Station	1040170/39633	Oct 25, 2017	ACR Env./ A2LA	Oct 25, 2018	
PC Program 1019 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.		
1251-Norsonic	Calibrator	30878	Nov 10, 2017	Scantek, Inc./ NVLAP	Nov 10, 2018	

Instrumentation and test results are traceable to SI (International System of Units) through standards maintained by NIST (USA) and NPL (UK).

Environmental conditions:

Temperature (°C)	Barometric pressure (kPa)	Relative Humidity (%)		
23.2	99.31	39.1		

Calibrated by:	Jeremy, Gotwalt	Authorized signatory:	Steven E. Marshall
Signature	M. HUK	Signature	Steven E Mariaal
Date	10 3/14/18	Date	3/15/2018

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Calibration Certificate No.40295

Instrument: Model: Manufacturer: Serial number: Composed of: Microphone 4189 Brüel & Kjær 2616507

Status:	Received	Sent
In tolerance:	X	X
Out of tolerance:	和文字绘画	Ser all a
See comments:		S. Mai
Contains non-accre	edited tests: Y	es X No

Customer: Tel/Fax:

Harris Miller Miller & Hanson Inc. 781-229-0707 x3119/781-229-7939

77 South Bedford Street Burlington, MA 01803

Tested in accordance with the following procedures and standards: Calibration of Measurement Microphones, Scantek, Inc., Rev. 2/25/2015

Instrumentation used for calibration: N-1504 Norsonic Test System:

Instrument - Manufacturer	Description	S/N	Cal. Date	Traceability evidence Cal. Lab / Accreditation	Cal. Due	
483B-Norsonic	SME Cal Unit	31061	Jul 28, 2017	Scantek, Inc./ NVLAP	Jul 28, 2018	
DS-360-SRS	Function Generator	88077	Sep 15, 2016	ACR Env./ A2LA	Sep 15, 2018	
34401A-Agilent Technologies	Digital Voltmeter	MY47011118	Sep 20, 2017	ACR Env./ A2LA	Sep 20, 2018	
HM30-Thommen	Meteo Station	1040170/39633	Oct 25, 2017	ACR Env./ A2LA	Oct 25, 2018	
PC Program 1017 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.		
1253-Norsonic	Calibrator	28326	Nov 10, 2017	Scantek, Inc./ NVLAP	Nov 10, 2018	
1203-Norsonic	Preamplifier	92268	Oct 18, 2017	Scantek, Inc./ NVLAP	Oct 18, 2018	
4180-Brüel&Kjær	Microphone	2246115	Oct 24, 2017	DANAK / DPLA	Oct 24, 2019	

Instrumentation and test results are traceable to SI - BIPM through standards maintained by NPL (UK) and NIST (USA)

Calibrated by:	Jeremy Gotwalt	Authorized signatory:	Steven E Marshall
Signature	and that	Signature	Steven EMarshall
Date	3/12/18	Date	3/15/2018

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Calibration Certificate No.40296

Instrument: Model: Manufacturer: Serial number: Class (IEC 60942): Barometer type: Barometer s/n: Customer: Tel/Fax: Acoustical CalibratorDate Calibrator4231Status:Brüel and KjærIn toleran2579295Out of to1See comicContainsHarris Miller Miller & Hanson Inc.Address:781-229-0707 x3119 /

Status:	Received	Sent
In tolerance:	X	X
Out of tolerance:	N AND A	N. W.
See comments:		in Mille
Contains non-accred	dited tests: Ye	s X No

77 South Bedford Street Burlington, MA 01803

Tested in accordance with the following procedures and standards: Calibration of Acoustical Calibrators, Scantek Inc., Rev. 10/1/2010

781-229-7939

Instrumentation used for calibration: Nor-1504 Norsonic Test System:

	Description	S/N		Traceability evidence	Cal. Due	
Instrument - Manufacturer	Description		Cal. Date	Cal. Lab / Accreditation		
483B-Norsonic	SME Cal Unit	31061	Jul 28, 2017	Scantek, Inc./ NVLAP	Jul 28, 2018	
D\$-360-SR\$	Function Generator	88077	Sep 15, 2016	ACR Env./ A2LA	Sep 15, 2018	
34401A-Agilent Technologies	Digital Voltmeter	MY47011118	Sep 20, 2017	ACR Env./ A2LA	Sep 20, 2018	
HM30-Thommen	Meteo Station	1040170/39633	Oct 25, 2017	ACR Env./ A2LA	Oct 25, 2018	
140-Norsonic	Real Time Analyzer	1403978	Mar 22, 2017	Scantek, Inc. / NVLAP	Mar 22, 2018	
PC Program 1018 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	AC	
4192-Brüel&Kjær	Microphone	2854675	Nov 11, 2017	Scantek, Inc. / NVLAP	Nov 11, 2018	
1203-Norsonic	Preamplifier	92268	Oct 18, 2017	Scantek, Inc./ NVLAP	Oct 18, 2018	

Instrumentation and test results are traceable to SI (International System of Units) through standards maintained by NIST (USA) and NPL (UK)

Calibrated by:	Jaremy Gotwalt	Authorized signatory:	Steven E. Marshall
Signature	a Conta	Signature	Storen Ellawral
Date	3/12/18	Date	3/15/2019

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Appendix C. Traffic Data Used in the Noise Analysis

Measurement Location	Roadway	Vehicle	Counted NB or EB	Counted SB or WB	Hourly Equivale nt NB or EB	Hourly Equivalen t SB or WB	Speed (mph) NB or EB	Speed (mph) SB or WB
ST01	I-205	Autos	444	296	2664	1776	65	65
		MT	18	18	108	108		
		НТ	44	52	264	312		
		Bus	0	0	0	0		
		Moto	3	0	18	0		
	Borland Rd	Autos	8	8	48	48	45	45
		MT	0	0	0	0		
		НТ	0	0	0	0		
		Bus	0	0	0	0		
		Moto	0	0	0	0		
ST02	I-205	Autos	516	394	3096	2364	65	65
		MT	26	24	156	144		
		НТ	40	30	240	180		
		Bus	3	0	18	0		
		Moto	3	2	18	12		
	Johnson Creek Rd	Autos	14	6	84	36	45	45
		MT	0	0	0	0		
		НТ	0	0	0	0		
		Bus	0	0	0	0		
		Moto	0	0	0	0		
ST03	I-205	Autos	332	425	1992	2550	65	65
		MT	14	15	84	90		
		HT	22	42	132	252		
		Bus	0	0	0	0		
		Moto	0	0	0	0		
ST04	I-205	Autos	365	472	2190	2832	65	65
		МТ	16	20	96	120		
		НТ	28	30	168	180		
		Bus	0	0	0	0		
		Moto	0	0	0	0		
ST05	I-205	Autos	400	462	2400	2772	65	65
		MT	14	26	84	156		
		НТ	40	28	240	168		
		Bus	0	0	0	0		

Table C-1. Short-Term 10-minute Traffic Counts

Measurement Location	Roadway	Vehicle	Counted NB or EB	Counted SB or WB	Hourly Equivale nt NB or EB	Hourly Equivalen t SB or WB	Speed (mph) NB or EB	Speed (mph) SB or WB
		Moto	0	0	0	0		
ST06	I-205	Autos	436	455	2616	2730	65	65
		MT	8	20	48	120		
		HT	28	34	168	204		
		Bus	0	0	0	0		
		Moto	0	0	0	0		
	Blankenship Rd	Autos	10	14	60	84	25	25
		MT	0	0	0	0		
		HT	0	1	0	6		
		Bus	0	0	0	0		
		Moto	0	0	0	0		
ST07	I-205	Autos	412	474	2472	2844	35	55
		MT	15	10	90	60		
		HT	39	23	234	138		
		Bus	0	0	0	0		
		Moto	0	0	0	0		
ST08	I-205	Autos	414	430	2484	2580	55	30
		MT	27	15	162	90		
		HT	41	31	246	186		
		Bus	0	0	0	0		
		Moto	0	0	0	0		
	Willamette Falls Drive	Autos	39	35	234	210	45	45
		MT	0	0	0	0		
		ΗT	0	0	0	0		
		Bus	0	0	0	0		
		Moto	0	0	0	0		
ST09	I-205	Autos	248	253	1488	1518	55	40
		MT	16	20	96	120		
		HT	36	40	216	240		
		Bus	0	0	0	0		
		Moto	0	0	0	0		
ST10	I-205	Autos	478	556	2868	3336	40	40
		MT	31	28	186	168		
		HT	34	36	204	216		
		Bus	0	0	0	0		
		Moto	0	0	0	0		
ST11	Willamette Falls Drive	Autos	40	59	240	354	40	40

 Table C-1. Short-Term 10-minute Traffic Counts

Measurement Location	Roadway	Vehicle	Counted NB or EB	Counted SB or WB	Hourly Equivale nt NB or EB	Hourly Equivalen t SB or WB	Speed (mph) NB or EB	Speed (mph) SB or WB
		MT	2	0	12	0		
		HT	1	0	6	0		
		Bus	2	1	12	6		
		Moto	0	0	0	0		
ST12	I-205	Autos	444	403	2664	2418	50	55
		MT	18	26	108	156		
		HT	44	25	264	150		
		Bus	0	0	0	0		
		Moto	0	0	0	0		
	I205SB Offramp to OR 43	Autos		20	0	121		25-40
		MT		1	0	8		
		HT		1	0	8		
		Bus		0	0	0		
		Moto		0	0	0		
ST13	I-205	Autos	450	410	2700	2460	55	35
		MT	17	23	102	138		
		HT	45	27	270	162		
		Bus	0	0	0	0		
		Moto	0	0	0	0		
	99E	Autos	216	275	1296	1650	30	20
		MT	4	9	24	54		
		HT	2	4	12	24		
		Bus	0	0	0	0		
		Moto	0	0	0	0		
	Clackamette Drive	Autos	2	5	12	30	20	20
		MT	1	0	6	0		
		HT	0	0	0	0		
		Bus	0	0	0	0		
		Moto	0	0	0	0		
Structure	I-205	Autos	312	652	1248	2608	55	35
Radiated		MT	63	46.5	252	186		
Noise		HT	31	30	124	120		
nt Oregon		Bus	0	0	0	0		
City		Moto	0	0	0	0		
	99E	Autos	339	324	1356	1296	30	20
		MT	11	11	44	44		
		HT	12	12	48	48		

 Table C-1. Short-Term 10-minute Traffic Counts

Measurement Location	Roadway	Vehicle	Counted NB or EB	Counted SB or WB	Hourly Equivale nt NB or EB	Hourly Equivalen t SB or WB	Speed (mph) NB or EB	Speed (mph) SB or WB
		Bus	0	0	0	0		
		Moto	0	0	0	0		
Structure	I-205	Autos	925	689	3700	2756	55	55
Radiated		MT	49	34	196	136		
Noise		HT	45	34	180	136		
nt West		Bus	0	0	0	0		
Linn 6-13-		Moto	0	0	0	0		
2018	I-205 NB On- Ramp	Autos	156	0	624	0	36	0
		MT	7	0	28	0		
		HT	0	0	0	0		
		Bus	0	0	0	0		
		Moto	0	0	0	0		
	I-205 SB Off-Ramp	Autos	0	194	0	776	0	32
		MT	0	4	0	16		
		HT	0	1	0	4		
		Bus	0	0	0	0		
		Moto	0	0	0	0		
Structure	I-205	Autos	807	625	3228	2500	50	55
Radiated		MT	38	29	152	116		
Noise		HT	54	52	216	208		
nt West		Bus	0	0	0	0		
Linn 6-19-		Moto	0	0	0	0		
2018	I-205 NB On- Ramp	Autos	67	0	268	0	30	0
	-	MT	0	0	0	0		
		HT	0	0	0	0		
		Bus	0	0	0	0		
		Moto	0	0	0	0		
F	I-205 SB Off-Ramp	Autos	0	188	0	752	0	32
		MT	0	4	0	16		
		HT	0	2	0	8		
		Bus	0	0	0	0		
		Moto	0	0	0	0		

 Table C-1. Short-Term 10-minute Traffic Counts

Source: HMMH, 2018

Notes for the tables that follow:

- 1. All Vehicles volume from Synchro Network.
- 2. Assume Autos, Buses, Medium Trucks, Heavy Trucks and Motorcycle percentages calculated using TMC counts during 12-1 p.m. on May 23, 2017.

Existing 2017 Truck Peak Hour (12:00-1:00 PM) I-205 Mainline										
Direction	Link	Speed, mph	All Vehicles ¹	Motorcycles ²	Autos ²	Buses ²	Medium Trucks ²	Heavy Trucks ²		
Northbound	I-5 to Stafford Exit	Car 65; Truck 55	3,025	21	2,610	6	119	269		
Northbound	Stafford Exit to Stafford Entrance	Car 65; Truck 55	2,748	19	2,371	5	108	245		
Northbound	Stafford Entrance to 10th St Exit	Car 65; Truck 55	3,059	21	2,639	6	120	272		
Northbound	10th St Exit to 10th St Entrance	55	2,729	19	2,354	5	107	243		
Northbound	10th St Entrance OR 43 Exit	55	3,133	22	2,703	6	123	279		
Northbound	OR 43 Exit to OR 43 Loop Entrance	55	2,873	20	2,479	6	113	256		
Northbound	OR 43 Loop Entrance to OR 43 Slip Entrance	55	3,382	24	2,918	6	133	301		
Northbound	OR 43 Slip Entrance to OR 99E Exit	55	3,585	25	3,093	7	141	319		
Northbound	OR 99E Exit to OR 99E Entrance	55	3,010	21	2,597	6	118	268		
Northbound	OR 99E Entrance to OR 213 Exit	55	3,957	28	3,414	8	155	352		
Northbound	OR 213 Exit to OR 213 Entrance	55	3,124	22	2,695	6	123	278		
Northbound	OR 213 Entrance to 82nd Dr Exit	55	4,699	33	4,054	9	184	418		
Southbound	82nd Dr Entrance to OR 213 Exit	55	4,492	33	3,941	3	150	364		

Existing 2017 Truck Peak Hour (12:00-1:00 PM) I-205 Mainline											
Direction	Link	Speed, mph	All Vehicles ¹	Motorcycles ²	Autos ²	Buses ²	Medium Trucks ²	Heavy Trucks ²			
Southbound	OR 213 Exit to OR 213 Entrance	55	2,822	21	2,476	2	94	229			
Southbound	OR 213 Entrance to OR 99E Exit	55	3,516	26	3,085	2	118	285			
Southbound	OR 99E Exit to OR 99E Entrance	55	2,661	20	2,335	2	89	216			
Southbound	OR 99E Entrance to OR 43 Exit	55	3,276	24	2,874	2	110	266			
Southbound	OR 43 Exit to OR 43 Entrance	55	2,582	19	2,265	2	86	209			
Southbound	OR 43 Entrance to 10th St Exit	55	2,837	21	2,489	2	95	230			
Southbound	10th St Exit to 10th St Entrance	55	2,406	18	2,111	2	81	195			
Southbound	10th St Entrance to Stafford Exit	Car 65; Truck 55	2,729	20	2,394	2	91	221			
Southbound	Stafford Exit to Stafford Entrance	Car 65; Truck 55	2,433	18	2,135	2	81	197			
Southbound	Stafford Entrance to I-5 Exit	Car 65; Truck 55	2,745	20	2,408	2	92	223			

Source: HDR, 2017

Existing 2017 Truck Peak Hour (12:00-1:00 PM) I-205 Ramps

Direction	Link	Speed, mph	All Vehicles ¹	Motorcycles ²	Autos ²	Buses ²	Medium Trucks ²	Heavy Trucks ²
Northbound	I-205 NB Stafford Exit Ramp	45	277	2	246	0	16	13
Northbound	I-205 NB Stafford Entrance Ramp	Car 65; Truck 55	309	2	281	1	18	7

Direction	Link	Speed, mph	All Vehicles ¹	Motorcycles ²	Autos ²	Buses ²	Medium Trucks ²	Heavy Trucks ²
Northbound	I-205 NB 10th Ave Exit Ramp	45	330	1	319	0	7	3
Northbound	I-205 NB 10th Ave Entrance Ramp	55	402	1	379	0	16	6
Northbound	I-205 NB OR 43 Exit Ramp	35	260	4	247	2	6	1
Northbound	I-205 NB OR 43 Loop Entrance Ramp	55	489	1	462	4	13	10
Northbound	I-205 NB OR 43 Slip Entrance Ramp	55	203	3	184	1	5	10
Northbound	I-205 NB OR99 Exit Ramp	30	575	3	532	6	20	14
Northbound	I-205 NB OR99 Entrance Ramp	55	947	9	853	4	41	40
Northbound	I-205 NB OR 213 Exit Ramp	35	833	4	775	6	31	17
Northbound	I-205 NB OR 213 Entrance Ramp	55	1,575	10	1452	7	51	55
Southbound	I-205 SB OR 213 Exit Ramp	25	1,670	10	1557	5	58	40
Southbound	I-205 SB OR 213 Entrance Ramp	55	694	5	649	1	25	14
Southbound	I-205 SB OR99 Exit Ramp	45	855	9	782	3	21	40
Southbound	I-205 SB OR99 Entrance Ramp	55	615	5	567	6	20	17
Southbound	I-205 SB OR 43 Exit Ramp	40	694	2	642	6	22	22
Southbound	I-205 SB OR 43 Entrance Ramp	55	255	1	243	0	7	4
Southbound	I-205 SB 10th Ave Exit Ramp	45	431	1	410	0	14	6
Southbound	I-205 SB 10th Ave Entrance Ramp	Car 65; Truck 55	320	3	301	3	8	5
Southbound	I-205 SB Stafford Exit Ramp	45	296	5	265	3	15	8
Southbound	I-205 SB Stafford Entrance Ramp	Car 65; Truck 55	312	1	290	2	10	9

Existing 2017 Truck Peak Hour (12:00-1:00 PM) I-205 Ramps

Source: HDR, 2017

Existing 201	7 Truck Peak H	our (12:00-1:00 PM) Side Street							
Road	Direction	Ramp Terminal Intersection Links	Speed, mph	All Vehicles	Motorcycles 2	Autos 2	Buses 2	Medium Trucks ²	Heavy Trucks 2
	Northbound	South of I-205 NB Ramps	45	345	3	333	0	7	2
	Northbound	Between Stafford Ramp Terminals	45	382	3	348	0	18	13
Stafford	Northbound	North of I-205 SB Ramps	45	502	6	442	1	32	21
Rd	Southbound	North of I-205 SB Ramps	45	527	5	476	3	29	14
	Southbound	Between Stafford Ramp Terminals	45	405	6	369	3	18	9
	Southbound	South of I-205 NB Ramps	45	334	6	317	2	5	4
	Northbound	South of 8th Ct	25	366	3	345	2	11	5
	Northbound	Between 8th Ct and NB Ramp Terminal	25	540	3	517	2	13	5
	Northbound	Between 10th Ramp Terminals	25	507	2	484	3	16	2
10th Ave	Northbound	Between Blankenship Rd and SB Ramp Terminal	25	616	0	590	2	17	7
	Southbound	Between SB Ramp Terminal and Blankenship	25	628	1	600	2	17	8
	Southbound	Between 10th Ramp Terminals	25	630	1	607	0	16	6
	Southbound	Between NB Ramp Terminal and 8th Ct	25	588	2	571	0	11	4
	Southbound	South of 8th Ct	25	383	0	371	0	10	2
	Northbound	South of Willamette Falls Dr.	25	422	3	411	0	2	6
OR 43	Northbound	Between Willamette Falls Dr. and I-205 NB Ramps	35	461	4	436	1	9	11
	Northbound	Between OR 43 Ramp Terminals	35	369	4	353	1	9	2

Existing 201	7 Truck Peak H	our (12:00-1:00 PM) Side Street							
Road	Direction	Ramp Terminal Intersection Links	Speed, mph	All Vehicles	Motorcycles 2	Autos 2	Buses 2	Medium Trucks ²	Heavy Trucks 2
	Northbound	North of I-205 SB Ramps	35	806	3	754	6	28	15
	Southbound	North of I-205 SB Ramps	35	852	1	807	6	25	13
	Southbound	Between I-205 SB Ramp and NB Loop Ramp	35	854	1	806	7	22	18
	Southbound	Between I-205 Ramp Terminals	35	345	1	323	3	10	8
	Southbound	Between I-205 NB Ramp and Willimatte Falls Dr.	35	494	2	469	4	11	8
	Southbound	South of Willamette Falls Dr.	25	435	1	427	0	2	5
	Eastbound	West of W A St	35	274	3	260	2	5	4
	Eastbound	Between W A St and Broadway St	35	296	3	276	1	8	8
Willamette	Eastbound	Between Broadway St and OR 43	35	307	4	286	1	8	8
Falls Dr.	Westbound	Between OR 43 and Broadway	35	298	3	278	4	8	5
	Westbound	Between Broadway and W A St	35	294	3	277	4	5	5
	Westbound	West of W A St	35	313	3	299	4	5	2
W A St	Northbound	North of Willamette Falls Dr.	20	70	0	64	2	0	4
	Southbound	North of Willamette Falls Dr.	20	111	0	102	1	3	5
Broadway	Northbound	North of Willamette Falls Dr.	20	17	0	16	0	0	1
St	Southbound	North of Willamette Falls Dr.	20	15	0	15	0	0	0
OR 99E	Northbound	South of 14th Ave	30	1,058	9	958	14	38	39
	Northbound	Between 14th Ave and I-205 NB Ramps	30	1,515	14	1,400	17	41	43

Existing 201	17 Truck Peak H	our (12:00-1:00 PM) Side Street							
Road	Direction	Ramp Terminal Intersection Links	Speed, mph	All Vehicles	Motorcycles 2	Autos 2	Buses 2	Medium Trucks ²	Heavy Trucks 2
	Northbound	Between OR99 Ramp Terminals	30	1,357	11	1,271	20	30	25
	Northbound	Between I-205 SB Ramps and Dunes Dr.	30	1,532	11	1,449	18	30	24
	Northbound	North of Dunes Dr.	30	1,222	6	1,160	18	25	13
	Southbound	North of Dunes Dr.	30	1,274	9	1,200	16	34	15
	Southbound	Between Dunes Dr. and I-205 SB Ramps	30	1,474	8	1,388	18	37	23
	Southbound	Between OR99 Ramp Terminals	30	1,559	15	1,438	17	41	48
	Southbound	Between I-205 NB Ramps and 14th Ave	30	1,341	12	1,236	16	32	45
	Southbound	South of 14th Ave	30	988	9	895	14	25	45
	Northbound	South of I-205 NB Ramps	45	2,288	15	2,117	10	74	72
	Northbound	Between OR 213 Ramp Terminals	45	708	5	660	1	28	14
OR 213	Northbound	North of I-205 SB Ramps	45	45	0	41	0	4	0
	Southbound	North of I-205 NB Ramps	45	49	0	43	0	6	0
	Southbound	Between OR 213 Ramp Terminals	45	1,691	6	1,591	3	47	44
	Southbound	South of I-205 NB Ramps	45	2,524	10	2,366	9	78	61

HDR, 2017

Future 2045 No Build Truck Peak Hour (12:00-1:00 PM) I-205 Mainline										
Direction	Link	Speed, mph	All Vehicles ¹	Motorcycles ²	Autos ²	Buses ²	Medium Trucks ²	Heavy Trucks ²		
Northbound	I-5 to Stafford Exit	Car 65; Truck 55	3,542	25	3,056	7	139	315		
Northbound	Stafford Exit to Stafford Entrance	Car 65; Truck 55	3,185	22	2,748	6	125	284		
Northbound	Stafford Entrance to 10th St Exit	Car 65; Truck 55	3,557	25	3,069	7	140	317		
Northbound	10th St Exit to 10th St Entrance	55	3,178	22	2,742	6	125	283		
Northbound	10th St Entrance OR 43 Exit	55	3,648	26	3,147	7	143	325		
Northbound	OR 43 Exit to OR 43 Loop Entrance	55	3,364	24	2,902	6	132	300		
Northbound	OR 43 Loop Entrance to OR 43 Slip Entrance	55	3,995	28	3,447	8	157	356		
Northbound	OR 43 Slip Entrance to OR 99E Exit	55	4,255	30	3,671	8	167	379		
Northbound	OR 99E Exit to OR 99E Entrance	55	3,544	25	3,058	7	139	316		
Northbound	OR 99E Entrance to OR 213 Exit	55	4,634	33	3,998	9	182	413		
Northbound	OR 213 Exit to OR 213 Entrance	55	3,595	25	3,102	7	141	320		
Northbound	OR 213 Entrance to 82nd Dr Exit	55	5,372	38	4,635	10	211	478		
Southbound	82nd Dr Entrance to OR 213 Exit	55	5,128	38	4,499	4	172	416		
Southbound	OR 213 Exit to OR 213 Entrance	55	3,202	24	2,809	2	107	260		
Southbound	OR 213 Entrance to OR 99E Exit	55	4,118	30	3,613	3	138	334		
Southbound	OR 99E Exit to OR 99E Entrance	55	3,152	23	2,765	2	106	256		

Future 2045 No Build Truck Peak Hour (12:00-1:00 PM) I-205 Mainline										
Direction	Link	Speed, mph	All Vehicles ¹	Motorcycles ²	Autos ²	Buses ²	Medium Trucks ²	Heavy Trucks ²		
Southbound	OR 99E Entrance to OR 43 Exit	55	3,953	29	3,468	3	132	320		
Southbound	OR 43 Exit to OR 43 Entrance	55	2,967	22	2,603	2	99	241		
Southbound	OR 43 Entrance to 10th St Exit	55	3,234	24	2,837	2	108	262		
Southbound	10th St Exit to 10th St Entrance	55	2,593	19	2,275	2	87	210		
Southbound	10th St Entrance to Stafford Exit	Car 65; Truck 55	2,958	22	2,595	2	99	240		
Southbound	Stafford Exit to Stafford Entrance	Car 65; Truck 55	2,600	19	2,281	2	87	211		
Southbound	Stafford Entrance to I-5 Exit	Car 65; Truck 55	3,025	22	2,654	2	101	245		

HDR, 2017

Future 2045 No Build Truck Peak Hour (12:00-1:00 PM) I-205 Ramps

Direction	Link	Speed, mph	All Vehicles ¹	Motorcycles ²	Autos ²	Buses ²	Medium Trucks ²	Heavy Trucks ²
Northbound	I-205 NB Stafford Exit Ramp	45	357	3	317	0	21	17
Northbound	I-205 NB Stafford Entrance Ramp	Car 65; Truck 55	372	2	338	1	22	8
Northbound	I-205 NB 10th Ave Exit Ramp	45	379	1	366	0	8	3
Northbound	I-205 NB 10th Ave Entrance Ramp	55	470	1	443	0	19	7
Northbound	I-205 NB OR 43 Exit Ramp	35	284	4	270	2	7	1

Direction	Link	Speed, mph	All Vehicles ¹	Motorcycles ²	Autos ²	Buses ²	Medium Trucks ²	Heavy Trucks ²
Northbound	I-205 NB OR 43 Loop Entrance Ramp	55	631	1	596	5	16	13
Northbound	I-205 NB OR 43 Slip Entrance Ramp	55	260	4	236	1	6	13
Northbound	I-205 NB OR99 Exit Ramp	30	711	4	658	7	25	17
Northbound	I-205 NB OR99 Entrance Ramp	55	1,090	10	982	5	47	46
Northbound	I-205 NB OR 213 Exit Ramp	35	1,039	5	967	7	39	21
Northbound	I-205 NB OR 213 Entrance Ramp	55	1,777	11	1638	8	58	62
Southbound	I-205 SB OR 213 Exit Ramp	25	1,926	12	1796	6	67	46
Southbound	I-205 SB OR 213 Entrance Ramp	55	916	7	857	1	33	18
Southbound	I-205 SB OR99 Exit Ramp	45	966	10	884	3	24	45
Southbound	I-205 SB OR99 Entrance Ramp	55	801	7	738	8	26	22
Southbound	I-205 SB OR 43 Exit Ramp	40	986	3	912	9	31	31
Southbound	I-205 SB OR 43 Entrance Ramp	55	267	1	254	0	7	4
Southbound	I-205 SB 10th Ave Exit Ramp	45	641	1	610	0	21	9
Southbound	I-205 SB 10th Ave Entrance Ramp	Car 65; Truck 55	365	3	343	3	9	6
Southbound	I-205 SB Stafford Exit Ramp	45	358	6	321	4	18	10
Southbound	I-205 SB Stafford Entrance Ramp	Car 65; Truck 55	425	1	395	3	14	12

Future 2045 No Build Truck Peak Hour (12:00-1:00 PM) I-205 Ramps

HDR, 2017

Road	Direction	Ramp Terminal Intersection Links	Speed, mph	All Vehicles	Motorcycles 2	Autos 2	Buses 2	Medium Trucks ²	Heavy Trucks 2
Stafford Rd	Northbound	South of I-205 NB Ramps	45	557	5	538	0	11	3
	Northbound	Between Stafford Ramp Terminals	45	606	5	552	0	29	21
	Northbound	North of I-205 SB Ramps	45	666	8	586	1	42	28
	Southbound	North of I-205 SB Ramps	45	756	7	683	4	42	20
	Southbound	Between Stafford Ramp Terminals	45	634	9	578	5	28	14
	Southbound	South of I-205 NB Ramps	45	570	10	541	3	9	7
10th Ave	Northbound	South of 8th Ct	25	421	3	397	2	13	6
	Northbound	Between 8th Ct and NB Ramp Terminal	25	609	3	583	2	15	6
	Northbound	Between 10th Ramp Terminals	25	590	2	563	3	19	2
	Northbound	Between Blankenship Rd and SB Ramp Terminal	25	710	0	680	2	20	8
	Southbound	Between SB Ramp Terminal and Blankenship	25	711	1	679	2	19	9
	Southbound	Between 10th Ramp Terminals	25	803	1	774	0	20	8
	Southbound	Between NB Ramp Terminal and 8th Ct	25	741	3	720	0	14	5
	Southbound	South of 8th Ct	25	537	0	520	0	14	3
OR 43	Northbound	South of Willamette Falls Dr.	25	572	4	557	0	3	8
	Northbound	Between Willamette Falls Dr. and I-205 NB Ramps	35	560	5	530	1	11	13
	Northbound	Between OR 43 Ramp Terminals	35	434	5	415	1	11	2
	Northbound	North of I-205 SB Ramps	35	1,117	4	1,045	8	39	21

Future 2045 No Build Truck Peak Hour (12:00-1:00 PM) Side Street
Road	Direction	Ramp Terminal Intersection Links	Speed, mph	All Vehicles	Motorcycles 2	Autos 2	Buses 2	Medium Trucks ²	Heavy Trucks 2
	Southbound	North of I-205 SB Ramps	35	1,127	1	1,067	8	33	17
	Southbound	Between I-205 SB Ramps and NB Loop Ramp	35	1,157	1	1,092	9	30	24
	Southbound	Between I-205 Ramp Terminals	35	526	2	492	5	15	12
	Southbound	Between I-205 NB Ramp and Willimatte Falls Dr.	35	666	3	632	5	15	11
	Southbound	South of Willamette Falls Dr.	25	655	2	643	0	3	8
	Eastbound	West of W A St	35	418	5	397	3	8	6
	Eastbound	Between W A St and Broadway St	35	468	5	436	2	13	13
Willamette	Eastbound	Between Broadway St and OR 43	35	464	6	432	2	12	12
Falls Dr.	Westbound	Between OR 43 and Broadway	35	454	5	424	6	12	8
	Westbound	Between Broadway and W A St	35	507	5	478	7	9	9
	Westbound	West of W A St	35	458	4	438	6	7	3
W A St	Northbound	North of Willamette Falls Dr.	20	191	0	175	5	0	11
	Southbound	North of Willamette Falls Dr.	20	192	0	176	2	5	9
Broadway	Northbound	North of Willamette Falls Dr.	20	0	0	0	0	0	0
St	Southbound	North of Willamette Falls Dr.	20	0	0	0	0	0	0
	Northbound	South of 14th Ave	30	1,278	11	1,157	17	46	47
OR 99E	Northbound	Between 14th Ave and I-205 NB Ramps	30	1,932	18	1,785	22	52	55
	Northbound	Between OR99 Ramp Terminals	30	1,777	14	1,664	26	39	33

Future 2045 No Build Truck Peak Hour (12:00-1:00 PM) Side Street

Road	Direction	Ramp Terminal Intersection Links	Speed, mph	All Vehicles	Motorcycles 2	Autos 2	Buses 2	Medium Trucks ²	Heavy Trucks 2
	Northbound	Between I-205 SB Ramps and Dunes Dr.	30	1,463	11	1,384	17	29	23
	Northbound	North of Dunes Dr.	30	1,323	6	1,256	19	27	14
	Southbound	North of Dunes Dr.	30	1,357	10	1,278	17	36	16
	Southbound	Between Dunes Dr. and I-205 SB Ramps	30	1,804	10	1,699	22	45	28
	Southbound	Between OR99 Ramp Terminals	30	1,767	17	1,630	19	46	54
	Southbound	Between I-205 NB Ramps and 14th Ave	30	1,507	13	1,389	18	36	51
	Southbound	South of 14th Ave	30	1,148	10	1,040	16	29	52
	Northbound	South of I-205 NB Ramps	45	2,920	19	2,702	13	94	92
	Northbound	Between OR 213 Ramp Terminals	45	1,143	8	1,066	2	45	23
OP 212	Northbound	North of I-205 SB Ramps	45	350	0	319	0	31	0
OK 213	Southbound	North of I-205 NB Ramps	45	139	0	122	0	17	0
	Southbound	Between OR 213 Ramp Terminals	45	1,936	7	1,822	3	54	50
	Southbound	South of I-205 NB Ramps	45	2,975	12	2,789	11	92	72

Future 2045 No Build Truck Peak Hour (12:00-1:00 PM) Side Street

HDR, 2017

Direction	Link	Speed, mph	All Vehicles ¹	Motorcycles 2	Autos ²	Buses ²	Medium Trucks ²	Heavy Trucks ²
		Car 65; Truck						
Northbound	I-5 to Stafford Exit	55	4,235	30	3,654	8	166	377
		Car 65; Truck						
Northbound	Stafford Exit to Stafford Entrance	55	3,958	28	3,415	8	155	352
		Car 65; Truck						
Northbound	Stafford Entrance to 10th St Exit	55	4,403	31	3,799	8	173	392
Northbound	10th St Exit to 10th St Entrance	55	3,941	28	3,400	8	155	351
Northbound	10th St Entrance OR 43 Exit	55	4,424	31	3,817	8	174	394
Northbound	OR 43 Exit to OR 43 Loop Entrance	55	4,050	28	3,494	8	159	361
Northbound	OR 43 Loop Entrance to OR 43 Slip Entrance	55	4,645	33	4,007	9	182	414
Northbound	OR 43 Slip Entrance to OR 99E Exit	55	4,884	34	4,214	9	192	435
Northbound	OR 99E Exit to OR 99E Entrance	55	4,025	28	3,473	8	158	358
Northbound	OR 99E Entrance to OR 213 Exit	55	5,096	36	4,397	10	200	454
Northbound	OR 213 Exit to OR 213 Entrance	55	3,899	27	3,364	7	153	347
Northbound	OR 213 Entrance to 82nd Dr Exit	55	5,645	40	4,870	11	222	503
Southbound	82nd Dr Entrance to OR 213 Exit	55	5,624	42	4,934	4	188	456
Southbound	OR 213 Exit to OR 213 Entrance	55	3,553	26	3,117	3	119	288
Southbound	OR 213 Entrance to OR 99E Exit	55	4,522	33	3,967	3	151	367
Southbound	OR 99E Exit to OR 99E Entrance	55	3,583	27	3,143	3	120	290
Southbound	OR 99E Entrance to OR 43 Exit	55	4,488	33	3,937	3	150	364
Southbound	OR 43 Exit to OR 43 Entrance	55	3,664	27	3,215	3	123	297
Southbound	OR 43 Entrance to 10th St Exit	55	4,072	30	3,573	3	136	330
Southbound	10th St Exit to 10th St Entrance	55	3,463	26	3,038	2	116	281

Future 2045 Build Truck Peak Hour (12:00-1:00 PM) I-205 Mainline

Direction	Link	Speed, mph	All Vehicles ¹	Motorcycles 2	Autos ²	Buses ²	Medium Trucks ²	Heavy Trucks ²
Southbound	10th St Entrance to Stafford Exit	Car 65; Truck 55 Car 65; Truck	3,937	29	3,454	3	132	319
Southbound	Stafford Exit to Stafford Entrance	55 Car 65; Truck	3,427	25	3,007	2	115	278
Southbound	Stafford Entrance to I-5 Exit	55	3,757	28	3,296	3	126	305

Future 2045 Build Truck Peak Hour (12:00-1:00 PM) I-205 Mainline

HDR, 2017

Future 2045 Build Truck Peak Hour (12:00-1:00 PM) 1-205 Ramps									
Direction	Link	Speed, mph	All Vehicles ¹	Motorcycles ²	Autos ²	Buses ²	Medium Trucks ²	Heavy Trucks ²	
Northbound	I-205 NB Stafford Exit Ramp	45	277	2	246	0	16	13	
Northbound	I-205 NB Stafford Entrance Ramp	Car 65; Truck 55	445	3	405	1	26	10	
Northbound	I-205 NB 10th Ave Exit Ramp	45	462	1	447	0	10	4	
Northbound	I-205 NB 10th Ave Entrance Ramp	55	483	1	455	0	19	7	
Northbound	I-205 NB OR 43 Exit Ramp	35	374	6	355	3	9	1	
Northbound	I-205 NB OR 43 Loop Entrance Ramp	55	595	1	562	5	15	13	
Northbound	I-205 NB OR 43 Slip Entrance Ramp	55	239	4	217	1	6	12	
Northbound	I-205 NB OR99 Exit Ramp	30	859	4	795	9	30	21	
Northbound	I-205 NB OR99 Entrance Ramp	55	1,071	10	965	5	46	45	
Northbound	I-205 NB OR 213 Exit Ramp	35	1,197	6	1114	9	45	24	
Northbound	I-205 NB OR 213 Entrance Ramp	55	1,746	11	1610	8	57	61	
Southbound	I-205 SB OR 213 Exit Ramp	25	2,071	12	1931	6	72	50	
Southbound	I-205 SB OR 213 Entrance Ramp	55	969	7	906	1	35	20	
Southbound	I-205 SB OR99 Exit Ramp	45	939	10	859	3	23	44	
Southbound	I-205 SB OR99 Entrance Ramp	55	905	7	834	9	29	25	
Southbound	I-205 SB OR 43 Exit Ramp	40	824	2	762	7	26	26	

Euture 2045 Build Truck Peak Hour (12:00-1:00 DM) L-205 P

Direction	Link	Speed, mph	All Vehicles ¹	Motorcycles ²	Autos ²	Buses ²	Medium Trucks ²	Heavy Trucks ²
Southbound	I-205 SB OR 43 Entrance Ramp	55	408	2	389	0	11	6
Southbound	I-205 SB 10th Ave Exit Ramp	45	609	1	579	0	20	8
Southbound	I-205 SB 10th Ave Entrance Ramp	Car 65; Truck 55	474	4	446	4	12	7
Southbound	I-205 SB Stafford Exit Ramp	45	510	9	457	5	26	14
Southbound	I-205 SB Stafford Entrance Ramp	Car 65; Truck 55	330	1	307	2	11	10

- -2045 Build Truck Deak Hour (12:00 1:00 DM) L 205 D

HDR, 2017

Road	Direction	Ramp Terminal Intersection Links	Speed , mph	All Vehicles	Motorcycles 2	Autos ²	Buses ²	Medium Trucks ²	Heavy Trucks ²		
	Northbound	South of I-205 NB Ramps	45	590	5	569	-	12	3		
	Northbound	Between Stafford Ramp Terminals	45	548	4	499	-	26	19		
Stafford	Northbound	North of I-205 SB Ramps	45	654	8	576	1	42	27		
Rd	Southbound	North of I-205 SB Ramps	45	683	6	617	4	38	18		
	Southbound	Between Stafford Ramp Terminals	45	757	11	690	6	34	17		
	Southbound	South of I-205 NB Ramps	45	631	11	599	4	9	8		
	Northbound	South of 8th Ct	25	435	4	410	2	13	6		
10th Ave	Northbound	Between 8th Ct and NB Ramp Terminal	25	611	3	585	2	15	6		
	Northbound	Between 10th Ramp Terminals	25	645	3	616	4	20	3		

Future 2045 Build Truck Peak Hour (12:00-1:00 PM) Side Street

Road	Direction	Ramp Terminal Intersection Links	Speed , mph	All Vehicles	Motorcycles 2	Autos ²	Buses ²	Medium Trucks ²	Heavy Trucks ²
	Northbound	Between Blankenship Rd and SB Ramp Terminal	25	820	-	785	3	23	9
	Southbound	Between SB Ramp Terminal and Blankenship	25	826	1	789	3	22	11
	Southbound	Between 10th Ramp Terminals	25	786	1	757	-	20	7
	Southbound	Between NB Ramp Terminal and 8th Ct	25	731	2	710	-	14	5
	Southbound	South of 8th Ct	25	527	-	510	-	14	3
	Northbound	South of Willamette Falls Dr.	25	554	4	540	-	3	8
	Northbound	Ramps	35	566	5	535	1	11	14
	Northbound	Between OR 43 Ramp Terminals	35	510	6	488	1	12	3
	Northbound	North of I-205 SB Ramps	35	1,004	4	939	7	35	19
OR 43	Southbound	North of I-205 SB Ramps	35	1,122	1	1,063	8	33	17
	Southbound	Between I-205 SB Ramps and NB Loop Ramp	35	1,044	1	985	9	27	22
	Southbound	Between I-205 Ramp Terminals	35	449	1	420	4	13	10
	Southbound	Dr.	35	640	3	608	5	14	10
	Southbound	South of Willamette Falls Dr.	25	597	1	586	-	3	7
Willamett e Falls	Eastbound	West of W A St	35	349	4	331	3	6	5
Dr.	Eastbound	Between W A St and Broadway St	35	375	4	350	1	10	10

Future 2045 Build Truck Peak Hour (12:00-1:00 PM) Side Street

Road	Direction	Ramp Terminal Intersection Links	Speed , mph	All Vehicles	Motorcycles 2	Autos ²	Buses ²	Medium Trucks ²	Heavy Trucks ²
	Eastbound	Between Broadway St and OR 43	35	382	5	356	1	10	10
	Westbound	Between OR 43 and Broadway	35	392	4	366	5	11	7
	Westbound	Between Broadway and W A St	35	392	4	369	5	7	7
	Westbound	West of W A St	35	319	3	305	4	5	2
W A St	Northbound	North of Willamette Falls Dr.	20	198	-	181	6	-	11
	Southbound	North of Willamette Falls Dr.	20	151	-	139	1	4	7
Broadwa	Northbound	North of Willamette Falls Dr.	20	-	-	-	-	-	-
y St	Southbound	North of Willamette Falls Dr.	20	-	-	-	-	-	-
	Northbound	South of 14th Ave	30	1,300	11	1,177	17	47	48
	Northbound	Between 14th Ave and I-205 NB Ramps	30	1,968	18	1,819	22	53	56
	Northbound	Between OR99 Ramp Terminals	30	1,877	15	1,758	28	41	35
	Northbound	Between I-205 SB Ramps and Dunes Dr.	30	1,974	14	1,867	23	39	31
OR 99E	Northbound	North of Dunes Dr.	30	1,367	7	1,298	20	28	15
	Southbound	North of Dunes Dr.	30	1,390	10	1,309	17	37	16
	Southbound	Between Dunes Dr. and I-205 SB Ramps	30	1,854	10	1,746	23	47	29
	Southbound	Between OR99 Ramp Terminals	30	1,791	17	1,652	20	47	55
	Southbound	Between I-205 NB Ramps and 14th Ave	30	1,644	15	1,515	20	39	55

Future 2045 Build Truck Peak Hour (12:00-1:00 PM) Side Street

Road	Direction	Ramp Terminal Intersection Links	Speed , mph	All Vehicles	Motorcycles 2	Autos ²	Buses ²	Medium Trucks ²	Heavy Trucks ²
	Southbound	South of 14th Ave	30	1,261	11	1,142	18	32	57
	Northbound	South of I-205 NB Ramps	45	2,935	19	2,716	13	95	92
	Northbound	Between OR 213 Ramp Terminals	45	1,189	8	1,108	2	47	24
OR 213	Northbound	North of I-205 SB Ramps	45	349	-	318	-	31	-
	Southbound	North of I-205 NB Ramps	45	147	-	129	-	18	-
	Southbound	Between OR 213 Ramp Terminals	45	2,118	8	1,993	4	59	55
	Southbound	South of I-205 NB Ramps	45	3,315	13	3,107	12	102	80

Future 2045 Build Truck Peak Hour (12:00-1:00 PM) Side Street

HDR, 2017

Appendix D. Detailed Noise Abatement Analysis Tables

Detailed Noise Abatement Analysis Acronyms

AFGAcoustical Feasibility GoalE/CEffectiveness/Cost MetricI.L.Insertion LossNRDGNoise Reduction Design Goal



asic Noise Barrier Optimization Tool 8/1/2018									
		1205	5CW Staffo	rd Road to	OR212				
			v	vali 1					
	10'	12'	14'	16'	18'	20'	22'	24'	Units
Average Wtd I.L. (benefited)		5	5.4	5.9	6.4	6.9	7.2	7.5	dBA
Maximum I.L.	4	5	6	7	8	9	9	10	dBA
Benefited/Impacted ≥ AFG	0	5	10	12	13	13	13	13	# of dwelling units
Benefited/Non Impact ≥ AFG	0	0	1	3	3	4	4	4	# of dwelling units
Total Benefited	0	5	11	15	16	17	17	17	# of dwelling units
Impacted Units ≥ NRDG	0	0	0	3	6	11	11	11	# of dwelling units
Benefited Units ≥ NRDG	0	0	0	3	6	11	12	12	# of dwelling units
Percent of impacts ≥ AFG	0%	31%	63%	75%	81%	81%	81%	81%	%
Percent of benefits ≥ NRDG		0%	0%	20%	38%	65%	71%	71%	%
"Cost-Reasonable" ?		No	No	No	No	No	No	No	
Surface Area	15,601	18,717	21,840	24,966	28,088	31,202	34,323	37,446	sq-ft
Surface Area/Ben Rec		3,743	1,985	1,664	1,756	1,835	2,019	2,203	sq-ft / ben rec
Barrier Length	1,560	1,560	1,560	1,560	1,560	1,560	1,560	1,560	ft
Min Height	10	12	14	16	18	20	22	24	ft
Max Height	10	12	14	16	18	20	22	24	ft
Avg Height	10	12	14	16	18	20	22	24	ft
Total Barrier Cost	312,020	374,340	436,800	499,320	702,200	780,050	858,075	936,150	\$
Cost/Ben Rec		74,868	39,709	33,288	43,888	45,885	50,475	55,068	\$ / ben rec
Effectiveness/Cost Metric (E/C)	-	-	-	7.0	13.4	23.4	21.3	19.5	

ODOT Acoustical Feasibilty Goal (dBA)	5
ODOT Acoustical Feasibilty Goal (%)	51%
ODOT Noise Reduction Design Goal (dBA)	7
ODOT Noise Reduction Design Goal (%)	1%

De	a la at lufa mu atla u			No Barrier A	nalysis			10	-ft Wall			12-	-ft Wall			1	4-ft Wall	
Pro	oject information			No Barrier			Wall 1	1 30' off Fog Li	ine		Wall 1	30' off Fog Li	ne		Wall 1	30' off Fog	Line	
							Average Wtd I.L.	. (benefited)		dB I.L. Avg	Average Wtd I.L.		5.0) dB I.L. Avg	Average Wtd I.L.		5.4	dB I.L. Avg
							Maximum I.L.		4	4 dB I.L. Max	Maximum I.L.			ō dB I.L. Max	Maximum I.L.		f	6 dB I.L. Max
1205CW	Stafford Road to OR212		Total Units Expos	sed to Impact		10	Benefited/Impact	led ≥ AFG	(# Prot Units	Benefited/Impacte	ed ≥ AFG		# Prot Units	Benefited/Impacted	d ≥ AFG	1/	0 # Prot Units
Cor	ntract No. K19786CW		# Impacts - NAC o	nly		10	Benefited/Non Im	npact ≥ AFG	(# Units	Benefited/Non Imp	oact ≥ AFG) # Units	Benefited/Non Imp	act ≥ AFG		1 # Units
1205	5CW_Build_Walls1to2		# Impacts - SI only	/		(Total Benefited		(# Ben Units	Total Benefited			# Ben Units	Total Benefited		1	1 # Ben Units
	Wall 1		# Impacts - Both N	IAC & SI		(Impacted Units ≥	NRDG	(# Units	Impacted Units ≥ N	NRDG) # Units	Impacted Units ≥ N	IRDG		0 # Units
	НММН						Benefited Units ≥	2 NRDG	() # Units	Benefited Units ≥ t	NRDG) # Units	Benefited Units ≥ N	IRDG	[0 # Units
	Scott Noel						Percent of impac	;ts ≥ AFG	0%	% Ben Units	Percent of impacts	s ≥ AFG	319	6 % Ben Units	Percent of impacts	≥ AFG	63%	6 % Ben Units
	8/1/2018						Percent of benefi	its ≥ NRDG		% NRDG Units	Percent of benefits	s ≥ NRDG	0%	% NRDG Units	Percent of benefits	≥ NRDG	0%	% NRDG Units
							"Cost-Reasonabl	ie" ?			"Cost-Reasonable	"?	N	D	"Cost-Reasonable"	'?	No	D
							Surface Area		15601	I Sq Feet	Surface Area		1871	' Sq Feet	Surface Area		21840) Sq Feet
N	.S. Department of Transportation	n					Surface Area/Ber	n Rec		Sq Feet	Surface Area/Ben	Rec	3743	3 Sq Feet	Surface Area/Ben	Rec	1985	5 Sq Feet
	ederal Highway	1					Barrier Length		1,560) Feet	Barrier Length		1,560) Feet	Barrier Length		1,560) Feet
\sim	Aministration	<u>e</u>					Min Height		10.0) Feet	Min Height		12.0) Feet	Min Height		14.0) Feet
	Administration						Max Height		10.0) Feet	Max Height		12.0) Feet	Max Height		14.0) Feet
							Avg Height		10.0) Feet	Avg Height		12.0) Feet	Avg Height		14.0) Feet
					_		Total Barrier Cos	it .	\$312,020)	Total Barrier Cost		\$374,340)	Total Barrier Cost		\$436,800	
				Enter SI Info			Cost/Ben Rec				Cost/Ben Rec		\$74,86	3	Cost/Ben Rec		\$39,709	9
	FHWA	No. of	Type of I	mpact		NO. Of	With Ba	arrier Sound L	evels, Impact and	Benefit	With Ba	arrier Sound Le	evels, Impact and	Benefit	With B	arrier Sound	Levels, Impact and	Benefit
Receiver I	Act Cat	Units	Bld Leq > NAC?	Sub. Inc.?	impact?	Units	Leq(dBA)	IL (db)	Impacted?	No. Benefited	Leq(dBA)	IL (db)	Impacted?	No. Benefited	Leq(dBA)	IL (db)	Impacted?	No. Benefited
R48	1 B	1	64				64	0			64	0			64	0		
R49	1 B	1	66		Impact!	1	66	0	Impact! w/ Bar		66	0	Impact! w/ Bar		65	1	Impact! w/ Bar	
R50	1 B	1	74		Impact!	1	72	2	Impact! w/ Bar		70	4	Impact! w/ Bar		69	5	Benefited/Impact	1
R51	1 B	1	71		Impact!	1	70	1	Impact! w/ Bar		69	2	Impact! w/ Bar		67	4	Impact! w/ Bar	
R52	1 B	1	69		Impact!	1	66	3	Impact! w/ Bar		64	5	Benefited/Impact	1	63	6	Benefited/Impact	1
R53	1 B	1	66		Impact!	1	65	1	Impact! w/ Bar		64	2	Impact! w/ Bar	-	63	3	Impact! w/ Bar	
R54	1 B	1	64				62	2			61	3			60	4		
R55	1 B	1	67		Impact!	1	63	4	Impact! w/ Bar		62	5	Benefited/Impact	1	61	6	Benefited/Impact	1
R56	1 B	1	67		Impact!	1	64	3	Impact! w/ Bar		63	4	Impact! w/ Bar		62	5	Benefited/Impact	1
R57	1 B	1	67		Impact!	1	64	3	Impact! w/ Bar		63	4	Impact! w/ Bar		62	5	Benefited/Impact	1
R58	1 B	1	67		Impact!	1	64	3	Impact! w/ Bar		62	5	Benefited/Impact	1	61	6	Benefited/Impact	1
R59	1 B	1	65		Impact!	1	62	3	Impact! w/ Bar		61	4	Impact! w/ Bar		60	5	Benefited/Impact	1
R60	1 B	1	66		Impact!	1	63	3	Impact! w/ Bar		62	4	Impact! w/ Bar		61	5	Benefited/Impact	1
R61	1 B	1	64				62	2			60	4			60	4		-
R62	1 B	1	66		Impact!	1	62	4	Impact! w/ Bar		61	5	Benefited/Impact	1	61	5	Benefited/Impact	1
R69	1 B	1	64				61	3			60	4		•	59	5	Benefited/Non-Imp	1
R70	1 B	1	64				62	2			61	3			60	4		
R71	1 B	1	67		Impact!	1	63	4	Impact! w/ Bar		62	5	Benefited/Impact	1	61	6	Benefited/Impact	1
R72	1 B	1	64				63	1			62	2		•	61	3		
R73	1 B	1	67		Impact!	1	64	3	Impact! w/ Bar		63	4	Impact! w/ Bar		63	4	Impact! w/ Bar	
R74	1 B	1	65		Impact	1	64	1	Impact! w/ Bar		63	2	Impact! w/ Bar		63	2	Impact! w/ Bar	
R75	1 B	1	67		Impact	1	65	2	Impact! w/ Bar		64	3	Impact! w/ Bar		64	3	Impact! w/ Bar	
			- -						inpact II, Dui		.	v	impact iii, Dui		- · ·	Ÿ	inipada in Dal	

Project by Connection	16-1	t Wall	18	-ft Wall	20	-ft Wall	22-	ft Wall
Project Information	Wall 1 30' off Fog Lin	e	Wall 1 30' off Fog Li	ine	Wall 1 30' off Fog L	ne	Wall 1 30' off Fog Li	ne
	Average Wtd I.L.	5.9 dB I.L. Avg	Average Wtd I.L.	6.4 dB I.L. Avg	Average Wtd I.L.	6.9 dB I.L. Avg	Average Wtd I.L.	7.2 dB I.L. Avg
	Maximum I.L.	7 dB I.L. Max	Maximum I.L.	8 dB I.L. Max	Maximum I.L.	9 dB I.L. Max	Maximum I.L.	9 dB I.L. Max
I205CW Stafford Road to OR212	Benefited/Impacted ≥ AFG	12 # Prot Units	Benefited/Impacted ≥ AFG	13 # Prot Units	Benefited/Impacted ≥ AFG	13 # Prot Units	Benefited/Impacted ≥ AFG	13 # Prot Units
Contract No. K19786CW	Benefited/Non Impact ≥ AFG	3 # Units	Benefited/Non Impact ≥ AFG	3 # Units	Benefited/Non Impact ≥ AFG	4 # Units	Benefited/Non Impact ≥ AFG	4 # Units
I205CW_Build_Walls1to2	Total Benefited	15 # Ben Units	Total Benefited	16 # Ben Units	Total Benefited	17 # Ben Units	Total Benefited	17 # Ben Units
Wall 1	Impacted Units ≥ NRDG	3 # Units	Impacted Units ≥ NRDG	6 # Units	Impacted Units ≥ NRDG	11 # Units	Impacted Units ≥ NRDG	11 # Units
НММН	Benefited Units ≥ NRDG	3 # Units	Benefited Units ≥ NRDG	6 # Units	Benefited Units ≥ NRDG	11 # Units	Benefited Units ≥ NRDG	12 # Units
Scott Noel	Percent of impacts ≥ AFG	75% % Ben Units	Percent of impacts ≥ AFG	81% % Ben Units	Percent of impacts ≥ AFG	81% % Ben Units	Percent of impacts ≥ AFG	81% % Ben Units
8/1/2018	Percent of benefits ≥ NRDG	20% % NRDG Units	Percent of benefits ≥ NRDG	38% % NRDG Units	Percent of benefits ≥ NRDG	65% % NRDG Units	Percent of benefits ≥ NRDG	71% % NRDG Units
	"Cost-Reasonable" ?	No	"Cost-Reasonable" ?	No	"Cost-Reasonable" ?	No	"Cost-Reasonable" ?	No
	Surface Area	24966 Sq Feet	Surface Area	28088 Sq Feet	Surface Area	31202 Sq Feet	Surface Area	34323 Sq Feet
U.S. Department of Transportation	Surface Area/Ben Rec	1664 Sq Feet	Surface Area/Ben Rec	1756 Sq Feet	Surface Area/Ben Rec	1835 Sq Feet	Surface Area/Ben Rec	2019 Sq Feet
Federal Highway	Barrier Length	1,560 Feet	Barrier Length	1,560 Feet	Barrier Length	1,560 Feet	Barrier Length	1,560 Feet
Administration	Min Height	16.0 Feet	Min Height	18.0 Feet	Min Height	20.0 Feet	Min Height	22.0 Feet
Administration	Max Height	16.0 Feet	Max Height	18.0 Feet	Max Height	20.0 Feet	Max Height	22.0 Feet
	Avg Height	16.0 Feet	Avg Height	18.0 Feet	Avg Height	20.0 Feet	Avg Height	22.0 Feet
	Total Barrier Cost	\$499,320	Total Barrier Cost	\$702,200	Total Barrier Cost	\$780,050	otal Barrier Cost	\$858,075
	Cost/Ben Rec	\$33,288.00	Cost/Ben Rec	\$43,888	Cost/Ben Rec	\$45,885	Cost/Ben Rec	\$50,475
FHWA No. of	With Barrier Sound Le	vels, Impact and Benefit	With Barrier Sound L	evels, Impact and Benefit	With Barrier Sound L	evels, Impact and Benefit	With Barrier Sound Le	vels, Impact and Benefit
Receiver ID Row Act Cat Units	Leg(dBA) IL (db)	Impacted? No. Benefited	Leg(dBA) IL (db)	Impacted? No. Benefited	Leg(dBA) IL (db)	Impacted? No. Benefited	Leg(dBA) IL (db)	Impacted? No. Benefited
R48 1 B 1	64 0	-	63 1	· · · · · · · · · · · · · · · · · · ·	63 1	· ·	63 1	· ·
R49 1 B 1	65 1	Impact! w/ Bar	65 1	Impact! w/ Bar	65 1	Impact! w/ Bar	65 1	Impact! w/ Bar
R50 1 B 1	67 7	Benefited/Impact 1	66 8	Benefited/Impact 1	65 9	Benefited/Impact 1	65 9	Benefited/Impact 1
R51 1 B 1	65 6	Benefited/Impact 1	64 7	Benefited/Impact 1	63 8	Benefited/Impact 1	63 8	Benefited/Impact 1
R52 1 B 1	62 7	Benefited/Impact 1	61 8	Benefited/Impact 1	61 8	Benefited/Impact 1	60 9	Benefited/Impact 1
R53 1 B 1	62 4	Impact! w/ Bar	61 5	Benefited/Impact 1	60 6	Benefited/Impact 1	60 6	Benefited/Impact 1
R54 1 B 1	59 5	Benefited/Non-Imp 1	58 6	Benefited/Non-Imp 1	58 6	Benefited/Non-Imp 1	57 7	Benefited/Non-Imp 1
R55 1 B 1	60 7	Benefited/Impact 1	59 8	Benefited/Impact 1	59 8	Benefited/Impact 1	58 9	Benefited/Impact 1
R56 1 B 1	61 6	Benefited/Impact 1	61 6	Benefited/Impact 1	60 7	Benefited/Impact 1	60 7	Benefited/Impact 1
R57 1 B 1	61 6	Benefited/Impact 1	60 7	Benefited/Impact 1	60 7	Benefited/Impact 1	59 8	Benefited/Impact 1
R58 1 B 1	61 6	Benefited/Impact 1	60 7	Benefited/Impact 1	59 8	Benefited/Impact 1	59 8	Benefited/Impact 1
R59 1 B 1	59 6	Benefited/Impact 1	59 6	Benefited/Impact 1	58 7	Benefited/Impact 1	58 7	Benefited/Impact 1
R60 1 B 1	60 6	Benefited/Impact 1	60 6	Benefited/Impact 1	59 7	Benefited/Impact 1	59 7	Benefited/Impact 1
R61 1 B 1	59 5	Benefited/Non-Imp 1	59 5	Benefited/Non-Imp 1	58 6	Benefited/Non-Imp 1	58 6	Benefited/Non-Imp 1
R62 1 B 1	60 6	Benefited/Impact 1	60 6	Benefited/Impact 1	59 7	Benefited/Impact 1	59 7	Benefited/Impact 1
R69 1 B 1	59 5	Benefited/Non-Imp 1	58 6	Benefited/Non-Imp 1	58 6	Benefited/Non-Imp 1	58 6	Benefited/Non-Imp 1
R70 1 B 1	60 4		60 4		59 5	Benefited/Non-Imp 1	59 5	Benefited/Non-Imp 1
R71 1 B 1	61 6	Benefited/Impact 1	61 6	Benefited/Impact 1	60 7	Benefited/Impact 1	60 7	Benefited/Impact 1
R72 1 B 1	61 3		60 4		60 4		60 4	<u> </u>
R73 1 B 1	62 5	Benefited/Impact 1	62 5	Benefited/Impact 1	62 5	Benefited/Impact 1	61 6	Benefited/Impact 1
R74 1 B 1	63 2	Impact! w/ Bar	62 3	Impact! w/ Bar	62 3	Impact! w/ Bar	62 3	Impact! w/ Bar
R75 1 B 1	63 4	Impact! w/ Bar	63 4	Impact! w/ Bar	63 4	Impact! w/ Bar	63 4	Impact! w/ Bar

				24-ft Wall						
P	roject information	on		Wall 1	1 30' off Fog Li	ne				
				Average Wtd I.L		7.5	dB I.L. Avg			
				Maximum I.L.		10	dB I.L. Max			
I205C	W Stafford Road to	OR212		Benefited/Impac	ted ≥ AFG	13	# Prot Units			
C	ontract No. K19786	CW		Benefited/Non Ir	mpact ≥ AFG	4	# Units			
120	05CW_Build_Walls1	to2		Total Benefited		17	# Ben Units			
	Wall 1			Impacted Units 2	≥ NRDG	11	# Units			
	НММН			Benefited Units	≥ NRDG	12	# Units			
	Scott Noel			Percent of impa	cts ≥ AFG	81%	% Ben Units			
	8/1/2018			Percent of benef	fits ≥ NRDG	71%	% NRDG Units			
				"Cost-Reasonab	ole" ?	No				
				Surface Area		37446	Sq Feet			
-	U.S. Department of T	ansportati	on	Surface Area/Be	en Rec	2203	Sq Feet			
	Federal Hi	ahwa	V	Barrier Length		1,560	Feet			
\sim	Administra	tion		Min Height		24.0	Feet			
	Administru			Max Height		24.0	Feet			
				Avg Height		24.0	Feet			
				Total Barrier Co	st	\$936,150				
				Cost/Ben Rec		\$55,068				
		FHWA	No. of	With B	arrier Sound L	evels, Impact and	Benefit			
Receiver	r ID Rov	Act Cat	Dwelling		II (db)	I	No. Bonofitod			
D40	4	D	Units	Leq(dBA)		Impacted ?	NO. Benefiteu			
R48 R40	1	B	1	65	1	Impactl w/ Bar				
D50	1	D	1	64	10	Repofited/Impact	1			
R50	1	D	1	62	0	Benefited/Impact	1			
R52	1	B	1	50	10	Benefited/Impact	1			
D52	1	D	1	60	6	Benefited/Impact	1			
R00	1	D	1	57	7	Benefited/Mon.lmn	1			
D55	1	D	1	59		Benefited/Impact	1			
R00	1	D	1	50	9	Benefited/Impact	1			
R30	1	D		59			1			
D59	1		1	50	8	Benefited/Impact	1			
R50	1	B	1	59	8	Benefited/Impact	1			
1105	1	B	1 1 1	59 58 57	8	Benefited/Impact Benefited/Impact Benefited/Impact	1 1 1			
D60	1	BB	1 1 1	59 58 57	8 9 8 7	Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact	1 1 1			
R60	1	B B B B	1 1 1 1	59 58 57 59 58	8 9 8 7 6	Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact	1 1 1 1			
R60 R61	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	B B B B B	1 1 1 1 1	59 58 57 59 58 58	8 9 8 7 6 7	Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Non-Imp Benefited/Impact	1 1 1 1			
R60 R61 R62	1 1 1 1 1	B B B B B	1 1 1 1 1 1	59 58 57 59 58 59 59 59	8 9 8 7 6 7	Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact	1 1 1 1 1			
R60 R61 R62 R69 R70	1 1 1 1 1 1 1	B B B B B B B B	1 1 1 1 1 1	59 58 57 59 58 59 58 59 58 59	8 9 8 7 6 7 6 5	Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Inon-Imp Benefited/Inon-Imp	1 1 1 1 1 1 1			
R60 R61 R62 R69 R70 R71	1 1 1 1 1 1 1 1	B B B B B B B B	1 1 1 1 1 1 1	59 58 57 59 58 59 58 59 58 59 60	8 9 8 7 6 7 6 5 7	Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Non-Imp Benefited/Non-Imp Benefited/Non-Imp Benefited/Non-Imp	1 1 1 1 1 1 1 1			
R60 R61 R62 R69 R70 R71 R71	1 1 1 1 1 1 1 1 1 1	B B B B B B B B B B B B B B B B B B B	1 1 1 1 1 1 1 1	59 58 57 59 58 59 58 59 58 59 60	8 9 8 7 6 7 6 5 7 7	Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Non-Imp Benefited/Impact	1 1 1 1 1 1 1 1			
R60 R61 R62 R69 R70 R71 R72 P72	1 1 1 1 1 1 1 1 1 1 1	B B B B B B B B B B B B B B B B B B B	1 1 1 1 1 1 1 1 1	59 58 57 59 58 59 58 59 58 59 60 60 60	8 9 8 7 6 7 6 5 7 4 4	Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Inon-Imp Benefited/Impact	1 1 1 1 1 1 1 1			
R60 R61 R62 R69 R70 R71 R72 R73 R74	1 1 1 1 1 1 1 1 1 1 1 1 1	B B B B B B B B B B B B B B B B B B B	1 1 1 1 1 1 1 1	59 58 57 59 58 59 58 59 58 59 60 60 60 61 62	8 9 8 7 6 7 6 5 7 4 6 5 7 4 6	Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Inon-Imp Benefited/Impact Benefited/Impact	1 1 1 1 1 1 1 1 1			
R60 R61 R62 R69 R70 R71 R72 R73 R74 R75	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	B B B B B B B B B B B B B B B B B B B	1 1 1 1 1 1 1 1 1	59 58 57 59 58 59 58 59 60 60 60 61 62 62	8 9 8 7 6 7 6 5 7 4 6 3 3	Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact	1 1 1 1 1 1 1 1			



8/7/2018

I205CW Stafford Road to OR213										
				Wall 2						
	10'	12'	14'	16'	18'	20'	22'	24'	Units	
Average Wtd I.L. (benefited)	5.6	6.6	7.7	7.7	8.4	8.9	9.7	10	dBA	
Maximum I.L.	7	9	10	11	12	13	14	14	dBA	
Benefited/Impacted ≥ AFG	19	24	26	36	36	36	36	36	# of dwelling units	
Benefited/Non Impact ≥ AFG	3	5	8	12	16	18	18	19	# of dwelling units	
Total Benefited	22	29	34	48	52	54	54	55	# of dwelling units	
Impacted Units ≥ NRDG	3	14	24	24	29	34	35	35	# of dwelling units	
Benefited Units ≥ NRDG	3	14	26	29	36	43	47	49	# of dwelling units	
Percent of impacts ≥ AFG	46%	59%	63%	88%	88%	88%	88%	88%	%	
Percent of benefits ≥ NRDG	14%	48%	76%	60%	69%	80%	87%	89%	%	
"Cost-Reasonable" ?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Surface Area	20,717	24,863	29,004	33,151	37,293	41,436	45,578	49,721	sq-feet	
Surface Area/Ben Rec	942	857	853	691	717	767	844	904	sq-ft / ben rec	
Barrier Length	2,070	2,070	2,070	2,070	2,070	2,070	2,070	2,070	ft	
Min Height	10	12	14	16	18	20	22	24	ft	
Max Height	10	12	14	16	18	20	22	24	ft	
Avg Height	10	12	14	16	18	20	22	24	ft	
Total Barrier Cost	414,340	497,260	580,080	828,775	932,325	1,035,900	1,139,450	1,243,025	\$	
Cost/Ben Rec	18,834	17,147	17,061	17,266	17,929	19,183	21,101	22,600	\$ / ben rec	
Effectiveness/Cost Metric (E/C)	1.9	9.7	16.7	20.7	24.1	26.4	24.7	23.0		

ODOT Acoustical Feasibilty Goal (dBA)	5
ODOT Acoustical Feasibilty Goal (%)	51%
ODOT Noise Reduction Design Goal (dBA)	7
ODOT Noise Reduction Design Goal (%)	1%

Project In	formation			No Barrier A	Analysis			10	-ft Wall			12-ft Wall			14-ft Wall	
Project III	Inormation			No Barrier			Wall 2	HDR 8-2018			Wall 2 HDR 8-201	8	-	Wall 2 HDR 8-201	8	
							Average Wtd I.L.	(benefited)	5.	6 dB I.L. Avg	Average Wtd I.L.	6.6	6 dB I.L. Avg	Average Wtd I.L.	7.7	dB I.L. Avg
1205CW Stafford	d Road to OR213		Total Units Expos	sed to Impact		4	Repetited/Impacte	Pd > AFG	1	9 # Prot Units	Maximum I.L. Benefited/Impacted > AEG	24	# Prot Units	Maximum I.L. Benefited/Impacted > AFG	26	# Prot Units
Contract No	5. K19786CW		# Impacts - NAC o	only		4	Benefited/Non Im	pact ≥ AFG		3 # Units	Benefited/Non Impact ≥ AFG		# Units	Benefited/Non Impact ≥ AFG	8	# Units
I205CW_Bui	ild_Walls1to2		# Impacts - SI only	/		(Total Benefited		2	2 # Ben Units	Total Benefited	29	# Ben Units	Total Benefited	34	# Ben Units
Wa	all 2		# Impacts - Both N	IAC & SI		(Impacted Units ≥ Repofited Units >	NRDG		3 # Units	Impacted Units ≥ NRDG	1.	4 # Units	Impacted Units ≥ NRDG	24	# Units
Scot	t Noel						Percent of impact	s ≥ AFG	469	% Ben Units	Percent of impacts \geq AFG	59%	6 % Ben Units	Percent of impacts \geq AFG	63%	% Ben Units
8/7/	2018						Percent of benefit	s ≥ NRDG	149	% NRDG Units	Percent of benefits ≥ NRDG	48%	6 % NRDG Units	Percent of benefits ≥ NRDG	76%	% NRDG Units
							"Cost-Reasonable	e" ?	Ye	S	"Cost-Reasonable" ?	Ye	3	"Cost-Reasonable" ?	Yes	
		1					Surface Area	Poo	2071	7 Sq Feet	Surface Area	24863	3 Sq Feet	Surface Area	29004	Sq Feet
Endo	ral Highwa	non					Barrier Length	Rec	2.07	0 Feet	Barrier Length	2.070) Feet	Barrier Length	2.070	Feet
rede	inistration	y					Min Height		10.	0 Feet	Min Height	12.0) Feet	Min Height	14.0	Feet
Admi	inistration						Max Height		10.	0 Feet	Max Height	12.0) Feet	Max Height	14.0	Feet
							Avg Height		10. ¢414.24	0 Feet	Avg Height	12.0 \$407.260) Feet	Avg Height Total Barrier Cost	14.0 ¢590.090	Feet
				Enter SI Info			Cost/Ben Rec		\$18,83	4	Cost/Ben Rec	\$17,14	7	Cost/Ben Rec	\$17,061	
	FHWA	No. of	Type of I	mpact		NO. OI	With Ba	arrier Sound L	evels, Impact and	Benefit	With Barrier Sound	d Levels, Impact and	Benefit	With Barrier Sound	Levels, Impact and I	Benefit
Receiver ID	Row Act Ca	Dwelling	Bld Leg > NAC?	Sub. Inc.?	Impact?	Units	Leg(dBA)	IL (db)	Impacted?	No. Benefited	Leg(dBA) IL (db)	Impacted?	No. Benefited	Leg(dBA) IL (db)	Impacted?	No. Benefited
ST-5a	1 B	1	73		Impact!	1	70	3	Impact! w/ Bar		68 5	Benefited/Impact	1	66 7	Benefited/Impact	1
ST-5b	1 B	1	68		Impact!	1	67	1	Impact! w/ Bar		65 3	Impact! w/ Bar	•	64 4	Impact! w/ Bar	•
R19	1 B	1	64				63	1			62 2			62 2		
R20	1 B	1	67		Impact!	1	65	2	Impact! w/ Bar		64 3	Impact! w/ Bar		63 4	Impact! w/ Bar	
R21	1 B	1	72		Impact!	1	66	6	Benefited/Impact	1	65 7	Benefited/Impact	1	64 8	Benefited/Impact	1
R23	В	1	74		Impact	1	67	6	Benefited/Impact	1	65 8	Benefited/Impact	1	64 Q	Benefited/Impact	1
R24	1 B	1	74		Impact!	1	69	5	Benefited/Impact	. 1	67 7	Benefited/Impact	1	65 9	Benefited/Impact	1
R25	1 B	1	74		Impact!	1	69	5	Benefited/Impact	1	67 7	Benefited/Impact	1	65 9	Benefited/Impact	1
R26	1 B	1	74		Impact!	1	69	5	Benefited/Impact	1	67 7	Benefited/Impact	1	65 9	Benefited/Impact	1
R27	1 B	1	74		Impact!	1	69	5	Benefited/Impact	1	67 7	Benefited/Impact	1	65 9	Benefited/Impact	1
R28 R20	1 B	1	74		Impact!	1	69	5	Benefited/Impact	1	67 7	Benefited/Impact	1	65 9	Benefited/Impact	1
R30	і В	1	73		Impact!	1	69	4	Impact! w/ Bar		67 6	Benefited/Impact	1	66 7	Benefited/Impact	1
R31	1 B	1	74		Impact!	1	70	4	Impact! w/ Bar		69 5	Benefited/Impact	1	66 8	Benefited/Impact	1
R32	1 B	1	74		Impact!	1	69	5	Benefited/Impact	1	68 6	Benefited/Impact	1	66 8	Benefited/Impact	1
R33	1 B	1	75		Impact!	1	68	7	Benefited/Impact	1	66 9	Benefited/Impact	1	65 10	Benefited/Impact	1
R34	1 B	1	69 60		Impact!	1	67	2	Impact! w/ Bar		66 3	Impact! w/ Bar		65 4	Impact! w/ Bar	4
R36	<u> </u>	1	68		Impact!	1	66	2	Impact! w/ Bar		65 3	Impact! w/ Bar		64 3	Impact! w/ Bar	'
R37	1 B	1	67		Impact!	1	66	1	Impact! w/ Bar		65 2	Impact! w/ Bar		63 4	Impact! w/ Bar	
R38	1 B	1	67		Impact!	1	66	1	Impact! w/ Bar		65 2	Impact! w/ Bar		63 4	Impact! w/ Bar	
R39	1 B	1	67		Impact!	1	66	1	Impact! w/ Bar		65 2	Impact! w/ Bar		63 4	Impact! w/ Bar	
R40	1 B	1	67		Impact!	1	65	2	Impact! w/ Bar		64 3	Impact! w/ Bar		63 4	Impact! w/ Bar	
R41	1 B	1	64		impacti	1	62	2	Impact! w/ Bar		61 3	impaci! w/ Bar		60 4	Impact! w/ Bar	
R43	1 B	1	64				63	1	-		62 2			61 3	-	
R44	1 B	1	64				63	1			62 2	_		61 3		
R45	1 B	1	64				62	2			62 2			61 3		
R46	1 B	1	64				62	2	-		62 2	_		61 3	-	
R63	<u> </u>	1	72		Impact	1	67	5	Renefited/Impact	1	66 6	Renefited/Impact	1	64 8	Renefited/Impact	1
R64	1 B	1	73		Impact!	1	67	6	Benefited/Impact	1	65 8	Benefited/Impact	1	64 9	Benefited/Impact	1
R65	1 B	1	74		Impact!	1	67	7	Benefited/Impact	1	65 9	Benefited/Impact	1	64 10	Benefited/Impact	1
R66	1 B	1	72		Impact!	1	66	6	Benefited/Impact	1	64 8	Benefited/Impact	1	64 8	Benefited/Impact	1
R67	1 B	1	68		Impact!	1	65	3	Impact! w/ Bar		64 4	Impact! w/ Bar		63 5	Benefited/Impact	1
R76		1	45		impacti	1	40	2	Benefited/Non-Imp	1	39 6	Benefited/Non-Imp	1	39 6	Benefited/Non-Imp	1
R77	1 B	1	66		Impact!	1	66	0	Impact! w/ Bar		66 0	Impact! w/ Bar	•	65 1	Impact! w/ Bar	
R78	1 B	1	66		Impact!	1	65	1	Impact! w/ Bar		65 1	Impact! w/ Bar		64 2	Impact! w/ Bar	
R79	1 B	1	65		Impact!	1	64	1	Impact! w/ Bar		64 1	Impact! w/ Bar		64 1	Impact! w/ Bar	
R80	1 B	1	70		Impact!	1	68	2	Impact! w/ Bar		67 3	Impact! w/ Bar		67 3	Impact! w/ Bar	
R81	1 B	1	69		Impact!	1	67	2	Impact! w/ Bar		66 3 59 1	Impact! w/ Bar		66 3 57 2	Impact! w/ Bar	
R83	<u> </u>	1	58				57	1	-		57 1	_		56 2	-	
R84	1 B	1	62				59	3	-		59 3	_		59 3	-	
R85	1 B	1	61				58	3			58 3	_		57 4	-	
R86	1 B	1	53				50	3			50 3			49 4		_
R87	1 B	1	55				52	3	-		52 3			50 5	Benefited/Non-Imp	1
R80	1 B	1	55				53	2	-		52 3	_		52 3	-	
R90	1 B	1	54				54	0	-		54 0	_		53 1	-	
R91	1 B	1	54				53	1	-		53 1	_		53 1	-	
R92	1 B	1	56				56	0			55 1			55 1		
R93	1 B	1	56				55	1			55 1			55 1		
R94	1 B	1	63				58	5	Benefited/Non-Imp	1	58 5	Benefited/Non-Imp	1	56 7	Benefited/Non-Imp	1
R96	1 B	1	63 65		Impact	1	80	5	Benefited/Iwpact	1	5 5 60 5	Benefited/Impact	1	58 7	Benefited/Ivon-Imp	1 1
R97	1 B	1	65		Impact	1	60	5	Benefited/Impact	1	60 5	Benefited/Impact	1	58 7	Benefited/Impact	1
				•		•		-		-	•		-	•		

_Optimization.xlsx Summary

	Due is at Infa				No Barrier A	nalysis			1(0-ft Wall			12	-ft Wall			14	4-ft Wall	
	Project Infor	rmation			No Barrier			Wall	2 HDR 8-2018			Wa	II 2 HDR 8-2018			Wa	I 2 HDR 8-2018		
								Average Wtd I.L.	. (benefited)	5.6	6 dB I.L. Avg	Average Wtd I.	L.	6.6	dB I.L. Avg	Average Wtd I.L		7.7	7 dB I.L. Avg
								Maximum I.L.		7	7 dB I.L. Max	Maximum I.L.		ę	dB I.L. Max	Maximum I.L.		1	0 dB I.L. Max
	I205CW Stafford Re	oad to OR213		Total Units Expo	sed to Impact		41	Benefited/Impac	ted ≥ AFG	19	# Prot Units	Benefited/Impa	icted ≥ AFG	24	# Prot Units	Benefited/Impac	ted ≥ AFG	26	F # Prot Units
	Contract No. K	19786CW		# Impacts - NAC c	nly		41	1 Benefited/Non In	npact ≥ AFG	3	8 # Units	Benefited/Non	Impact ≥ AFG	5	# Units	Benefited/Non In	npact ≥ AFG	3	<mark>8 #</mark> Units
	I205CW_Build_	Walls1to2		# Impacts - SI only	<i>,</i>		C	Total Benefited		22	# Ben Units	Total Benefited		29	# Ben Units	Total Benefited		34	# Ben Units
	Wall 2	2		# Impacts - Both N	IAC & SI		0	Impacted Units ≥	≥ NRDG	3	3 # Units	Impacted Units	≥ NRDG	14	# Units	Impacted Units ≥	≥ NRDG	2	4 # Units
	HMMH	4						Benefited Units 2	≥ NRDG	3	3 # Units	Benefited Units	s ≥ NRDG	14	# Units	Benefited Units	≥ NRDG	2	6 # Units
	Scott No	bel						Percent of impac	cts ≥ AFG	46%	6 % Ben Units	Percent of impa	acts ≥ AFG	59%	% Ben Units	Percent of impac	cts ≥ AFG	639	% Ben Units
	8/7/201	8						Percent of benef	its ≥ NRDG	14%	% NRDG Units	Percent of ben	efits ≥ NRDG	48%	% NRDG Units	Percent of benef	fits ≥ NRDG	769	% NRDG Units
								"Cost-Reasonab	le" ?	Yes	S	"Cost-Reasona	ble" ?	Yes		"Cost-Reasonab	le" ?	Yes	5
								Surface Area	_	20717	7 Sq Feet	Surface Area	_	24863	Sq Feet	Surface Area	_	29004	4 Sq Feet
	U.S. Departme	ent of Transporte	ntion					Surface Area/Be	n Rec	942	2 Sq Feet	Surface Area/E	len Rec	857	Sq Feet	Surface Area/Be	en Rec	853	3 Sq Feet
	Federa	l Highwa	VC					Barrier Length		2,070) Feet	Barrier Length		2,070	Feet	Barrier Length		2,070) Feet
	Admini	istration						Min Height		10.0) Feet	Min Height		12.0	Feet	Min Height		14.0) Feet
	Admin	JIGIOI						Max Height		10.0	Feet	Max Height		12.0	Feet	Max Height		14.0	Feet
								Avg Height		10.0	Feet	Avg Height		12.0	Feet	Avg Height		14.0) Feet
								Total Barrier Cos	st	\$414,340)	Total Barrier Co	ost	\$497,260		Total Barrier Cos	st	\$580,080)
			No. of		Enter SI Info		NO. 01	Cost/Ben Rec		\$18,834	+	Cost/Ben Rec	<u> </u>	\$17,147		Cost/Ben Rec		\$17,00	
	Bosoiver ID	BOW FHWA	A Dwolling	Type of I	mpact	Impact2	Impacted	With B	arrier Sound I	Levels, Impact and	Benefit	with	Barrier Sound L	evels, impact and	Benefit	With	Barrier Sound	Levels, Impact and	Benefit
	Receiver ID	Act Ca	t Units	Bld Leq > NAC?	Sub. Inc.?	inpact?	Units	Leq(dBA)	IL (db)	Impacted?	No. Benefited	Leq(dBA)	IL (db)	Impacted?	No. Benefited	Leq(dBA)	IL (db)	Impacted?	No. Benefited
R98		1 B	1	65		Impact!	1	62	3	Impact! w/ Bar		59	6	Benefited/Impact	1	58	7	Benefited/Impact	1
R99		1 B	1	65		Impact!	1	62	3	Impact! w/ Bar		59	6	Benefited/Impact	1	58	7	Benefited/Impact	1
R100		1 B	1	69		Impact!	1	63	6	Benefited/Impact	1	63	6	Benefited/Impact	1	60	9	Benefited/Impact	1
R101		1 B	1	69		Impact!	1	63	6	Benefited/Impact	1	62	7	Benefited/Impact	1	60	9	Benefited/Impact	1
R102		1 B	1	60				56	4		-	56	4		•	54	6	Benefited/Non-Imp	1
R103		1 B	1	61				57	4			56	5	Benefited/Non-Imp	1	55	6	Benefited/Non-Imp	1
R104		1 B	1	63				59	4			58	5	Benefited/Non-Imp	1	57	6	Benefited/Non-Imp	1
R105		1 B	1	63				60	3			59	4		•	58	5	Benefited/Non-Imp	1
R106		1 B	1	52				52	0			52	0			52	0		
R107		1 B	1	51				51	0			51	0			51	0		
R108		1 B	1	54				54	0			54	0			54	0		
R109		1 B	1	54				54	0			54	0			54	0		
R110		1 B	1	55				55	0	-		55	0			55	0		
R111		1 B	1	51				51	0			51	0			51	0		
R112		1 B	1	57				57	0	-		57	0			57	0		
R113		1 B	1	53				53	0			53	0			53	0		

Drainet Information	16	-ft Wall		18	-ft Wall	20)-ft Wall	22	-ft Wall
Project Information	Wall 2 HDR 8-2018			Wall 2 HDR 8-2018		Wall 2 HDR 8-2018		Wall 2 HDR 8-2018	
	Average Wtd I.L.	7.7	7 dB I.L. Avg	Average Wtd I.L.	8.4 dB I.L. Avg	Average Wtd I.L.	8.9 dB I.L. Avg	Average Wtd I.L.	9.7 dB I.L. Avg
	Maximum I.L.	11	1 dB I.L. Max	Maximum I.L.	12 dB I.L. Max	Maximum I.L.	13 dB I.L. Max	Maximum I.L.	14 dB I.L. Max
Contract No. K19786CW	Benefited/Impacted 2 AFG	30		Benefited/Impacted 2 AFG	36 # Prot Units	Benefited/Impacted 2 AFG	36 # Prot Units	Benefited/Impacted 2 AFG	36 # Prot Units
1205CW Build Walls1to2	Total Benefited	48	# Ben Units	Total Benefited	52 # Ben Units	Total Benefited	54 # Ben Units	Total Benefited	54 # Ben Units
Wall 2	Impacted Units ≥ NRDG	24	# Units	Impacted Units ≥ NRDG	29 # Units	Impacted Units ≥ NRDG	34 # Units	Impacted Units ≥ NRDG	35 # Units
НММН	Benefited Units ≥ NRDG	29	# Units	Benefited Units ≥ NRDG	36 # Units	Benefited Units ≥ NRDG	43 # Units	Benefited Units ≥ NRDG	47 # Units
Scott Noel	Percent of impacts ≥ AFG	88%	% Ben Units	Percent of impacts ≥ AFG	88% % Ben Units	Percent of impacts ≥ AFG	88% % Ben Units	Percent of impacts ≥ AFG	88% % Ben Units
8/7/2018	Percent of benefits ≥ NRDG	60%	% NRDG Units	Percent of benefits ≥ NRDG	69% % NRDG Units	Percent of benefits ≥ NRDG	80% % NRDG Units	Percent of benefits ≥ NRDG	87% % NRDG Units
	Surface Area	33151	Sa Feet	Surface Area	37293 Sg Feet	Surface Area	41436 Sg Feet	Surface Area	45578 Sg Feet
U.S. Department of Transportation	Surface Area/Ben Rec	691	1 Sq Feet	Surface Area/Ben Rec	717 Sq Feet	Surface Area/Ben Rec	767 Sq Feet	Surface Area/Ben Rec	844 \$q Feet
Federal Highway	Barrier Length	2,070) Feet	Barrier Length	2,070 Feet	Barrier Length	2,070 Feet	Barrier Length	2,070 Feet
Administration	Min Height	16.0) Feet	Min Height	18.0 Feet	Min Height	20.0 Feet	Min Height	22.0 Feet
Administration	Max Height	16.0	Feet	Max Height	18.0 Feet	Max Height	20.0 Feet	Max Height	22.0 Feet
	Total Barrier Cost	\$828.775	5	Total Barrier Cost	\$932.325	Total Barrier Cost	\$1.035.900	Total Barrier Cost	\$1,139,450
	Cost/Ben Rec	\$17,266.15	5	Cost/Ben Rec	\$17,929	Cost/Ben Rec	\$19,183	Cost/Ben Rec	\$21,101
EHWA No. of	With Barrier Sound L	evels, Impact an	d Benefit	With Barrier Sound L	evels, Impact and Benefit	With Barrier Sound	evels, Impact and Benefit	With Barrier Sound L	evels, Impact and Benefit
Receiver ID Row Act Cat Dwelling) Log(dBA) II (db)	Imposted 2	No Benefited	Log(dBA) II (db)	Imported 2 No Benefited	Log(dBA) II (db)	Imported 2 No Benefited	Log(dBA) II (db)	Imported 2 No. Benefited
Units		Impacted ?		Leq(dBA) 12 (db)	Benefited/Impact	62 11	Benefited/Impact	62 11	Benefited/Impact 1
ST-5b 1 B 1	63 5	Benefited/Impact	1	61 7	Benefited/Impact 1	60 8	Benefited/Impact 1	59 9	Benefited/Impact 1
R19 1 B 1	61 3	Dononiou, in puot	•	60 4	2 ononiou inipaor	59 5	Benefited/Non-Imp 1	59 5	Benefited/Non-Imp 1
R20 1 B 1	62 5	Benefited/Impact	1	62 5	Benefited/Impact 1	61 6	Benefited/Impact 1	61 6	Benefited/Impact 1
R21 1 B 1	63 9	Benefited/Impact	1	63 9	Benefited/Impact 1	63 9	Benefited/Impact 1	62 10	Benefited/Impact 1
R22 1 B 1	63 11	Benefited/Impact	1	62 12	Benefited/Impact 1	61 13	Benefited/Impact 1	60 14	Benefited/Impact 1
R23 1 B 1	63 10	Benefited/Impact	1	62 11	Benefited/Impact 1	61 12	Benefited/Impact 1	61 12	Benefited/Impact 1
R24 1 B 1	64 10	Benefited/Impact	1		Benefited/impact 1		Benefited/impact 1		Benefited/impact 1
R25 I B I R26 I B 1	64 10	Benefited/Impact	1	63 11	Benefited/Impact 1	62 12	Benefited/Impact 1	62 12	Benefited/Impact 1
R27 1 B 1	64 10	Benefited/Impact	1	63 11	Benefited/Impact 1	62 12	Benefited/Impact 1	61 13	Benefited/Impact 1
R28 1 B 1	64 10	Benefited/Impact	1	63 11	Benefited/Impact 1	62 12	Benefited/Impact 1	61 13	Benefited/Impact 1
R29 1 B 1	64 11	Benefited/Impact	1	63 12	Benefited/Impact 1	62 13	Benefited/Impact 1	61 14	Benefited/Impact 1
R30 1 B 1	<u>64</u> 9	Benefited/Impact	1	63 10	Benefited/Impact 1	62 11	Benefited/Impact 1	61 12	Benefited/Impact 1
R31 1 B 1	65 9	Benefited/Impact	1	64 10	Benefited/Impact 1	63 11	Benefited/Impact 1	62 12	Benefited/Impact 1
R32 1 B 1	64 10	Benefited/Impact	1	63 11	Benefited/Impact 1	63 11	Benefited/Impact 1	62 12	Benefited/Impact 1
R34 1 B 1	63 6	Benefited/Impact	1	62 7	Benefited/Impact 1	61 8	Benefited/Impact 1	60 9	Benefited/Impact 1
R35 1 B 1	63 6	Benefited/Impact	1	61 8	Benefited/Impact 1	60 9	Benefited/Impact 1	59 10	Benefited/Impact 1
R36 1 B 1	62 6	Benefited/Impact	1	61 7	Benefited/Impact 1	60 8	Benefited/Impact 1	59 9	Benefited/Impact 1
R37 1 B 1	62 5	Benefited/Impact	1	61 6	Benefited/Impact 1	60 7	Benefited/Impact 1	59 8	Benefited/Impact 1
R38 1 B 1	62 5	Benefited/Impact	1	61 6	Benefited/Impact 1	60 7	Benefited/Impact 1	59 8	Benefited/Impact 1
R39 1 B 1	62 5	Benefited/Impact	1	61 6	Benefited/Impact 1	60 7	Benefited/Impact 1	59 8	Benefited/Impact 1
R40 1 B 1	62 5	Benefited/Impact	1	61 6	Benefited/Impact 1	60 7	Benefited/Impact 1	59 8	Benefited/Impact 1
R41 1 B 1	59 5	Benefited/Mon-Imn	1	58 6	Benefited/Non-Imp	57 7	Benefited/Mon-Imp	57 7	Benefited/Non-Imp
R43 1 B 1	59 5	Benefited/Non-Imp	1	58 6	Benefited/Non-Imp 1	58 6	Benefited/Non-Imp	57 7	Benefited/Non-Imp
R44 1 B 1	61 3			59 5	Benefited/Non-Imp 1	59 5	Benefited/Non-Imp 1	58 6	Benefited/Non-Imp 1
R45 1 B 1	60 4		_	59 5	Benefited/Non-Imp 1	57 7	Benefited/Non-Imp 1	56 8	Benefited/Non-Imp 1
R46 1 B 1	59 5	Benefited/Non-Imp	1	58 6	Benefited/Non-Imp 1	58 6	Benefited/Non-Imp 1	56 8	Benefited/Non-Imp 1
R47 1 B 1	60 4			59 5	Benefited/Non-Imp 1	58 6	Benefited/Non-Imp 1	56 8	Benefited/Non-Imp 1
R63 1 B 1	63 9	Benefited/Impact	1	61 11	Benefited/Impact 1	61 11	Benefited/Impact 1	60 12	Benefited/Impact 1
R04 I B I R65 I B 1	63 11	Benefited/Impact	1	62 12	Benefited/Impact 1	62 12	Benefited/Impact	61 13	Benefited/Impact 1
R66 1 B 1	63 9	Benefited/Impact	1	62 10	Benefited/Impact 1	62 10	Benefited/Impact 1	62 10	Benefited/Impact 1
R67 1 B 1	62 6	Benefited/Impact	1	61 7	Benefited/Impact 1	60 8	Benefited/Impact 1	59 9	Benefited/Impact 1
R68 1 B 1	61 6	Benefited/Impact	1	61 6	Benefited/Impact 1	59 8	Benefited/Impact 1	58 9	Benefited/Impact 1
R76 1 D 1	39 6	Benefited/Non-Imp	1	38 7	Benefited/Non-Imp	38 7	Benefited/Non-Imp 1	38 7	Benefited/Non-Imp 1
R77 1 B 1	65 1	Impact! w/ Bar		65 1	Impact! w/ Bar	65 1	Impact! w/ Bar	65 1	Impact! w/ Bar
R/8 1 B 1	64 2	Impact! w/ Bar		64 2	Impact! w/ Bar	64 2	Impact! w/ Bar	64 2	Impact! w/ Bar
R/9 I B I R80 I B 1	67 3	Impact! w/ Bar		67 3	Impact! w/ Bar	67 3	Impact w/ Bar	67 3	Impact w/ Bar
R81 1 B 1	66 3	Impact! w/ Bar		66 3	Impact w/ Bar	66 3	Impact w/ Bar	66 3	Impact w/ Bar
R82 1 B 1	57 2			57 2		57 2		56 3	
R83 1 B 1	56 2	-		55 3		55 3		55 3	
R84 1 B 1	58 4			58 4		58 4		58 4	
R85 1 B 1	57 4			57 4		57 4		57 4	
R86 1 B 1	49 4			48 5	Benefited/Non-Imp 1	48 5	Benefited/Non-Imp 1	48 5	Benefited/Non-Imp 1
R87 1 B 1	50 5	Benefited/Non-Imp	1	49 6	Benefited/Non-Imp 1	49 6	Benefited/Non-Imp 1	49 6	Benefited/Non-Imp 1
	52 5	Renefited/Non-Imp	1	51 6	Benefited/Non-Imp 1	51 5	Benefited/Non-Imp	50 5	Benefited/Non-Imp
R90 1 B 1	53 1	Denonted/Non-Imp	· ·	53 1	Denented Aron-imp	52 2		52 2	
R91 1 B 1	53 1	-		52 2	•	52 2	-	52 2	-
R92 1 B 1	55 1	-		55 1	-	54 2	-	54 2	
R93 1 B 1	55 1			54 2		54 2		54 2	_
R94 1 B 1	55 8	Benefited/Non-Imp	1	54 9	Benefited/Non-Imp 1	54 9	Benefited/Non-Imp 1	53 10	Benefited/Non-Imp 1
R95 1 B 1	55 8	Benefited/Non-Imp	1	54 9	Benefited/Non-Imp 1	54 9	Benefited/Non-Imp 1	53 10	Benefited/Non-Imp 1
1 B 1	56 9	Benefited/Impact	1	55 10	Benefited/Impact 1	55 10	Benefited/Impact 1	54 11	Benefited/Impact 1
к <i>ы</i> 1 В 1	o/ 8	Benefited/Impact	1	9 9		50 1 0	Denemed/impact 1	94 11	Denemed/impact

Dealers the formula them	16	6-ft Wall	18	-ft Wall	20-	ft Wall	22	-ft Wall
Project Information	Wall 2 HDR 8-2018							
	Average Wtd I.L.	7.7 dB I.L. Avg	Average Wtd I.L.	8.4 dB I.L. Avg	Average Wtd I.L.	8.9 dB I.L. Avg	Average Wtd I.L.	9.7 dB I.L. Avg
	Maximum I.L.	11 dB I.L. Max	Maximum I.L.	12 dB I.L. Max	Maximum I.L.	13 dB I.L. Max	Maximum I.L.	14 dB I.L. Max
I205CW Stafford Road to OR213	Benefited/Impacted ≥ AFG	36 # Prot Units	Benefited/Impacted ≥ AFG	36 # Prot Units	Benefited/Impacted ≥ AFG	36 # Prot Units	Benefited/Impacted ≥ AFG	36 # Prot Units
Contract No. K19786CW	Benefited/Non Impact ≥ AFG	12 # Units	Benefited/Non Impact ≥ AFG	16 # Units	Benefited/Non Impact ≥ AFG	18 # Units	Benefited/Non Impact ≥ AFG	18 # Units
I205CW_Build_Walls1to2	Total Benefited	48 # Ben Units	Total Benefited	52 # Ben Units	Total Benefited	54 # Ben Units	Total Benefited	54 # Ben Units
Wall 2	Impacted Units ≥ NRDG	24 # Units	Impacted Units ≥ NRDG	29 # Units	Impacted Units ≥ NRDG	34 # Units	Impacted Units ≥ NRDG	35 # Units
НММН	Benefited Units ≥ NRDG	29 # Units	Benefited Units ≥ NRDG	36 # Units	Benefited Units ≥ NRDG	43 # Units	Benefited Units ≥ NRDG	47 # Units
Scott Noel	Percent of impacts ≥ AFG	88% % Ben Units	Percent of impacts ≥ AFG	88% % Ben Units	Percent of impacts ≥ AFG	88% % Ben Units	Percent of impacts ≥ AFG	88% % Ben Units
8/7/2018	Percent of benefits ≥ NRDG	60% % NRDG Units	Percent of benefits ≥ NRDG	69% % NRDG Units	Percent of benefits ≥ NRDG	80% % NRDG Units	Percent of benefits ≥ NRDG	87% % NRDG Units
	"Cost-Reasonable" ?	Yes						
	Surface Area	33151 Sq Feet	Surface Area	37293 Sq Feet	Surface Area	41436 Sq Feet	Surface Area	45578 Sq Feet
U.S. Department of Transportation	Surface Area/Ben Rec	691 Sq Feet	Surface Area/Ben Rec	717 Sq Feet	Surface Area/Ben Rec	767 Sq Feet	Surface Area/Ben Rec	844 Sq Feet
Federal Highway	Barrier Length	2,070 Feet	Barrier Length	2,070 Feet	Barrier Length	2,070 -eet	Barrier Length	2,070 -eet
Administration	Min Height	16.0 Feet	Min Height	18.0 Feet	Min Height	20.0 Feet	Min Height	22.0 Feet
Harminghandhorr	Max Height	16.0 Feet	Max Height	18.0 Feet	Max Height	20.0 Feet		22.0 Feet
	Avg Height	16.0 Feel	Avg Height	18.0 Feel	Avg Height	20.0 Feel	Avg Height	22.0 Feel
	Total Barrier Cost	\$828,775	Lotal Barrier Cost	\$932,325	I otal Barrier Cost	\$1,035,900	I otal Barrier Cost	\$1,139,450
No. of	With Parrier Sound I	sir,200.15	With Parrier Sound L	ovels Impact and Repofit	With Parrier Sound Lo	wole Impact and Bonofit	With Barrior Sound L	ovols Impact and Bonofit
Receiver ID Row FHWA	With Barrier Sound L	evers, impact and benefit	With Barner Sound L	evers, impact and benefit	With Barner Sound Le	evers, impact and benefit	With Barner Sound L	evers, impact and benefit
Act Cat Units	Leq(dBA) IL (db)	Impacted? No. Benefited						
R98 1 B 1	57 8	Benefited/Impact 1	56 9	Benefited/Impact 1	56 9	Benefited/Impact 1	55 10	Benefited/Impact 1
R99 1 B 1	57 8	Benefited/Impact 1	56 9	Benefited/Impact 1	56 9	Benefited/Impact 1	55 10	Benefited/Impact 1
R100 1 B 1	59 10	Benefited/Impact 1	58 11	Benefited/Impact 1	57 12	Benefited/Impact 1	56 13	Benefited/Impact 1
R101 1 B 1	58 11	Benefited/Impact 1	58 11	Benefited/Impact 1	57 12	Benefited/Impact 1	56 13	Benefited/Impact 1
R102 1 B 1	54 6	Benefited/Non-Imp 1	53 7	Benefited/Non-Imp 1	52 8	Benefited/Non-Imp 1	52 8	Benefited/Non-Imp 1
R103 1 B 1	54 7	Benefited/Non-Imp 1	53 8	Benefited/Non-Imp 1	53 8	Benefited/Non-Imp 1	52 9	Benefited/Non-Imp 1
R104 1 B 1	56 7	Benefited/Non-Imp 1	55 8	Benefited/Non-Imp 1	54 9	Benefited/Non-Imp 1	53 10	Benefited/Non-Imp 1
R105 1 B 1	56 7	Benefited/Non-Imp 1	55 8	Benefited/Non-Imp 1	54 9	Benefited/Non-Imp 1	53 10	Benefited/Non-Imp 1
R106 1 B 1	51 1		51 1		51 1		51 1	
R107 1 B 1	51 0		51 0		51 0		51 0	
R108 1 B 1	54 0		54 0		54 0		54 0	
R109 1 B 1	54 0		54 0		54 0		54 0	
R110 1 B 1	55 0		55 0		55 0		55 0	
R111 1 B 1	51 0		51 0		51 0		51 0	
R112 1 B 1	57 0		56 1		56 1		56 1	
R113 1 B 1	53 0		53 0		53 0		53 0	

	Due is at lufar					24-	ft Wall	
	Project Infor	matio	n		Wall	2 HDR 8-2018		
					Average Wtd I.	L.	10.0	dB I.L. Avg
					Maximum I.L.		14	dB I.L. Max
	I205CW Stafford Ro	ad to (DR213		Benefited/Impa	Icted ≥ AFG	36	# Prot Units
	1205CW Build V	9700C Valls1t	vv 02		Total Benefited	Impact 2 AFG	55	# Units # Ben Units
	Wall 2	ranore	-		Impacted Units	≥ NRDG	35	# Units
	НММН				Benefited Units	s ≥ NRDG	49	# Units
	Scott No	el			Percent of impa	acts ≥ AFG	88%	% Ben Units
	8/7/2018	3			Percent of ben	efits ≥ NRDG	89%	% NRDG Units
					"Cost-Reasona Surface Area	ble" ?	Yes 40721	Sa Foot
	S Denartme	of of Irr	insportati	00	Surface Area/B	en Rec	904	Sa Feet
	P Federal	Hic	hwa	V	Barrier Length		2,070	Feet
	Admini	-	ion	,	Min Height		24.0	Feet
	Authinis	sil u			Max Height		24.0	Feet
					Avg Height	oct	24.0 \$1.242.025	Feet
					Cost/Ben Rec	031	\$22.600	
				No. of	With E	Barrier Sound Le	vels. Impact and	Benefit
	Receiver ID	Row	Act Cat	Dwelling				No. Description
OTE			Act Out	Units	Leq(dBA)	IL (db)	Impacted?	No. Benefited
ST-58		- 1 - 1	В	1	61 50	12	Benefited/Impact	1
R19		1	B	1	59	5	Benefited/Non-Imp	1
R20		1	В	1	61	6	Benefited/Impact	1
R21		1	В	1	62	10	Benefited/Impact	1
R22		1	В	1	60	14	Benefited/Impact	1
R23		1	В	1	60	13	Benefited/Impact	1
R24		1	В	1	61	13	Benefited/Impact	1
R25		- 1	В	1	61	13	Benefited/Impact	1
R20 R27		- 1	B	1	61	13	Benefited/Impact	1
R28		• 1	B	1	61	13	Benefited/Impact	1
R29		1	В	1	61	14	Benefited/Impact	1
R30		1	В	1	61	12	Benefited/Impact	1
R31		1	В	1	61	13	Benefited/Impact	1
R32		1	В	1	61	13	Benefited/Impact	1
R33		1	В	1	61	14	Benefited/Impact	1
R34		- 1	В	1	59	10	Benefited/Impact	1
R35		- 1 - 1	В	1	59	10	Benefited/Impact	1
R30		• 1	B	1	58	9	Benefited/Impact	1
R38		1	В	1	59	8	Benefited/Impact	1
R39		1	В	1	58	9	Benefited/Impact	1
R40		1	В	1	58	9	Benefited/Impact	1
R41		1	В	1	59	7	Benefited/Impact	1
R42		1	В	1	56	8	Benefited/Non-Imp	1
R43		- 1	В	1	56	8	Benefited/Non-Imp	1
R44		- 1	В	1	57	7	Benefited/Non-Imp	1
R46		• 1	B	1	56	8	Benefited/Non-Imp	1
R47		1	B	1	56	8	Benefited/Non-Imp	1
R63		1	В	1	60	12	Benefited/Impact	1
R64		1	В	1	60	13	Benefited/Impact	1
R65		1	В	1	61	13	Benefited/Impact	1
R66		1	В	1	61	11	Benefited/Impact	1
R67		1	В	1	58	10	Benefited/Impact	1
R76		1	В	1	5/ 38	7	Benefited/Impact	1
R77		1	В	1	65	1	Impact! w/ Bar	'
R78		1	В	1	64	2	Impact! w/ Bar	
R79		1	В	1	63	2	Impact! w/ Bar	
R80		1	В	1	67	3	Impact! w/ Bar	
R81		1	В	1	66	3	Impact! w/ Bar	
R82		1	В	1	56	3		
R83		- 1	В	1	55	3		
R85		1	B	1	56	4	Renefited/Non-Imp	1
R86		1	B	1	48	5	Benefited/Non-Imp	1
R87		1	В	1	48	7	Benefited/Non-Imp	1
R88		1	В	1	50	5	Benefited/Non-Imp	1
R89		1	В	1	51	6	Benefited/Non-Imp	1
R90		1	В	1	52	2		
R91		1	В	1	52	2		
R92		1	В	1	54	2		
R93		1	B	1	52	<u> </u>	Renefited/Non-Imp	1
R95		1	B	1	53	10	Benefited/Non-Imp	1
R96		1	В	1	53	12	Benefited/Impact	1
R97		1	В	1	53	12	Benefited/Impact	1

3/12/2019 12:44 PM D-10 -R

	Barland Info					24	-ft Wall	
	Project Infor	matio	n		Wall	2 HDR 8-2018		
					Average Wtd I.L		10.0	dB I.L. Avg
					Maximum I.L.		14	dB I.L. Max
	I205CW Stafford Ro	oad to C	DR213		Benefited/Impac	cted ≥ AFG	36	# Prot Units
	Contract No. K	9786C	w		Benefited/Non I	mpact ≥ AFG	19	# Units
	I205CW_Build_\	Nalls1t	o2		Total Benefited		55	# Ben Units
	Wall 2				Impacted Units	≥ NRDG	35	# Units
	НММН				Benefited Units	≥ NRDG	49	# Units
	Scott No	el			Percent of impa	cts ≥ AFG	88%	% Ben Units
	8/7/201	8			Percent of bene	fits ≥ NRDG	89%	% NRDG Units
					"Cost-Reasonab	ole" ?	Yes	
					Surface Area		49721	Sq Feet
	U.S. Departme	nt of Tro	risportatio	on	Surface Area/Be	en Rec	904	Sq Feet
	P Federal	Hic	hwa	V	Barrier Length		2,070	Feet
	Admini	at an		,	Min Height		24.0	Feet
	Admini	snu	1011		Max Height		24.0	Feet
					Avg Height		24.0	Feet
					Total Barrier Co	ost	\$1,243,025	
					Cost/Ben Rec		\$22,600	
			FHWA	No. of	With B	arrier Sound L	evels, Impact and	Benefit
	Receiver ID	Row	FHWA Act Cat	No. of Dwelling	With B	arrier Sound L	evels, Impact and	Benefit
R98	Receiver ID	Row	FHWA Act Cat	No. of Dwelling Units	With B Leq(dBA)	arrier Sound L IL (db) 10	evels, Impact and Impacted?	Benefit No. Benefited
R98	Receiver ID	Row	FHWA Act Cat B B	No. of Dwelling Units 1 1	With B Leq(dBA) 55 55	arrier Sound L IL (db) 10 10	evels, Impact and Impacted? Benefited/Impact Benefited/Impact	Benefit No. Benefited
R98 R99 R100	Receiver ID	Row 1 1 1 1	FHWA Act Cat B B B	No. of Dwelling Units 1 1 1	With B Leq(dBA) 55 55 56	arrier Sound L IL (db) 10 10 13	evels, Impact and Impacted? Benefited/Impact Benefited/Impact Benefited/Impact	Benefit No. Benefited
R98 R99 R100 R101	Receiver ID	Row 1 1 1 1 1 1	FHWA Act Cat B B B B B	No. of Dwelling Units 1 1 1 1	With B Leq(dBA) 55 55 56 56	arrier Sound L IL (db) 10 10 13 13	evels, Impact and Impacted? Benefited/Impact Benefited/Impact Benefited/Impact	Benefit No. Benefited
R98 R99 R100 R101 R102	Receiver ID	Row 1 1 1 1 1 1 1 1 1 1	FHWA Act Cat B B B B B B	No. of Dwelling Units 1 1 1 1 1	With B Leq(dBA) 55 55 56 56 56 51	arrier Sound L IL (db) 10 10 13 13 9	evels, Impact and Impacted? Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact	Benefit No. Benefited 1 1 1 1 1
R98 R99 R100 R101 R102 R103	Receiver ID	Row 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	FHWA Act Cat B B B B B B B B	No. of Dwelling 1 1 1 1 1 1	With B Leq(dBA) 55 55 56 56 51 52	arrier Sound L IL (db) 10 10 13 13 9 9	evels, Impact and Impacted? Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Non-Imp Benefited/Non-Imp	Benefit No. Benefited 1 1 1 1 1 1
R98 R99 R100 R101 R102 R103 R104	Receiver ID	Row 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	FHWA Act Cat B B B B B B B B B B B	No. of Dwelling 1 1 1 1 1 1 1 1	With B Leq(dBA) 55 55 56 56 51 52 53	arrier Sound L IL (db) 10 13 13 9 9 10	evels, Impact and Impacted? Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Non-Imp Benefited/Non-Imp Benefited/Non-Imp	Benefit No. Benefited 1 1 1 1 1 1 1
R98 R99 R100 R101 R102 R103 R104 R105	Receiver ID	Row 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	FHWA Act Cat B B B B B B B B B B B B B	No. of Dwelling Units 1 1 1 1 1 1 1 1 1 1	With B Leq(dBA) 55 55 56 56 51 52 53 53	arrier Sound L IL (db) 10 13 13 9 9 9 10 10	evels, Impact and Impacted? Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Non-Imp Benefited/Non-Imp Benefited/Non-Imp	Benefit No. Benefited 1 1 1 1 1 1 1 1 1
R98 R99 R100 R101 R102 R103 R104 R105 R106	Receiver ID	Row 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	FHWA Act Cat B B B B B B B B B B B B B B B B B B B	No. of Dwelling 1 1 1 1 1 1 1 1 1 1 1 1 1	With B Leq(dBA) 55 56 56 56 51 52 53 53 51	arrier Sound L IL (db) 10 10 13 13 9 9 9 9 10 10 10 1	evels, Impact and Impacted? Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Non-Imp Benefited/Non-Imp Benefited/Non-Imp Benefited/Non-Imp	Benefit No. Benefited 1 1 1 1 1 1 1 1 1 1
R98 R99 R100 R101 R102 R103 R104 R105 R106 R107	Receiver ID	Row 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	FHWA Act Cat B B B B B B B B B B B B B B B B B B B	No. of Dwelling Units 1 1 1 1 1 1 1 1 1 1 1 1 1 1	With B Leq(dBA) 55 55 56 56 51 52 53 53 51 51	arrier Sound L IL (db) 10 13 13 9 9 10 10 10 1 0	evels, Impact and Impacted? Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Non-Imp Benefited/Non-Imp Benefited/Non-Imp Benefited/Non-Imp	Benefit 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
R98 R99 R100 R101 R102 R103 R104 R105 R106 R107 R108	Receiver ID	Row 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	FHWA Act Cat B B B B B B B B B B B B B B B B B B B	No. of Dwelling Units 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	With B Leq(dBA) 55 56 56 51 52 53 53 51 51 54	arrier Sound L IL (db) 10 10 13 13 9 9 9 10 10 10 10 0 0	evels, Impact and Impacted? Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Non-Imp Benefited/Non-Imp Benefited/Non-Imp Benefited/Non-Imp	Benefit 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
R98 R99 R100 R101 R102 R103 R104 R105 R106 R107 R108 R109	Receiver ID	Row 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	FHWA Act Cat B B B B B B B B B B B B B B B B B B B	No. of Dwelling Units 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	With B Leq(dBA) 55 56 56 51 52 53 53 51 51 54 54	arrier Sound L IL (db) 10 13 13 9 9 10 10 10 10 10 0 0 0	evels, Impact and Impacted? Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Non-Imp Benefited/Non-Imp Benefited/Non-Imp Benefited/Non-Imp	Benefit No. Benefited 1 1 1 1 1 1 1 1 1
R98 R99 R100 R101 R102 R103 R104 R105 R107 R107 R108 R109 R110	Receiver ID	Row 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	FHWA Act Cat B B B B B B B B B B B B B B B B B B B	No. of Dwelling Units 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	With B Leq(dBA) 55 56 56 51 52 53 53 51 51 54 54 55 	arrier Sound L IL (db) 10 10 13 13 9 9 9 10 10 10 10 0 0 0 0 0 0	evels, Impact and Impacted? Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Non-Imp Benefited/Non-Imp Benefited/Non-Imp Benefited/Non-Imp	Benefit No. Benefited 1 1 1 1 1 1 1 1 1
R98 R99 R100 R101 R102 R103 R104 R105 R106 R107 R108 R109 R110 R111	Receiver ID	Row 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	FHWA Act Cat B B B B B B B B B B B B B B B B B B B	No. of Dwelling Units 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	With B Leq(dBA) 55 55 56 56 51 52 53 53 51 51 54 54 55 51	arrier Sound L IL (db) 10 10 13 9 9 9 10 10 10 10 0 0 0 0 0 0 0	evels, Impact and Impacted? Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Non-Imp Benefited/Non-Imp Benefited/Non-Imp Benefited/Non-Imp	Benefit No. Benefited 1 1 1 1 1 1 1 1 1
R98 R99 R100 R101 R102 R103 R104 R105 R106 R107 R108 R107 R108 R109 R111 R111 R1112	Receiver ID	Row 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	FHWA Act Cat B B B B B B B B B B B B B B B B B B B	No. of Dwelling Units 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	With B Leq(dBA) 55 55 56 56 51 52 53 53 51 54 54 55 51 56 51 55 51 56	arrier Sound L IL (db) 10 10 13 9 9 10 10 10 10 10 0 0 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1	evels, Impact and Impacted? Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Non-Imp Benefited/Non-Imp Benefited/Non-Imp Benefited/Non-Imp	Benefit No. Benefited 1 1 1 1 1 1 1 1

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6	28	/20	18
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I205CW Stafford Road to OR213													
			Wall 3 30'	from Fog I	Line								
	10'	12'	14'	16'	18'	20'	22'	24'	Units				
Average Wtd I.L. (benefited)	5	5.3	5.9	6.2	6.7	7.1	7.3	7.7	dBA				
Maximum I.L.	5	6	7	8	9	10	10	11	dBA				
Benefited/Impacted ≥ AFG	5	12	16	23	25	28	30	30	# of dwelling units				
Benefited/Non Impact ≥ AFG	0	0	2	2	5	7	7	8	# of dwelling units				
Total Benefited	5	12	18	25	30	35	37	38	# of dwelling units				
Impacted Units ≥ NRDG	0	0	4	10	13	17	21	24	# of dwelling units				
Benefited Units ≥ NRDG	0	0	4	10	15	19	23	28	# of dwelling units				
Percent of impacts ≥ AFG	12%	29%	39%	56%	61%	68%	73%	73%	%				
Percent of benefits ≥ NRDG	0%	0%	22%	40%	50%	54%	62%	74%	%				
"Cost-Reasonable" ?	No	No	No	No	No	No	No	No					
Surface Area	21,586	25,907	30,226	34,537	38,857	43,176	47,497	51,821	sq-feet				
Surface Area/Ben Rec	4,317	2,159	1,679	1,381	1,295	1,234	1,284	1,364	sq-ft / ben rec				
Barrier Length	2,161	2,161	2,161	2,161	2,161	2,161	2,161	2,161	ft				
Min Height	10	12	14	16	18	20	22	24	ft				
Max Height	10	12	14	16	18	20	22	24	ft				
Avg Height	10	12	14	16	18	20	22	24	ft				
Total Barrier Cost	431,720	518,140	604,520	1,079,400	1,187,425	1,079,400	1,187,425	1,295,525	\$				
Cost/Ben Rec	86,344	43,178	33,584	43,176	39,581	30,840	32,093	34,093	\$ / ben rec				
Effectiveness/Cost Metric (E/C)	-	-	1.4	4.3	6.0	8.2	9.7	10.5					

ODOT Acoustical Feasibilty Goal (dBA)	5
ODOT Acoustical Feasibilty Goal (%)	51%
ODOT Noise Reduction Design Goal (dBA)	7
ODOT Noise Reduction Design Goal (%)	1%

Breiset Information	No Barrier Analysis	1	I0-ft Wall	12	2-ft Wall	14-ft	t Wall	16-ft Wall		
Project mormation	No Barrier	Wall 3 HDR 06-2018	8	Wall 3 HDR 06-2018		Wall 3 HDR 06-2018		Wall 3 HDR 06-2018		
	-	Average Wtd I.L. (benefited)	5.0 dB I.L. Avg	Average Wtd I.L.	5.3 dB I.L. Avg	Average Wtd I.L.	5.9 dB I.L. Avg	Average Wtd I.L.	6.2 dB I.L. Avg	
		Maximum I.L.	5 dB I.L. Max	Maximum I.L.	6 dB I.L. Max	Maximum I.L.	7 dB I.L. Max	Maximum I.L.	8 dB I.L. Max	
I205CW Stafford Road to OR213	Total Units Exposed to Impact	41 Benefited/Impacted ≥ AFG	5 # Prot Units	Benefited/Impacted ≥ AFG	12 # Prot Units	Benefited/Impacted ≥ AFG	16 # Prot Units	Benefited/Impacted ≥ AFG	23 # Prot Units	
Contract No. K19786CW	# Impacts - NAC only	41 Benefited/Non Impact 2 AFG	0 # Units	Benefited/Non Impact 2 AFG	U # Units	Benefited/Non Impact 2 AFG	2 # Units	Benefited/Non Impact 2 AFG	2 # Units	
Wall 3 30' from Fog Line	# Impacts - Storily # Impacts - Both NAC & SI	0 Impacted Units > NRDG	0 # Units	Impacted Units > NRDG		Impacted Units > NRDG	4 # Units	Impacted Units > NRDG	25 # Bell Offics	
НММН		Benefited Units ≥ NRDG	0 # Units	Benefited Units ≥ NRDG	0 # Units	Benefited Units ≥ NRDG	4 # Units	Benefited Units ≥ NRDG	10 # Units	
Scott Noel		Percent of impacts ≥ AFG	12% % Ben Units	Percent of impacts ≥ AFG	29% % Ben Units	Percent of impacts ≥ AFG	39% % Ben Units	Percent of impacts ≥ AFG	56% % Ben Units	
6/28/2018		Percent of benefits ≥ NRDG	0% % NRDG Units	Percent of benefits ≥ NRDG	0% NRDG Units	Percent of benefits ≥ NRDG	22% % NRDG Units	Percent of benefits ≥ NRDG	40% % NRDG Units	
		"Cost-Reasonable" ?	No	"Cost-Reasonable" ?	No	"Cost-Reasonable" ?	No	"Cost-Reasonable" ?	No	
		Surface Area	21586 Sq Feet	Surface Area	25907 Sq Feet	Surface Area	30226 Sq Feet	Surface Area	34537 \$q Feet	
U.S. Department of Transportation		Surface Area/Ben Rec	4317 Sq Feet	Surface Area/Ben Rec	2159 Sq Feet	Surface Area/Ben Rec	1679 5q Feet	Surface Area/Ben Rec	1381 Sq Feet	
Federal Highway		Min Height	10.0 Feet	Min Height	2,101 Feet	Min Height	14.0 Eeet	Min Height	2,101 Feet	
Administration		Max Height	10.0 Feet	Max Height	12.0 Feet	Max Height	14.0 Feet	Max Height	16.0 Feet	
		Avg Height	10.0 Feet	Avg Height	12.0 Feet	Avg Height	14.0 Feet	Avg Height	16.0 Feet	
		Total Barrier Cost	\$431,720	Total Barrier Cost	\$518,140	Total Barrier Cost	\$604,520	Total Barrier Cost	\$1,079,400	
	Enter SI Info	Cost/Ben Rec	\$86,344	Cost/Ben Rec	\$43,178	Cost/Ben Rec	\$33,584	Cost/Ben Rec	\$43,176.00	
Receiver ID Rev FHWA Dwelling	Type of Impact Impact2 Impact2	With Barrier Sound	Levels, Impact and Benefit	With Barrier Sound L	evels, Impact and Benefit	With Barrier Sound Lev	vels, Impact and Benefit	With Barrier Sound Le	evels, Impact and Benefit	
Act Cat Units	Bld Leq > NAC? Sub. Inc.? Units	Leg(dBA) IL (db)	Impacted? No. Benefited	Leg(dBA) IL (db)	Impacted? No. Benefited	Leg(dBA) IL (db)	Impacted? No. Benefited	Leg(dBA) IL (db)	Impacted? No. Benefited	
ML-7 1 B 1	65 Impact 1	62 3	Impact! w/ Bar	61 4	Impact! w/ Bar	60 5	Benefited/Impact 1	60 5	Benefited/Impact 1	
R114 1 B 1	65 Impact 1	65 0	Impact! w/ Bar	65 0	Impact! w/ Bar	65 0	Impact! w/ Bar	65 0	Impact! w/ Bar	
R115 1 B 1	66 Impact! 1	66 0	Impact! w/ Bar	66 0	Impact! w/ Bar	66 0	Impact! w/ Bar	66 0	Impact! w/ Bar	
R116 1 B 1	67 Impact! 1	67 0	Impact! w/ Bar	66 1	Impact! w/ Bar	66 1	Impact! w/ Bar	66 1	Impact! w/ Bar	
R117 1 B 1	68 Impact! 1	68 0	Impact! w/ Bar	68 0	Impact! w/ Bar	68 0	Impact! w/ Bar	67 1	Impact! w/ Bar	
R118 1 B 1	70 Impact 1	69 1	Impact! w/ Bar	69 1	Impact! w/ Bar	68 2	Impact! w/ Bar	68 2	Impact! w/ Bar	
R119 I B I R120 I B I	69 Impact 1	66 3	Impact w/ Bar	66 3	Impacti w/ Bar	65 4	Impact w/ Bar	65 4	Impact w/ Bar	
R120 1 B 1	66 Impact 1	63 3	Impact w/ Bar	63 3	Impact w/ Bar	62 4	Impact w/ Bar	62 4	Impact w/ Bar	
R122 1 B 1	68 Impact 1	65 3	Impact! w/ Bar	65 3	Impact! w/ Bar	64 4	Impact! w/ Bar	64 4	Impact! w/ Bar	
R123 1 B 1	66 Impact! 1	63 3	Impact! w/ Bar	63 3	Impact! w/ Bar	63 3	Impact! w/ Bar	62 4	Impact! w/ Bar	
R124 1 B 1	65 Impact! 1	63 2	Impact! w/ Bar	63 2	Impact! w/ Bar	62 3	Impact! w/ Bar	62 3	Impact! w/ Bar	
R125 1 B 1	64	62 2		61 3		60 4		60 4		
R126 1 B 1	67 Impact 1	64 3	Impact! w/ Bar	63 4	Impact! w/ Bar	63 4	Impact! w/ Bar	62 5	Benefited/Impact 1	
R127 1 B 1	65 Impact 1	62 3	Impact! w/ Bar	61 4	Impact! w/ Bar	61 4	Impact! w/ Bar	<u>60</u> 5	Benefited/Impact 1	
	66 Impact 1	65 1	Impact w/ Bar	64 3	Impact w/ Bar	64 3	Impact w/ Bar	64 2	Impact w/ Bar	
R130 1 B 1	65 Impact 1	64 1	Impact w/ Bar	64 1	Impact w/ Bar	64 1	Impact w/ Bar	64 1	Impact w/ Bar	
R131 1 B 1	65 Impact 1	64 1	Impact! w/ Bar	64 1	Impact! w/ Bar	64 1	Impact w/ Bar	64 1	Impact! w/ Bar	
R132 1 B 1	61	61 0	- • •	60 1	• • •	60 1		60 1		
R133 1 B 1	67 Impact! 1	65 2	Impact! w/ Bar	64 3	Impact! w/ Bar	63 4	Impact! w/ Bar	63 4	Impact! w/ Bar	
R134 1 B 1	67 Impact! 1	65 2	Impact! w/ Bar	64 3	Impact! w/ Bar	63 4	Impact! w/ Bar	63 4	Impact! w/ Bar	
R135 1 B 1	67 Impact! 1	62 5	Benefited/Impact 1	61 6	Benefited/Impact 1	60 7	Benefited/Impact 1	60 7	Benefited/Impact 1	
R136 1 B 1	68 Impact 1	66 2	Impact! w/ Bar	65 3	Impact! w/ Bar	64 4	Impact! w/ Bar	63 5	Benefited/Impact 1	
	69 Impact 1	66 3	Impact w/ Bar	65 3	Impact w/ Bar	64 4	Impact w/ Bar	63 6	Benefited/Impact 1	
R139 1 B 1	68 impact 1	66 2	Impact w/ Bar	65 3	Impact w/ Bar		Impact w/ Bar	64 4	Impact! w/ Bar	
R140 1 B 1	69 Impact! 1	67 2	Impact! w/ Bar	66 3	Impact! w/ Bar	65 4	Impact! w/ Bar	64 5	Benefited/Impact 1	
R141 1 B 1	68 Impact 1	63 5	Benefited/Impact 1	62 6	Benefited/Impact 1	61 7	Benefited/Impact 1	60 8	Benefited/Impact 1	
R142 1 B 1	67 Impact! 1	62 5	Benefited/Impact 1	61 6	Benefited/Impact 1	61 6	Benefited/Impact 1	60 7	Benefited/Impact 1	
R143 1 B 1	69 Impact! 1	65 4	Impact! w/ Bar	64 5	Benefited/Impact 1	62 7	Benefited/Impact 1	61 8	Benefited/Impact 1	
R144 1 B 1	70 Impact 1	66 4	Impact! w/ Bar	66 4	Impact! w/ Bar	64 6	Benefited/Impact 1	63 7	Benefited/Impact 1	
R140 1 B 1	68 Impacti 1	63 5	Impact W/ Bar	62 5	Benefited/Impact	61 7	Benefited/impact 1		Benefited/Impact 1	
R147 1 B 1	66 Impact 1	62 4	Impact! w/ Bar	61 5	Benefited/Impact 1	60 6	Benefited/Impact 1	60 6	Benefited/Impact 1	
R148 1 B 1	66 Impact! 1	61 5	Benefited/Impact 1	61 5	Benefited/Impact 1	60 6	Benefited/Impact 1	59 7	Benefited/Impact 1	
R149 1 B 1	68 Impact! 1	64 4	Impact! w/ Bar	63 5	Benefited/Impact 1	62 6	Benefited/Impact 1	61 7	Benefited/Impact 1	
R150 1 B 1	66 Impact! 1	62 4	Impact! w/ Bar	61 5	Benefited/Impact 1	60 6	Benefited/Impact 1	59 7	Benefited/Impact 1	
R151 1 B 1	64	61 3		60 4		59 5	Benefited/Non-Imp 1	58 6	Benefited/Non-Imp 1	
R152 1 B 1	65 Impact! 1	62 3	Impact! w/ Bar	61 4	Impact! w/ Bar	60 5	Benefited/Impact 1	60 5	Benefited/Impact 1	
R153 1 B 1	65 Impact! 1	64 1	Impact! w/ Bar	63 2	Impact! w/ Bar	62 3	Impact! w/ Bar	61 4	Impact! w/ Bar	
R134 I B I P155 I P 1	66 Impact 1	63 3	Impact w/ Bar	62 4	Impact w/ Bar	59 5	Benefited/Impact 1	59 5	Benefited/Impact	
R156 1 B 1	67 impact 1	63 4	Impact w/ Bar	62 5	Benefited/Impact 1	61 6	Benefited/Impact 1	61 6	Benefited/Impact 1	
R157 1 B 1	65 Impact! 1	63 2	Impact! w/ Bar	62 3	Impact! w/ Bar	61 4	Impact! w/ Bar	60 5	Benefited/Impact 1	
R158 1 B 1	64	63 1		62 2		61 3	•	60 4		
R159 1 B 1	61	60 1		60 1		59 2		58 3		
R160 1 B 1	64	64 0		64 0		64 0		64 0		
R161 1 B 1	63	62 1		61 2	_	61 2		60 3		
R162 1 B 1	62	61 1	_	60 2	-	59 3		58 4	-	
	62	60 2	_	60 3 50 2	-	60 <u>3</u> 50 2		59 4	-	
R165 1 B 1	64	64 0	-	64 0	-	63 1		63 1	-	
R166 1 B 1	64	64 0		64 0		63 1		63 1	-	
R167 1 B 1	64	63 1	-	63 1	-	63 1		62 2		

Desired before other	18	3-ft Wall	20	-ft Wall	22-	ft Wall	24-f	t Wall
Project Information	Wall 3 HDR 06-2018		Wall 3 HDR 06-2018		Wall 3 HDR 06-2018		Wall 3 HDR 06-2018	
	Average Wtd I.L.	6.7 dB I.L. Avg	Average Wtd I.L.	7.1 dB I.L. Avg	Average Wtd I.L.	7.3 dB I.L. Avg	Average Wtd I.L.	7.7 dB I.L. Avg
	Maximum I.L.	9 dB I.L. Max	Maximum I.L.	10 dB I.L. Max	Maximum I.L.	10 dB I.L. Max	Maximum I.L.	11 dB I.L. Max
I205CW Stafford Road to OR213	Benefited/Impacted ≥ AFG	25 # Prot Units	Benefited/Impacted ≥ AFG	28 # Prot Units	Benefited/Impacted ≥ AFG	30 # Prot Units	Benefited/Impacted ≥ AFG	30 # Prot Units
Contract No. K19786CW	Benefited/Non Impact ≥ AFG	5 # Units	Benefited/Non Impact ≥ AFG	7 # Units	Benefited/Non Impact ≥ AFG	7 # Units	Benefited/Non Impact ≥ AFG	8 # Units
1205CW_Build_Wall3to4	I otal Benefited	30 # Ben Units	Iotal Benefited	35 # Ben Units		37 # Ben Units	Iotal Benefited	38 # Ben Units
	Repetited Units > NRDG	13 # Units	Repetited Units > NRDG	17 # Units		21 # Units	Repetited Units > NRDG	24 # Units
Scott Noel	Percent of impacts > AFG	61% % Ben Units	Percent of impacts > AFG	68% % Ben Units	Percent of impacts > AFG	73% % Ben Units	Percent of impacts > AFG	73% % Ben Units
6/28/2018	Percent of benefits ≥ NRDG	50% % NRDG Units	Percent of benefits ≥ NRDG	54% % NRDG Units	Percent of benefits \geq NRDG	62% % NRDG Units	Percent of benefits ≥ NRDG	74% % NRDG Units
	"Cost-Reasonable" ?	No	"Cost-Reasonable" ?	No	"Cost-Reasonable" ?	No	"Cost-Reasonable" ?	No
	Surface Area	38857 Sq Feet	Surface Area	43176 Sq Feet	Surface Area	47497 Sq Feet	Surface Area	51821 Sq Feet
U.S. Department of Transportation	Surface Area/Ben Rec	1295 Sq Feet	Surface Area/Ben Rec	1234 Sq Feet	Surface Area/Ben Rec	1284 Sq Feet	Surface Area/Ben Rec	1364 Sq Feet
Federal Highway	Barrier Lengtn Min Height	2, 161 Feel	Barrier Lengin Min Height	2,161 Feel	Barrier Lengin Min Height	2,161 Feel	Barrier Lengin Min Height	2,101 reel
Administration	Max Height	18.0 Feet	Max Height	20.0 Feet	Max Height	22.0 Feet	Max Height	24.0 Feet
	Avg Height	18.0 Feet	Avg Height	20.0 Feet	Avg Height	22.0 Feet	Avg Height	24.0 Feet
	Total Barrier Cost	\$1,187,425	Total Barrier Cost	\$1,079,400	Total Barrier Cost	\$1,187,425	Total Barrier Cost	\$1,295,525
	Cost/Ben Rec	\$39,581	Cost/Ben Rec	\$30,840	Cost/Ben Rec	\$32,093	Cost/Ben Rec	\$34,093
FHWA Dwolling	With Barrier Sound L	evels, Impact and Benefit	With Barrier Sound L	evels, Impact and Benefit	With Barrier Sound Le	evels, Impact and Benefit	With Barrier Sound Le	vels, Impact and Benefit
Act Cat Units	Leq(dBA) IL (db)	Impacted? No. Benefited	Leg(dBA) IL (db)	Impacted? No. Benefited	Leq(dBA) IL (db)	Impacted? No. Benefited	Leg(dBA) IL (db)	Impacted? No. Benefited
ML-7 1 B 1	59 6	Benefited/Impact 1	59 6	Benefited/Impact 1	58 7	Benefited/Impact 1	58 7	Benefited/Impact 1
R114 1 B 1	65 0	Impact! w/ Bar	65 0	Impact! w/ Bar	65 0	Impact! w/ Bar	65 0	Impact! w/ Bar
R115 1 B 1	66 0	Impact! w/ Bar	66 0	Impact! w/ Bar	66 0	Impact! w/ Bar	66 0	Impact! w/ Bar
R116 1 B 1	66 1	Impact! w/ Bar	66 1	Impact! w/ Bar	66 1	Impact! w/ Bar	66 1	Impact! w/ Bar
R11/ 1 B 1	<u>67</u> 1	Impact! w/ Bar	67 1 69 2	Impact! w/ Bar	6/ 1 69 2	Impact! w/ Bar	67 1 69 2	Impact! w/ Bar
R119 1 B 1		Impact w/ Bar		Impact w/ Bar		Impact w/ Bar		Impacti w/ Bar
R120 1 B 1	65 4	Impact! w/ Bar	65 4	Impact! w/ Bar	65 4	Impact! w/ Bar	65 4	Impact! w/ Bar
R121 1 B 1	62 4	Impact! w/ Bar	61 5	Benefited/Impact 1	61 5	Benefited/Impact 1	61 5	Benefited/Impact 1
R122 1 B 1	64 4	Impact! w/ Bar	64 4	Impact! w/ Bar	63 5	Benefited/Impact 1	63 5	Benefited/Impact 1
R123 1 B 1	62 4	Impact! w/ Bar	62 4	Impact! w/ Bar	61 5	Benefited/Impact 1	61 5	Benefited/Impact 1
R124 1 B 1	61 4	Impact! w/ Bar	61 4	Impact! w/ Bar	61 4	Impact! w/ Bar	61 4	Impact! w/ Bar
R125 1 B 1	60 4 62 5	Reported/Impact	59 5	Benefited/Impact 1	59 5	Benefited/Impact 1	59 5	Benefited/Non-Imp 1
R120 I B I R127 I B I	59 6	Benefited/Impact 1	59 6	Benefited/Impact 1	59 6	Benefited/Impact 1	58 7	Benefited/Impact 1
R128 1 B 1	62 6	Benefited/Impact 1	61 7	Benefited/Impact 1	61 7	Benefited/Impact 1	61 7	Benefited/Impact 1
R129 1 B 1	64 2	Impact! w/ Bar	63 3	Impact! w/ Bar	63 3	Impact! w/ Bar	63 3	Impact! w/ Bar
R130 1 B 1	64 1	Impact! w/ Bar	63 2	Impact! w/ Bar	63 2	Impact! w/ Bar	63 2	Impact! w/ Bar
R131 1 B 1	63 2	Impact! w/ Bar	63 2	Impact! w/ Bar	63 2	Impact! w/ Bar	63 2	Impact! w/ Bar
R132 1 B 1	60 1		60 1		60 1		60 1	
R133 1 B 1	63 4	Impact! W/ Bar	62 5	Benefited/impact 1	62 5	Benefited/Impact	62 5	Benefited/Impact
R135 1 B 1	59 8	Benefited/Impact 1	58 9	Benefited/Impact 1	58 9	Benefited/Impact 1	57 10	Benefited/Impact 1
R136 1 B 1	62 6	Benefited/Impact 1	62 6	Benefited/Impact 1	61 7	Benefited/Impact 1	61 7	Benefited/Impact 1
R137 1 B 1	62 7	Benefited/Impact 1	61 8	Benefited/Impact 1	60 9	Benefited/Impact 1	60 9	Benefited/Impact 1
R138 1 B 1	62 6	Benefited/Impact 1	62 6	Benefited/Impact 1	61 7	Benefited/Impact 1	61 7	Benefited/Impact 1
R139 1 B 1	63 5	Benefited/Impact 1	62 6	Benefited/Impact 1	61 7	Benefited/Impact 1	61 7	Benefited/Impact 1
R140 1 B 1	63 6	Benefited/Impact 1	62 7	Benefited/Impact 1	62 7	Benefited/Impact 1	61 8	Benefited/Impact 1
R141 1 B 1 R142 1 B 1	59 9	Benefited/Impact 1	59 8	Benefited/Impact 1	58 9	Benefited/Impact 1	57 10	Benefited/Impact 1
R143 1 B 1	60 9	Benefited/Impact 1	59 10	Benefited/Impact 1	59 10	Benefited/Impact 1	58 11	Benefited/Impact 1
R144 1 B 1	62 8	Benefited/Impact 1	61 9	Benefited/Impact 1	60 10	Benefited/Impact 1	60 10	Benefited/Impact 1
R145 1 B 1	60 8	Benefited/Impact 1	59 9	Benefited/Impact 1	58 10	Benefited/Impact 1	58 10	Benefited/Impact 1
R146 1 B 1	59 9	Benefited/Impact 1	59 9	Benefited/Impact 1	58 10	Benefited/Impact 1	57 11	Benefited/Impact 1
R147 1 B 1	59 7	Benefited/Impact 1	58 8	Benefited/Impact 1	58 8	Benefited/Impact 1	57 9	Benefited/Impact 1
R140 1 B 1	59 7 60 9	Benefited/impact 1	58 8	Benefited/impact 1	50 0	Benefited/impact 1	5/ 9	Benefited/impact 1
R150 1 B 1	59 7	Benefited/Impact 1	58 8	Benefited/Impact 1	57 9	Benefited/Impact 1	57 9	Benefited/Impact 1
R151 1 B 1	56 8	Benefited/Non-Imp	55 9	Benefited/Non-Imp	55 9	Benefited/Non-Imp	54 10	Benefited/Non-Imp
R152 1 B 1	59 6	Benefited/Impact 1	57 8	Benefited/Impact 1	57 8	Benefited/Impact 1	56 9	Benefited/Impact 1
R153 1 B 1	61 4	Impact! w/ Bar	60 5	Benefited/Impact 1	59 6	Benefited/Impact 1	58 7	Benefited/Impact 1
R154 1 B 1	57 7	Benefited/Non-Imp 1	56 8	Benefited/Non-Imp 1	56 8	Benefited/Non-Imp 1	55 9	Benefited/Non-Imp 1
R155 1 B 1	60 6	Benefited/Impact 1	59 7	Benefited/Impact 1	58 8	Benefited/Impact 1	58 8	Benefited/Impact 1
R100 1 B 1	60 F	Benefited/impact 1	59 8	Benefited/impact 1	59 8	Benefited/impact 1	58 9	Benefited/impact 1
R158 1 B 1	60 5	Benefited/impact	59 6	Benefited/Mon-Imp	59 b	Benefited/Impact 1	58 6	Benefited/Mon-Imp 1
R159 1 B 1	57 4	-	57 4	Denented/ron-imp	57 4	Bononed/Hon-Imp	57 4	Benanced Non-Imp
R160 1 B 1	63 1		63 1	-	63 1		63 1	-
R161 1 B 1	59 4		59 4		59 4		58 5	Benefited/Non-Imp 1
R162 1 B 1	57 5	Benefited/Non-Imp 1	56 6	Benefited/Non-Imp 1	56 6	Benefited/Non-Imp 1	55 7	Benefited/Non-Imp 1
R163 1 B 1	58 5	Benefited/Non-Imp 1	57 6	Benefited/Non-Imp 1	57 6	Benefited/Non-Imp 1	56 7	Benefited/Non-Imp 1
R164 1 B 1	57 5	Benefited/Non-Imp 1	56 6	Benefited/Non-Imp 1	56 6	Benefited/Non-Imp 1	56 6	Benefited/Non-Imp 1
R105 1 B 1	63 1	-	63 1	_	63 1	-	63 1	-
	62 2	-	61 3	-	61 3	-	61 3	-
	<u>-</u>				· · · ·		· · · ·	



		1205	CW Staffo	rd Road to	OR213				
			V	/all 4					
	10'	12'	14'	16'	18'	20'	22'	24'	Units
Average Wtd I.L. (benefited)	6.3	7.2	7.4	8	8.5	8.7	9.2	9.5	dBA
Maximum I.L.	10	12	13	14	15	16	17	17	dBA
Benefited/Impacted ≥ AFG	32	32	33	34	35	35	35	35	# of dwelling units
Benefited/Non Impact ≥ AFG	14	25	42	48	51	56	57	59	# of dwelling units
Total Benefited	46	57	75	82	86	91	92	94	# of dwelling units
Impacted Units ≥ NRDG	16	29	32	32	32	32	32	32	# of dwelling units
Benefited Units ≥ NRDG	17	34	43	48	62	72	76	78	# of dwelling units
Percent of impacts ≥ AFG	86%	86%	89%	92%	95%	95%	95%	95%	%
Percent of benefits ≥ NRDG	37%	60%	57%	59%	72%	79%	83%	83%	%
"Cost-Reasonable" ?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Surface Area	15,183	18,217	21,256	24,292	27,326	30,361	33,396	36,432	sq-feet
Surface Area/Ben Rec	330	320	283	296	318	334	363	388	sq-ft / ben rec
Barrier Length	1,517	1,517	1,517	1,517	1,517	1,517	1,517	1,517	ft
Min Height	10	12	14	16	18	20	22	24	ft
Max Height	10	12	14	16	18	20	22	24	ft
Avg Height	10	12	14	16	18	20	22	24	ft
Total Barrier Cost	303,660	364,340	425,120	485,840	683,150	759,025	834,900	910,800	\$
Cost/Ben Rec	6,601	6,392	5,668	5,925	7,944	8,341	9,075	9,689	\$ / ben rec
Effectiveness/Cost Metric (E/C)	35.4	66.3	82.5	78.9	73.6	70.1	64.4	60.3	

ODOT Acoustical Feasibilty Goal (dBA)	5
ODOT Acoustical Feasibilty Goal (%)	51%
ODOT Noise Reduction Design Goal (dBA)	7
ODOT Noise Reduction Design Goal (%)	1%

8/5/2018

	Due is at lufau			1	No Barrier	Analysis			1(0-ft Wall			12	-ft Wall			1	4-ft Wall	
	Project Infor	mation			No Barrie	r		Wa	II 4 HDR 12-2017	7		Wa	II 4 HDR 12-2017	,		Wa	II 4 HDR 12-201	7	
								Average Wtd	I.L. (benefited)	6	.3 dB I.L. Avg	Average Wtd I	.L.	7.	2 dB I.L. Avg	Average Wtd I.I	L.	7	4 dB I.L. Avg
								Maximum I.L.			10 dB I.L. Max	Maximum I.L.		1	2 dB I.L. Max	Maximum I.L.		1:	3 dB I.L. Max
	1205CW Stafford Ro	bad to OR213		Total Units Expos	sed to Impac	st	3	Benefited/Imp	acted ≥ AFG		32 # Prot Units	Benefited/Impa	acted ≥ AFG	3.	2 # Prot Units	Benefited/Impac	cted ≥ AFG	3	3 # Prot Units
	Contract No. K	19786CW		# Impacts - NAC o	only		3	7 Benefited/Nor	i Impact ≥ AFG		4 # Units	Benefited/Non	Impact ≥ AFG	2	5 # Units	Benefited/Non I	mpact ≥ AFG	42	2 # Units
	I205CW_Build_	_Wall3to4		# Impacts - SI only			(I otal Benefite		4	6 # Ben Units	Total Benefited		5.	# Ben Units	Total Benefited			# Ben Units
	Wall 4	, 		# impacts - Both N	NAC & SI		l	Renefited Unit	ts > NRDG		7 # Units	Repetited Units	s > NRDG		4 # Units	Renefited Units	> NRDG		13 # Units
	Scott No	• nel						Percent of im	pacts ≥ AEG	86	% % Ben Units	Percent of imp	acts ≥ AFG	869	% % Ben Units	Percent of impa	cts ≥ AFG	89	% % Ben Units
	8/5/201	8						Percent of be	nefits ≥ NRDG	37	% % NRDG Units	Percent of ben	lefits ≥ NRDG	609	% NRDG Units	Percent of bene	fits ≥ NRDG	57	% NRDG Units
								"Cost-Reason	nable" ?	Y	es	"Cost-Reasona	able" ?	Ye	s	"Cost-Reasonal	ble" ?	Ye	S
								Surface Area		1518	33 Sq Feet	Surface Area		1821	7 Sq Feet	Surface Area		2125	6 Sq Feet
	II.S. Departme	ent of Transportation	on					Surface Area/	Ben Rec	3;	30 Sq Feet	Surface Area/E	Ben Rec	32	0 Sq Feet	Surface Area/Be	en Rec	28	3 Sq Feet
	Federal	Highwa	y					Barrier Lengtr	1	1,5		Barrier Length		1,51	7 Feet	Barrier Length		1,51	/ Feet
1	📂 Admini	stration						Max Height		10	0 Feet	Max Height		12.	0 Feet	Max Height		14.	0 Feet
								Avg Height		10	.0 Feet	Avg Height		12.	0 Feet	Avg Height		14.	0 Feet
								Total Barrier (Cost	\$303,66	60	Total Barrier C	ost	\$364,34	0	Total Barrier Cos	st	\$425,120	0
					Enter SI Info	0	Na	Cost/Ben Rec	<u>, </u>	\$6,60)1	Cost/Ben Rec		\$6,39	2	Cost/Ben Rec		\$5,66	i8
		Bow FHWA	No. of	Type of li	mpact	Impact2	NO. OF	With	Barrier Sound	Levels, Impact an	d Benefit	With	Barrier Sound L	evels, Impact and	Benefit	With	Barrier Sound	Levels, Impact and	Benefit
I. I.		Act Cat	Units	Bld Leq > NAC?	Sub. Inc.?	impacti	Units	Leg(dBA)	IL (db)	Impacted?	No. Benefited	Leg(dBA)	IL (db)	Impacted?	No. Benefited	Leg(dBA)	IL (db)	Impacted?	No. Benefited
ST-6		1 C	1	63				60	3			60	3			59	4		
R168		1 B	1	68		Impact!	1	67	1	Impact! w/ Bar		67	1	Impact! w/ Bar		67	1	Impact! w/ Bar	
R169		1 B	1	68		Impact!	1	66	2	Impact! w/ Bar		66	2	Impact! w/ Bar		66	2	Impact! w/ Bar	_
R170		1 B	1	60				56	4		_	56	4			55	5	Benefited/Non-Imp	1
R171		_ 1 B	1	65		Impact!	1	59	6	Benefited/Impact	1	58	7	Benefited/Impact	1	57	8	Benefited/Impact	1
R172		<u> </u>	1	60		impact!	'	62 56		Benefited/Impact		55	5	Benefited/Mon.Imp	1	59	12	Benefited/Impact	
R174		- 1 B	1	65		Impact!	1	58	7	Benefited/Impact	1	57	8	Benefited/Impact	1	56	9	Benefited/Impact	1
R175		1 B	1	71		Impact!	1	61	10	Benefited/Impact	1	59	12	Benefited/Impact	1	58	13	Benefited/Impact	1
R176		1 B	1	60				56	4		-	56	4		-	55	5	Benefited/Non-Imp	1
R177		1 B	1	65		Impact!	1	58	7	Benefited/Impact	1	58	7	Benefited/Impact	1	57	8	Benefited/Impact	1
R178		1 B	1	71		Impact!	1	61	10	Benefited/Impact	1	60	11	Benefited/Impact	1	58	13	Benefited/Impact	1
R179		_ 1 B	1	60				56	4		_	55	5	Benefited/Non-Imp	1	55	5	Benefited/Non-Imp	1
R180		1 B	1	65 71		Impact!	1	58	10	Benefited/Impact	1	57	8	Benefited/Impact	1	50	9 12	Benefited/Impact	1
R182		_ 1 B	1	59		impacti	'	55	4	Benefited/impact		54	5	Benefited/Non-Imp	1	53	6	Benefited/Non-Imp	1
R183		1 B	1	62				56	6	Benefited/Non-Imp	1	55	7	Benefited/Non-Imp	1	54	8	Benefited/Non-Imp	1
R184		1 B	1	59				55	4			54	5	Benefited/Non-Imp	1	54	5	Benefited/Non-Imp	1
R185		1 B	1	63				56	7	Benefited/Non-Imp	1	55	8	Benefited/Non-Imp	1	54	9	Benefited/Non-Imp	1
R186		1 B	1	63				59	4		_	58	5	Benefited/Non-Imp	1	57	6	Benefited/Non-Imp	1
R187		_ 1 B	1	67		Impact!	1	61	6	Benefited/Impact	1	59	8	Benefited/Impact	1	59	8	Benefited/Impact	1
R188		- 1 B	1	63		Impost	1	59	4	Ponofited/Impact	1	58	5	Benefited/Ivon-Imp	1	57	0	Benefited/Ivon-Imp	1
R190		- 1 B	1	63		impact:		58	5	Benefited/Non-Imr	1	57	6	Benefited/Non-Imp	1	57	6	Benefited/Non-Imp	1
R191		- 1 B	1	67		Impact!	1	60	7	Benefited/Impact	1	59	8	Benefited/Impact	1	58	9	Benefited/Impact	1
R192		1 B	1	63				58	5	Benefited/Non-Imp	1	57	6	Benefited/Non-Imp	1	57	6	Benefited/Non-Imp	1
R193		1 B	1	67		Impact!	1	60	7	Benefited/Impact	1	59	8	Benefited/Impact	1	58	9	Benefited/Impact	<mark>_</mark> 1
R194		1 B	1	61				57	4		_	56	5	Benefited/Non-Imp	1	56	5	Benefited/Non-Imp	1
R195		_ 1 B	1	67		Impact!	1	59	8	Benefited/Impact	1	58	9	Benefited/Impact	1	57	10	Benefited/Impact	1
R196		1 B	1	61		Impost	1	57	4	Ponofited/Impact	1	50	5	Benefited/Ivon-Imp	1	55	<u>6</u> 10	Benefited/Non-Imp	1
R197		_ 1 B	1	60		impacti	'	57	3	Benefited/impact		56	4	Benefited/impact		55	5	Benefited/Non-Imp	1
R199		1 B	1	66		Impact!	1	59	7	Benefited/Impact	1	57	9	Benefited/Impact	1	56	10	Benefited/Impact	<u> </u>
R200		1 B	1	60]	56	4			55	5	Benefited/Non-Imp	1	54	6	Benefited/Non-Imp	1
R201		1 B	1	65		Impact!	1	60	5	Benefited/Impact	1	57	8	Benefited/Impact	1	56	9	Benefited/Impact	<mark>/</mark> 1
R202		1 B	1	60				56	4		• ·	55	5	Benefited/Non-Imp	1	54	6	Benefited/Non-Imp	1
R203		1 B	1	65		Impact!	1	60	5	Benefited/Impact	1	57	8	Benefited/Impact	1	56	9	Benefited/Impact	
R204		1 B	1	59 64		1		50	5	Benefited/Non-Imr	1	57	4	Renefited/Non-Imp	1	56	3 8	Benefited/Non-Imp	
R206		1 B	1	60				57	3	Ononed/Non-imp	- '	56	4	Beneficariton-imp		55	5	Benefited/Non-Imp	1
R207		1 B	1	65		Impact!	1	60	5	Benefited/Impact	1	58	7	Benefited/Impact	1	56	9	Benefited/Impact	1
R208		1 B	1	60				57	3			56	4			55	5	Benefited/Non-Imp	1
R209		1 B	1	65		Impact!	1	60	5	Benefited/Impact	1	58	7	Benefited/Impact	1	56	9	Benefited/Impact	1
R210		1 B	1	67		Impact!	1	62	5	Benefited/Impact	1	60	7	Benefited/Impact	1	59	8	Benefited/Impact	1
R211		_ 1 B	1	67		Impact!	1	62	5	Benefited/Impact	1	60	7	Benefited/Impact	1	59	8	Benefited/Impact	– 1
R212		- 1 B	1	60		Impact	1	57 60	5	Repetited/Impact	1	58	4 7	Benefited/Impact	1	57	4 8	Repetited/Impact	– 1
R214		1 B	1	60		impact!		57	3	Denented/impact		56	4	Benemed/impact		55	5	Benefited/Non-Imp	
R215		1 B	1	65		Impact!	1	60	5	Benefited/Impact	1	58	7	Benefited/Impact	1	57	8	Benefited/Impact	1
R216		1 B	1	66		Impact!	1	61	5	Benefited/Impact	1	60	6	Benefited/Impact	1	58	8	Benefited/Impact	1
R217		1 B	1	67		Impact!	1	61	6	Benefited/Impact	1	60	7	Benefited/Impact	1	59	8	Benefited/Impact	1
R218		1 B	1	60				58	2		_	57	3		-	57	3		_
R219		1 B	1	64		1		59	5	Benefited/Non-Imp	1	58	6	Benefited/Non-Imp	1	58	6	Benefited/Non-Imp	1
R220		1 B	1	60		land the	4	57	3	Der afte dille	- 4	57	3	Don <i>efte</i> d [#]	- A	56	4	Don-ft- d/	- A
R221		- 1 B	1	60		Impact!	1	59	5	Benefited/Impact	1	80	6	Benefited/Impact	1	50 50	7	Benefited/Impact	1
R223		1 B	1	66		Impact	1	61	5	Benefited/Impact	1	60	6	Benefited/Impact	1	59	7	Benefited/Impact	
				~~	•	paot.	•	<u>,</u>	v	20.10mcd/mpdot		~~	v	20112 mod/impaor		00		Denomourmpaol	·

Due is st luter			1	No Barrier Analysis		10-ft Wall			12-ft Wall				14-ft Wall					
Project Inform	mation			No Barrier			Wall 4	4 HDR 12-2017	7		Wall	4 HDR 12-2017			Wa	II 4 HDR 12-201	7	
							Average Wtd I.L	. (benefited)	6.3	3 dB I.L. Avg	Average Wtd I.I	L.	7.	2 dB I.L. Avg	Average Wtd I.	L.	7	.4 dB I.L. Avg
							Maximum I.L.	· · · ·	1(0 dB I.L. Max	Maximum I.L.		1	2 dB I.L. Max	Maximum I.L.		,	3 dB I.L. Max
I205CW Stafford Ro	ad to OR213		Total Units Expo	sed to Impact		3	7 Benefited/Impac	ted ≥ AFG	32	2 # Prot Units	Benefited/Impac	cted ≥ AFG	3	2 # Prot Units	Benefited/Impa	cted ≥ AFG	:	Harace And Angel And Angel
Contract No. K1	19786CW		# Impacts - NAC o	nly		3	7 Benefited/Non Ir	mpact ≥ AFG	14	1 # Units	Benefited/Non I	mpact ≥ AFG	2:	5 # Units	Benefited/Non I	Impact ≥ AFG	4	<mark>2 #</mark> Units
I205CW_Build_	Wall3to4		# Impacts - SI only	/			0 Total Benefited		46	8 # Ben Units	Total Benefited		57	7 # Ben Units	Total Benefited		7	5 # Ben Units
Wall 4			# Impacts - Both N	IAC & SI			0 Impacted Units 2	≥NRDG	16	6 # Units	Impacted Units	≥NRDG	2	9 # Units	Impacted Units	≥NRDG		32 # Units
HMMH							Benefited Units	≥ NRDG	17	7 # Units	Benefited Units	≥ NRDG	3	4 # Units	Benefited Units	≥ NRDG		43 # Units
Scott Noe	el						Percent of impac	cts ≥ AFG	86%	6 % Ben Units	Percent of impa	icts ≥ AFG	869	% Ben Units	Percent of impa	acts ≥ AFG	89	% 8en Units
8/5/2018	8						Percent of bene	fits ≥ NRDG	37%	6 % NRDG Units	Percent of bene	efits ≥ NRDG	609	% NRDG Units	Percent of bene	efits ≥ NRDG	57	% NRDG Units
							"Cost-Reasonab	ole" ?	Yes	S On Frink	"Cost-Reasonal	ble" ?	Ye	S C	"Cost-Reasona	ble" ?	Ye	IS Du Funt
	1						Surface Area	n Poo	1018	Sq Feel	Surface Area	on Boo	1821	7 Sq Feel	Surface Area	on Roo	212	2 Sa Foot
U.S. Departmen	ni or iransportant	n					Barrier Length	II Nec	1 51		Barrier Length	en Kec	1.51	7 Eget	Barrier Length	en Rec	1.5	
rederdi	Highwa	У					Min Height		10 () Feet	Min Height		12	0 Feet	Min Height		14	0 Feet
Adminis	stration						Max Height		10.0	0 Feet	Max Height		12.	0 Feet	Max Height		14	.0 Feet
							Avg Height		10.0	0 Feet	Avg Height		12.	0 Feet	Avg Height		14	.0 Feet
							Total Barrier Co	st	\$303,660)	Total Barrier Co	st	\$364,34	D	Total Barrier Co	st	\$425,12	:0
				Enter SI Info			Cost/Ben Rec		\$6,60	1	Cost/Ben Rec		\$6,39	2	Cost/Ben Rec		\$5,6	ô8
	FHWA	No. of	Type of I	mpact		No. of	With B	arrier Sound	Levels, Impact and	Benefit	With E	Barrier Sound L	evels, Impact and	Benefit	With	Barrier Sound	Levels, Impact and	Benefit
Receiver ID	Row Act Cat	Dwelling			Impact?	Impacted				No. Double				No. Deserve				No. Designed
D004		Units	Bid Leq > NAC?	Sub. Inc. ?		Units	Leq(dBA)	(db)	Impacted?	NO. Benefited	Leq(dBA)		Impacted?	NO. Benefited	Leq(dBA)	ις (αρ)	Impacted?	NO. Benefited
R224	1 B	1	59				57	2	Damafika d/Mara Juan	4	56	3	Demostra d/Nam Jura	4	56	3	Damafika d/Mara Juan	- 4
R225	_ 1 В	1	04		Impost	1	59	<u> </u>	Benefited/Non-Imp	1		0	Benefited/Impost	1	57	1	Benefited/Innon-Imp	
R220	- 1 D	1	50		impacti	I	57	2	Beneineu/impaci		56	2	Benefited/impact		55	11	Benefited/impact	_ '
R228	- 1 B	1	64				59	5	Benefited/Non-Imp	1	58	6	Benefited/Non-Imp	1	57	7	Benefited/Non-Imp	1
R229	- 1 B	1	71		Impact!	1	63	8	Benefited/Impact	1	60	11	Benefited/Impact	1	59	12	Benefited/Impact	1
R230	1 B	1	59			-	57	2			56	3			55	4		-
R231	1 B	1	64				59	5	Benefited/Non-Imp	1	58	6	Benefited/Non-Imp	1	57	7	Benefited/Non-Imp	1
R232	1 B	1	71		Impact!	1	63	8	Benefited/Impact	1	61	10	Benefited/Impact	1	59	12	Benefited/Impact	1
R233	1 B	1	60				56	4			56	4		_	55	5	Benefited/Non-Imp	1
R234	1 B	1	64				59	5	Benefited/Non-Imp	1	58	6	Benefited/Non-Imp	1	57	7	Benefited/Non-Imp	1
R235	1 B	1	70		Impact!	1	62	8	Benefited/Impact	1	60	10	Benefited/Impact	1	59	11	Benefited/Impact	1
R236	1 B	1	59				55	4			54	5	Benefited/Non-Imp	1	54	5	Benefited/Non-Imp	1
R237	1 B	1	62				57	5	Benefited/Non-Imp	1	56	6	Benefited/Non-Imp	1	55	7	Benefited/Non-Imp	1
R238	і В 1 Р	1	58				55	3	Popofitod/Non Imp	1	54	4	Ponofited/Non Imp	1	53	5	Benefited/Non-Imp	1
R240	- 1 B	1	58				55	3	Denemed/Non-imp		54	4	Denented/Non-Imp		54	4	Denemed/Non-Imp	<u> </u>
R241	1 B	1	63				57	6	Benefited/Non-Imp	1	56	7	Benefited/Non-Imp	1	55	8	Benefited/Non-Imp	1
R242	- 1 B	1	58				55	3	Denonica, non mp		54	4	Denoncourrent mip		53	5	Benefited/Non-Imp	1
R243	1 B	1	63				57	6	Benefited/Non-Imp	1	56	7	Benefited/Non-Imp	1	55	8	Benefited/Non-Imp	1
R244	1 B	1	61				60	1			60	1			59	2		_
R245	1 B	1	63				60	3			59	4			58	5	Benefited/Non-Imp	1
R246	1 B	1	62				59	3	_		58	4			58	4		_
R247	1 B	1	62				59	3	_		58	4	-		57	5	Benefited/Non-Imp	1
R248	1 B	1	62				59	3	-		58	4	-		57	5	Benefited/Non-Imp	1
R249	_ 1 В 	1	60				57	3	-		57	4	-		56	3	Benefited/Non-Imp	
R250	1 B	1	59				57	2			56	3	-		56	3	-	
R252	1 B	1	59				58	1	-		57	2	-		56	3	-	
R253	1 B	1	59		1		57	2	-		56	3	-		54	5	Benefited/Non-Imp	1
R254	1 B	1	59		1		57	2			56	3			55	4		-
R255	1 B	1	59		1		57	2			56	3			56	3		
R256	1 B	1	64		1		61	3			60	4			60	4		
R257	1 B	1	62		1		60	2			59	3			59	3		
R258	1 B	1	61				59	2	_		59	2			59	2		
R259	1 B	1	61				59	2	_		59	2	_		58	3	_	
R260	1 B	1	60				58	2	_		58	2			58	2	_	
R261	1 B	1	59				58	1			57	2	-		57	2	-	
R202		1	59				58	1	-		5/	2	-		5/	2	-	
R203		1	59		1		57	2	-		57	2	-		57	2	Repetited/Non Jan	1
R265	- 1 B	1	61				59	2	-		57	4	-		56	5	Benefited/Non-Imp	
R266	1 B	1	58				57	1	-		56	2	-		55	3	Benemeu/Non-Mp	 '
R267	1 B	1	59		1		58	1			57	2	-		57	2	-	
R268	1 B	1	62		1		60	2	-		59	3	-		59	3	-	
R269	1 B	1	63				61	2			61	2			60	3		
R270	1 B	1	63				62	1			61	2			60	3		
R271	1 B	1	65		Impact!	1	62	3	Impact! w/ Bar		61	4	Impact! w/ Bar		61	4	Impact! w/ Bar	
R272	1 B	1	66		Impact!	1	63	3	Impact! w/ Bar		62	4	Impact! w/ Bar		61	5	Benefited/Impact	1
R273	1 B	1	67]	Impact!	1	64	3	Impact! w/ Bar		63	4	Impact! w/ Bar		63	4	Impact! w/ Bar	

Due is at Information	16-ft Wall		18	-ft Wall	20	-ft Wall	22-ft Wall		
Project Information	Wall 4 HDR 12-2017								
	Average Wtd I.L.	8.0 dB I.L. Avg	Average Wtd I.L.	8.5 dB I.L. Avg	Average Wtd I.L.	8.7 dB I.L. Avg	Average Wtd I.L.	9.2 dB I.L. Avg	
	Maximum I.L.	14 dB I.L. Max	Maximum I.L.	15 dB I.L. Max	Maximum I.L.	16 dB I.L. Max	Maximum I.L.	17 dB I.L. Max	
I205CW Stafford Road to OR213	Benefited/Impacted ≥ AFG	34 # Prot Units	Benefited/Impacted ≥ AFG	35 # Prot Units	Benefited/Impacted ≥ AFG	35 # Prot Units	Benefited/Impacted ≥ AFG	35 # Prot Units	
Contract No. K19786CW	Benefited/Non Impact ≥ AFG	48 # Units	Benefited/Non Impact ≥ AFG	51 # Units	Benefited/Non Impact ≥ AFG	56 # Units	Benefited/Non Impact ≥ AFG	57 # Units	
	Impacted Linits > NRDG	32 # Units	Impacted Linits > NRDG	32 # Units	Impacted Units > NRDG	32 # Units		32 # Bell Offics	
НММН	Benefited Units ≥ NRDG	48 # Units	Benefited Units ≥ NRDG	62 # Units	Benefited Units ≥ NRDG	72 # Units	Benefited Units ≥ NRDG	76 # Units	
Scott Noel	Percent of impacts ≥ AFG	92% % Ben Units	Percent of impacts ≥ AFG	95% % Ben Units	Percent of impacts ≥ AFG	95% % Ben Units	Percent of impacts ≥ AFG	95% % Ben Units	
8/5/2018	Percent of benefits ≥ NRDG	59% % NRDG Units	Percent of benefits ≥ NRDG	72% % NRDG Units	Percent of benefits ≥ NRDG	79% % NRDG Units	Percent of benefits ≥ NRDG	83% % NRDG Units	
	"Cost-Reasonable" ?	Yes							
	Surface Area	24292 Sq Feet	Surface Area	27326 Sq Feet	Surface Area	30361 Sq Feet	Surface Area	33396 Sq Feet	
U.S. Department of transportation	Barrier Length	1 517 Feet	Surface Area/Berr Rec	1 517 Eeet	Barrier Length	1 517 Eeet	Barrier Length		
rederal highway	Min Height	16.0 Feet	Min Height	18.0 Feet	Min Height	20.0 Feet	Min Height	22.0 Feet	
Administration	Max Height	16.0 Feet	Max Height	18.0 Feet	Max Height	20.0 Feet	Max Height	22.0 Feet	
	Avg Height	16.0 Feet	Avg Height	18.0 Feet	Avg Height	20.0 Feet	Avg Height	22.0 Feet	
	Total Barrier Cost	\$485,840	Total Barrier Cost	\$683,150	Total Barrier Cost	\$759,025	Total Barrier Cost	\$834,900	
No	Vith Parrier Sound L	\$5,924.00	With Parrier Sound L	avola Impact and Papafit	With Parrier Sound L	so,341	With Parrier Sound L	\$9,075	
Receiver ID Row FHWA Dwell	ng	evels, impact and benefit		evers, impact and benefit	With Barner Sound E	evels, impact and benefit	With Barrier Sound E	evers, impact and benefit	
Act Cat Unit	s Leq(dBA) IL (db)	Impacted? No. Benefited	Leq(dBA) IL (db)	Impacted? No. Benefited	I Leq(dBA) IL (db)	Impacted? No. Benefited	Leq(dBA) IL (db)	Impacted? No. Benefited	
ST-6 1 C 1	59 4		59 4		58 5	Benefited/Non-Imp 1	58 5	Benefited/Non-Imp 1	
R168 1 B 1	67 1	Impact! w/ Bar							
R169 1 B 1	<u> </u>	Impact: W/ Bar	66 2	Impact! W/ Bar	66 2	Impact! W/ Bar	65 3	Impacti w/ Bar	
R170 I B I R171 I B 1	56 9	Benefited/Impact 1	55 10	Benefited/Impact 1	55 10	Benefited/Impact 1	54 11	Benefited/Impact 1	
R172 1 B 1	58 13	Benefited/Impact 1	56 15	Benefited/Impact 1	56 15	Benefited/Impact 1	55 16	Benefited/Impact 1	
R173 1 B 1	54 6	Benefited/Non-Imp 1	53 7	Benefited/Non-Imp 1	52 8	Benefited/Non-Imp 1	52 8	Benefited/Non-Imp 1	
R174 1 B 1	55 10	Benefited/Impact 1	55 10	Benefited/Impact 1	54 11	Benefited/Impact 1	53 12	Benefited/Impact 1	
R175 1 B 1	57 14	Benefited/Impact 1	56 15	Benefited/Impact 1	55 16	Benefited/Impact 1	54 17	Benefited/Impact 1	
R176 1 B 1	54 6	Benefited/Non-Imp 1	54 6	Benefited/Non-Imp	53 7	Benefited/Non-Imp 1	53 7	Benefited/Non-Imp 1	
R1// 1 B 1	56 9	Benefited/Impact 1	55 10	Benefited/Impact 1	55 10	Benefited/Impact 1	54 11 55 16	Benefited/Impact 1	
R179 1 B 1	54 6	Benefited/Mon-Imp	53 7	Benefited/Mon-Imp	53 7	Benefited/Non-Imp	52 8	Benefited/Mon-Imp	
R180 1 B 1	55 10	Benefited/Impact 1	55 10	Benefited/Impact 1	54 11	Benefited/Impact 1	54 11	Benefited/Impact 1	
R181 1 B 1	57 14	Benefited/Impact 1	56 15	Benefited/Impact 1	55 16	Benefited/Impact 1	55 16	Benefited/Impact 1	
R182 1 B 1	52 7	Benefited/Non-Imp 1	52 7	Benefited/Non-Imp 1	51 8	Benefited/Non-Imp 1	51 8	Benefited/Non-Imp 1	
R183 1 B 1	53 9	Benefited/Non-Imp 1	53 9	Benefited/Non-Imp 1	52 10	Benefited/Non-Imp 1	52 10	Benefited/Non-Imp 1	
R184 1 B 1	53 6	Benefited/Non-Imp 1	52 7	Benefited/Non-Imp 1	<u>52</u> 7	Benefited/Non-Imp 1	51 8	Benefited/Non-Imp 1	
R186 1 B 1	57 6	Benefited/Non-Imp 1	55 10	Benefited/Non-Imp	52 II 55 8	Benefited/Non-Imp 1	55 8	Benefited/Non-Imp 1	
R187 1 B 1	58 9	Benefited/Impact 1	57 10	Benefited/Impact 1	56 11	Benefited/Impact 1	56 11	Benefited/Impact 1	
R188 1 B 1	56 7	Benefited/Non-Imp 1	56 7	Benefited/Non-Imp 1	55 8	Benefited/Non-Imp 1	55 8	Benefited/Non-Imp 1	
R189 1 B 1	58 9	Benefited/Impact 1	57 10	Benefited/Impact 1	56 11	Benefited/Impact 1	56 11	Benefited/Impact 1	
R190 1 B 1	56 7	Benefited/Non-Imp 1	55 8	Benefited/Non-Imp	55 8	Benefited/Non-Imp 1	<u>54</u> 9	Benefited/Non-Imp 1	
R191 1 B 1 P102 1 P 1	57 10	Benefited/Impact 1	56 11	Benefited/Impact 1	56 11	Benefited/Impact 1	55 12	Benefited/Impact 1	
R192 1 B 1	57 10	Benefited/Impact 1	56 11	Benefited/Impact 1	56 1 1	Benefited/Impact 1	55 12	Benefited/Impact 1	
R194 1 B 1	55 6	Benefited/Non-Imp 1	54 7	Benefited/Non-Imp 1	54 7	Benefited/Non-Imp 1	53 8	Benefited/Non-Imp 1	
R195 1 B 1	56 11	Benefited/Impact 1	55 12	Benefited/Impact 1	55 12	Benefited/Impact 1	54 13	Benefited/Impact 1	
R196 1 B 1	55 6	Benefited/Non-Imp 1	54 7	Benefited/Non-Imp 1	54 7	Benefited/Non-Imp 1	53 8	Benefited/Non-Imp 1	
R197 1 B 1	56 11	Benefited/Impact 1	55 12	Benefited/Impact 1	54 13	Benefited/Impact 1	54 13	Benefited/Impact 1	
R198 1 B 1	55 6	Benefited/Incode 1	53 7	Benefited/Impost	53 7	Benefited/Impact	53 7	Benefited/Impact	
R200 1 B 1	54 6	Benefited/Non-Imp 1	53 7	Benefited/Non-Imp 1	53 7	Benefited/Non-Imp 1	52 8	Benefited/Non-Imp 1	
R201 1 B 1	55 10	Benefited/Impact 1	54 11	Benefited/Impact 1	54 11	Benefited/Impact 1	53 12	Benefited/Impact 1	
R202 1 B 1	54 6	Benefited/Non-Imp 1	53 7	Benefited/Non-Imp 1	53 7	Benefited/Non-Imp 1	52 8	Benefited/Non-Imp 1	
R203 1 B 1	55 10	Benefited/Impact 1	54 11	Benefited/Impact 1	54 11	Benefited/Impact 1	53 12	Benefited/Impact 1	
R204 1 B 1	53 6	Benefited/Non-Imp 1	53 6	Benefited/Non-Imp 1	53 6	Benefited/Non-Imp 1	52 7	Benefited/Non-Imp	
R200 1 B 1	50 9	Benefited/Non-Imp 1	54 10	Benefited/Non-Imp 1	53 7	Benefited/Non-Imp	53 1 1	Benefited/Non-Imp 1	
R207 1 B 1	56 9	Benefited/Impact 1	55 10	Benefited/Impact 1	54 11	Benefited/Impact 1	54 11	Benefited/Impact 1	
R208 1 B 1	54 6	Benefited/Non-Imp 1	54 6	Benefited/Non-Imp 1	53 7	Benefited/Non-Imp 1	53 7	Benefited/Non-Imp	
R209 1 B 1	56 9	Benefited/Impact 1	55 10	Benefited/Impact 1	54 11	Benefited/Impact 1	54 11	Benefited/Impact 1	
R210 1 B 1	58 9	Benefited/Impact 1	57 10	Benefited/Impact 1	57 10	Benefited/Impact 1	57 10	Benefited/Impact 1	
R211 1 B 1	58 9	Benefited/Impact 1	57 10	Benefited/Impact 1	57 10	Benefited/Impact 1	57 10	Benefited/Impact 1	
R212 1 B 1	55 5	Benefited/Non-Imp 1	55 5	Benefited/Non-Imp 1	55 5	Benefited/Non-Imp	54 6	Benefited/Non-Imp	
R213 1 B 1 R214 1 R 4	55 5	Benefited/Non-Imp	54 6	Benefited/Mon-Imp	50 10 54 6	Benefited/Mon-Imp	50 10 54 6	Benefited/Mon-Imp	
R215 1 B 1	56 9	Benefited/Impact 1	55 10	Benefited/Impact 1	55 10	Benefited/Impact 1	54 11	Benefited/Impact 1	
R216 1 B 1	57 9	Benefited/Impact 1	57 9	Benefited/Impact 1	56 10	Benefited/Impact 1	56 10	Benefited/Impact 1	
R217 1 B 1	58 9	Benefited/Impact 1	57 10	Benefited/Impact 1	57 10	Benefited/Impact 1	57 10	Benefited/Impact 1	
R218 1 B 1	56 4		56 4		56 4		56 4		
R219 1 B 1	57 7	Benefited/Non-Imp 1	57 7	Benefited/Non-Imp 1	57 7	Benefited/Non-Imp 1	56 8	Benefited/Non-Imp 1	
R220 1 B 1	56 4		56 4		55 5	Benefited/Non-Imp	55 5	Benefited/Non-Imp	
R222 1 B 1	58 8	Benefited/Impact 1	58 8	Benefited/Impact	58 9	Benefited/Impact 1		Benefited/Impact 1	
R223 1 B 1	58 8	Benefited/Impact 1	58 8	Benefited/Impact 1	58 8	Benefited/Impact 1	58 8	Benefited/Impact 1	

Project Information	16-	ft Wall	18-ft Wall 20-ft Wall		22-ft Wall			
	Wall 4 HDR 12-2017		Wall 4 HDR 12-2017	7	Wall 4 HDR 12-2017	,	Wall 4 HDR 12-2017	
	Average Wtd I.L.	8.0 dB I.L. Avg	Average Wtd I.L.	8.5 dB I.L. Avg	Average Wtd I.L.	8.7 dB I.L. Avg	Average Wtd I.L.	9.2 dB I.L. Avg
	Maximum I.L.	14 dB I.L. Max	Maximum I.L.	15 dB I.L. Max	Maximum I.L.	16 dB I.L. Max	Maximum I.L.	17 dB I.L. Max
I205CW Stafford Road to OR213	Benefited/Impacted ≥ AFG	34 # Prot Units	Benefited/Impacted ≥ AFG	35 # Prot Units	Benefited/Impacted ≥ AFG	35 # Prot Units	Benefited/Impacted ≥ AFG	35 # Prot Units
Contract No. K19786CW	Benefited/Non Impact ≥ AFG	48 # Units	Benefited/Non Impact ≥ AFG	51 # Units	Benefited/Non Impact ≥ AFG	56 # Units	Benefited/Non Impact ≥ AFG	57 # Units
I205CW_Build_Wall3to4	Total Benefited	82 # Ben Units	Total Benefited	86 # Ben Units	Total Benefited	91 # Ben Units	Total Benefited	92 # Ben Units
Wall 4	Impacted Units ≥ NRDG	32 # Units	Impacted Units ≥ NRDG	32 # Units	Impacted Units ≥ NRDG	32 # Units	Impacted Units ≥ NRDG	32 # Units
НММН	Benefited Units ≥ NRDG	48 # Units	Benefited Units ≥ NRDG	62 # Units	Benefited Units ≥ NRDG	72 # Units	Benefited Units ≥ NRDG	76 # Units
Scott Noel	Percent of impacts ≥ AFG	92% % Ben Units	Percent of impacts ≥ AFG	95% % Ben Units	Percent of impacts ≥ AFG	95% % Ben Units	Percent of impacts ≥ AFG	95% % Ben Units
8/5/2018	Percent of benefits ≥ NRDG	59% % NRDG Units	Percent of benefits ≥ NRDG	72% % NRDG Units	Percent of benefits ≥ NRDG	79% % NRDG Units	Percent of benefits ≥ NRDG	83% % NRDG Units
	"Cost-Reasonable" ?	Yes	"Cost-Reasonable" ?	Yes	"Cost-Reasonable" ?	Yes	"Cost-Reasonable" ?	Yes
	Surface Area	24292 Sg Feet	Surface Area	27326 Sg Feet	Surface Area	30361 Sg Feet	Surface Area	33396 Sg Feet
U.S. Department of Transportation	Surface Area/Ben Rec	296 Sg Feet	Surface Area/Ben Rec	318 Sg Feet	Surface Area/Ben Rec	334 Sq Feet	Surface Area/Ben Rec	363 Sg Feet
Fodoral Highway	Barrier Length	1 517 Feet	Barrier Length	1.517 Feet	Barrier Length	1 517 Feet	Barrier Length	1 517 Feet
rederar nighway	Min Height	16.0 Feet	Min Height	18.0 Feet	Min Height	20.0 Feet	Min Height	22.0 Feet
Administration	Max Height	16.0 Feet	Max Height	18.0 Feet	Max Height	20.0 Feet	Max Height	22.0 Feet
	Ava Height	16.0 Feet	Ava Height	18.0 Feet	Ava Height	20.0 Feet	Ava Height	22.0 Feet
	Total Barrier Cost	\$485 840	Total Barrier Cost	\$683 150	Total Barrier Cost	\$759.025	Total Barrier Cost	\$834 900
	Cost/Ben Rec	\$5,924,88	Cost/Ben Rec	\$7.944	Cost/Ben Rec	\$8.341	Cost/Ben Rec	\$9 075
No. of	With Barrior Sound L	vols Impact and Bonofit	With Barrior Sound I	ovols Impact and Bonofit	With Barrier Sound I	ovols Impact and Bonofit	With Barrior Sound L	avole Impact and Bonofit
Receiver ID Row FHWA Dwelling		evers, impact and benefit	with Barner Sound I	Levels, impact and benefit	With Barrier Sound L	evers, impact and benefit	With Barrier Sound Le	ers, impact and benefit
Act Cat Units	leg(dBA) IL(db)	Impacted? No. Benefited	Leg(dBA) IL (db)	Impacted? No. Benefited	Leg(dBA) IL (db)	Impacted? No. Benefited	Leg(dBA) IL (db)	Impacted? No. Benefited
R224 I B I	55 4		54 5	Benefited/Non-Imp	54 5	Benefited/Non-Imp	53 6	Benefited/Non-Imp
R225 1 B 1	57 7	Benefited/Non-Imp	56 8	Benefited/Non-Imp	55 9	Benefited/Non-Imp	55 9	Benefited/Non-Imp
R226 1 B 1	58 13	Benefited/Impact	5/ 14	Benefited/Impact	5/ 14	Benefited/Impact	56 15	Benefited/impact
R227 1 B 1	54 5	Benefited/Non-Imp	54 5	Benefited/Non-Imp 1	53 6	Benefited/Non-Imp 1	53 6	Benefited/Non-Imp 1
R228 1 B 1	56 8	Benefited/Non-Imp	55 9	Benefited/Non-Imp 1	55 9	Benefited/Non-Imp	54 10	Benefited/Non-Imp 1
R229 1 B 1	58 13	Benefited/Impact 1	57 14	Benefited/Impact 1	56 15	Benefited/Impact 1	55 16	Benefited/Impact 1
R230 1 B 1	55 4		54 5	Benefited/Non-Imp 1	53 6	Benefited/Non-Imp 1	53 6	Benefited/Non-Imp 1
R231 1 B 1	56 8	Benefited/Non-Imp 1	56 8	Benefited/Non-Imp 1	55 9	Benefited/Non-Imp 1	54 10	Benefited/Non-Imp 1
R232 1 B 1	58 13	Benefited/Impact 1	57 14	Benefited/Impact 1	56 15	Benefited/Impact 1	55 16	Benefited/Impact 1
R233 1 B 1	54 6	Benefited/Non-Imp 1	53 7	Benefited/Non-Imp 1	53 7	Benefited/Non-Imp 1	52 8	Benefited/Non-Imp 1
R234 1 B 1	56 8	Benefited/Non-Imp 1	55 9	Benefited/Non-Imp 1	54 10	Benefited/Non-Imp 1	54 10	Benefited/Non-Imp 1
R235 1 B 1	57 13	Benefited/Impact 1	56 14	Benefited/Impact 1	56 14	Benefited/Impact 1	55 15	Benefited/Impact 1
R236 1 B 1	53 6	Benefited/Non-Imp 1	52 7	Benefited/Non-Imp 1	51 8	Benefited/Non-Imp 1	51 8	Benefited/Non-Imp 1
R237 1 B 1	54 8	Benefited/Non-Imp 1	53 9	Benefited/Non-Imp 1	53 9	Benefited/Non-Imp 1	52 10	Benefited/Non-Imp 1
R238 1 B 1	53 5	Benefited/Non-Imp	52 6	Benefited/Non-Imp 1	51 7	Benefited/Non-Imp 1	51 7	Benefited/Non-Imp 1
R239 1 B 1	54 8	Benefited/Non-Imp 1	53 9	Benefited/Non-Imp 1	52 10	Benefited/Non-Imp 1	52 10	Benefited/Non-Imp 1
R240 1 B 1	53 5	Benefited/Non-Imp 1	52 6	Benefited/Non-Imp 1	52 6	Benefited/Non-Imp 1	51 7	Benefited/Non-Imp 1
R241 1 B 1	54 9	Benefited/Non-Imp 1	53 10	Benefited/Non-Imp 1	52 11	Benefited/Non-Imp 1	52 11	Benefited/Non-Imp 1
R242 1 B 1	52 6	Benefited/Non-Imp	52 6	Benefited/Non-Imp 1	51 7	Benefited/Non-Imp	51 7	Benefited/Non-Imp
R243 1 B 1	54 9	Benefited/Non-Imp	53 10	Benefited/Non-Imp 1	52 11	Benefited/Non-Imp	52 11	Benefited/Non-Imp
R244 1 B 1	58 3	Bononcourterrinp	58 3	DenentearNon mp	57 4	Denonted/Non-Imp	56 5	Benefited/Non-Imp
R245 1 B 1	57 6	Repetited/Non-Imp	57 6	Benefited/Non-Imp	56 7	Benefited/Non-Imp	55 8	Benefited/Non-Imp
	57 5	Benefited/Non-Imp	56 6	Benefited/Non-Imp	55 7	Benefited/Non-Imp	55 7	Repetited/Non-Imp
	57 5	Benefited/Non-Imp	50 8	Benefited/Non-Imp	55 7	Benefited/Non-Imp	55 7	Benefited/Non-Imp
R24/ I B I	56 6	Denefited/Non-Imp	56 6	Benefited/Non-Imp	55 7	Denefited/Non-Imp	54 8	Demefited/Non-Imp
R240 I B I	56 6	Denefited/Non-Imp	55 7	Benefited/Non-Imp	55 7	Denefited/Non-Imp	54 8	Demefited/Non-Imp
R249 I B I	55 6	Benefited/Non-Imp	55 6	Benefited/Non-Imp	54 7	Benefited/Non-Imp	53 8	Benefited/Non-Imp
R250 1 B 1	55 5	Benefited/Non-Imp	54 6	Benefited/Non-Imp	54 6	Benefited/Non-Imp	53 7	Benefited/Non-Imp
	55 4	-	54 5	Benefited/Ivon-Imp	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Benefited/Non-Imp	D4 5	Denefited/Non-Imp 1
K202 1 B 1	55 4		55 4	Deve Charles In	54 5	Benefited/Ivon-Imp 1	54 5	Benefited/Non-Imp 1
R203 1 B 1	54 5	Benefited/Non-Imp 1	53 6	Benefited/Non-Imp	53 6	Benefited/Non-Imp	52 7	Benefited/Non-Imp 1
R254 1 B 1	54 5	Benefited/Non-Imp	54 5	Benefited/Non-Imp 1	54 5	Benefited/Non-Imp 1	53 6	Benefited/Non-Imp
R255 1 B 1	55 4	_	55 4		54 5	Benefited/Non-Imp	54 5	Benefited/Non-Imp 1
R256 1 B 1	60 4	_	60 4	_	59 5	Benefited/Non-Imp 1	59 5	Benefited/Non-Imp
R257 1 B 1	59 3		59 3	_	59 3	_	59 3	1
R258 1 B 1	58 3		58 3		58 3		58 3	
R259 1 B 1	58 3		58 3		58 3		58 3	
R260 1 B 1	57 3		57 3		57 3		57 3	
R261 1 B 1	57 2		57 2		57 2		57 2	
R262 1 B 1	57 2		57 2		57 2		56 3	
R263 1 B 1	57 2		56 3		56 3		56 3	4
R264 1 B 1	55 6	Benefited/Non-Imp 1	54 7	Benefited/Non-Imp 1	53 8	Benefited/Non-Imp 1	53 8	Benefited/Non-Imp 1
R265 1 B 1	55 6	Benefited/Non-Imp 1	54 7	Benefited/Non-Imp 1	53 8	Benefited/Non-Imp 1	53 8	Benefited/Non-Imp 1
R266 1 B 1	55 3		54 4		54 4		54 4	
R267 1 B 1	57 2		56 3		56 3	-	56 3	
R268 1 B 1	58 4		58 4	-	58 4		58 4	i i i i i i i i i i i i i i i i i i i
R269 1 B 1	60 3		59 4		59 4	-	59 4	1
R270 1 B 1	60 3		60 3		59 4	-	59 4	1
R271 1 B 1	60 5	Benefited/Impact 1	60 5	Benefited/Impact 1	60 5	Benefited/Impact 1	60 5	Benefited/Impact 1
R272 1 B 1	61 5	Benefited/Impact 1	61 5	Benefited/Impact 1	61 5	Benefited/Impact 1	60 6	Benefited/Impact 1
R273 1 P 1	63 4	Impact w/ Bar	62 5	Benefited/Impact 1	62 5	Benefited/Impact 1	62 5	Benefited/Impact 1
	03 4	impact: w/ bai	02 3	Denenteu/Impact	02 3	Denenteu/impact	02 3	Denented/impact

					24-ft Wall						
	Project Inform	natio	n		Wall	4 HDR 12-2017					
					Average Wtd I	L	9.5	dB I.L. Ava			
					Maximum I.L.		17	dB I.L. Max			
	I205CW Stafford Roa	ad to C	OR213		Benefited/Impa	cted ≥ AFG	35	# Prot Units			
	Contract No. K1	9786C	W		Benefited/Non	Impact ≥ AFG	59	# Units			
	I205CW_Build_V	Vall3to	54		Total Benefited	> NBDC	94	# Ben Units			
	HMMH				Renefited Units	≥ NRDG	32	# Units			
	Scott Noe	el			Percent of impa	acts ≥ AFG	95%	% Ben Units			
	8/5/2018				Percent of ben	efits ≥ NRDG	83%	% NRDG Units			
					"Cost-Reasona	ible" ?	Yes				
					Surface Area		36432	Sq Feet			
	U.S. Departmen	t of Iro	insportati	on	Surface Area/B	en Rec	388	Sq Feet			
	rederal	HIG	inwa	У	Min Height		24.0	Feet			
	Adminis	trat	ion		Max Height		24.0	Feet			
					Avg Height		24.0	Feet			
					Total Barrier C	ost	\$910,800				
					Cost/Ben Rec		\$9,689				
	Possiver ID	Pow	FHWA	No. of	With E	Barrier Sound Le	evels, Impact and	Benefit			
	Receiver ID	ROW	Act Cat	Unite	Leg(dBA)	IL (db)	Impacted?	No. Benefited			
ST-6		1	С	1	58	5	Benefited/Non-Imp	1			
R168		1	В	1	66	2	Impact! w/ Bar	·			
R169		1	В	1	65	3	Impact! w/ Bar				
R170		1	В	1	52	8	Benefited/Non-Imp	1			
R171		1	В	1	53	12	Benefited/Impact	1			
R172		1	В	1	54	17	Benefited/Impact	1			
R173		1	В	1	51	9	Benefited/Non-Imp	1			
R1/4		1	В	1	53	12	Benefited/Impact	1			
R175		1	B	1	52	<u> </u>	Benefited/Impact	1			
R170		1	B	1	53	12	Benefited/Impact	1			
R178		1	В	1	54	17	Benefited/Impact	1			
R179		1	В	1	52	8	Benefited/Non-Imp	1			
R180		1	В	1	53	12	Benefited/Impact	1			
R181		1	В	1	54	17	Benefited/Impact	1			
R182		1	В	1	50	9	Benefited/Non-Imp	1			
R183		1	В	1	51	11	Benefited/Non-Imp	1			
R184		1	В	1	51	<u>8</u> 12	Benefited/Non-Imp	1			
R186		. 1	B	1	54	9	Benefited/Non-Imp	1			
R187		1	В	1	55	12	Benefited/Impact	1			
R188		1	В	1	54	9	Benefited/Non-Imp	1			
R189		1	В	1	55	12	Benefited/Impact	1			
R190		1	В	1	54	9	Benefited/Non-Imp	1			
R191		1	В	1	55	12	Benefited/Impact	1			
R192		1	В	1	54	9 12	Benefited/Ivon-Imp	1			
R193		1	B	1	53	8	Benefited/Non-Imp	1			
R195		1	В	1	53	14	Benefited/Impact	1			
R196		1	В	1	53	8	Benefited/Non-Imp	1			
R197		1	В	1	53	14	Benefited/Impact	1			
R198		1	В	1	52	8	Benefited/Non-Imp	1			
R199		. 1	В	1	53	13	Benefited/Impact	1			
R200		1	В	1	52	8	Benefited/Non-Imp	1			
R201		1	В	1	53	12	Benefited/Impact	1			
R202		1	B	1	52	12	Benefited/Impact	1			
R204		1	B	1	52	7	Benefited/Non-Imp	1			
R205		1	В	1	53	11	Benefited/Non-Imp	1			
R206		1	В	1	53	7	Benefited/Non-Imp	1			
R207		1	В	1	54	11	Benefited/Impact	1			
R208		1	В	1	53	7	Benefited/Non-Imp	1			
R209		1	В	1	54	11	Benefited/Impact	1			
R210		1	В	1	56	11	Benefited/Impact	1			
R211		1	В	1	56	<u> </u>	Benefited/Impact	1			
R212		1	B	1	54	11	Benefited/Impact	1			
R214		1	В	1	54	6	Benefited/Non-Imp	, 1			
R215		1	В	1	54	11	Benefited/Impact	1			
R216		1	В	1	56	10	Benefited/Impact	1			
R217		1	В	1	56	11	Benefited/Impact	1			
R218		1	В	1	55	5	Benefited/Non-Imp	1			
R219		1	В	1	56	8	Benefited/Non-Imp	1			
R220		1	В	1	55	5	Benefited/Non-Imp	1			
R221		1	B	1	50	9	Benefited/Impact	1			
R223		1	B	1	57	9	Benefited/Impact	1			

_Optimization.xlsx Summary

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						04	()A/-11	
	Project Inform	natio	n			24-	ft wall	
		natio	••		Wall 4	4 HDR 12-2017		
-					Average Wtd I.I	L.	9.5	dB I.L. Avg
					Maximum I.L.		17	dB I.L. Max
	I205CW Stafford Roa	ad to	OR213		Benefited/Impag	cted ≥ AFG	35	# Prot Units
	Contract No. K1	9786C	w		Benefited/Non I	mpact ≥ AFG	59	# Units
	1205CW Build \	Nall3t	o4		Total Benefited		94	# Ben Units
	Wall 4				Impacted Units	≥NRDG	32	# Units
	НММН				Benefited Units	≥ NRDG	78	# I Inits
	Soott Nor				Porcent of impo		05%	# Onits % Ron Unite
	9/5/2019	51			Percent of Impa		90 /0	V NDDC Units
	0/5/2010)			Percent of bene		0370	% NRDG UNIts
					Cost-Reasonal	DIE ?	res 00400	0
					Surface Area	D.	36432	Sq Feet
	U.S. Departmen	of of Tro	ansportati	on	Surface Area/Be	en Rec	388	Sq Feet
	Federal	Hic	ihwa	V	Barrier Length		1,517	Feet
	Adminis	trai	ion	·	Min Height		24.0	Feet
	Adminis	il u			Max Height		24.0	Feet
					Avg Height		24.0	Feet
					Total Barrier Co	ost	\$910,800	
					Cost/Ben Rec		\$9,689	
				No. of	With B	arrier Sound Le	evels, Impact and	Benefit
	Receiver ID	Row		Dwelling			· •	
			ALL CAL	Units	Leq(dBA)	IL (db)	Impacted?	No. Benefited
R224		1	В	1	53	6	Benefited/Non-Imp	1
R225		1	B	1	54	10	Benefited/Non-Imp	1
R226		 1	B	1	55	16	Benefited/Impact	1
D227		- 1	B	1	50	7	Benefited/Mon.lmn	1
R227		- /	D	1	52	1	Demetited/Non-Imp	1
R228		•]	В	1	53	11	Benefited/Non-Imp	1
R229		- 1	В	1	54	17	Benefited/Impact	1
R230		1	В	1	52	7	Benefited/Non-Imp	1
R231		1	В	1	54	10	Benefited/Non-Imp	1
R232		1	В	1	55	16	Benefited/Impact	1
R233		1	В	1	52	8	Benefited/Non-Imp	1
R234		1	В	1	53	11	Benefited/Non-Imp	1
R235		1	В	1	54	16	Benefited/Impact	1
R236		 1	B	1	50	9	Benefited/Non-Imp	1
R237		 1	B	1	52	10	Benefited/Non-Imp	1
R237		- ¦	D	1	52	0	Benefited/Non-Imp	1
R238		- !	В		50	8	Benefited/Non-Imp	
R239		- !	В	1	51	11	Benefited/INon-Imp	1
R240		1	В	1	51	7	Benefited/Non-Imp	1
R241		1	В	1	51	12	Benefited/Non-Imp	1
R242		1	В	1	50	8	Benefited/Non-Imp	1
R243		1	В	1	51	12	Benefited/Non-Imp	1
R244		1	В	1	56	5	Benefited/Non-Imp	1
R245		1	В	1	55	8	Benefited/Non-Imp	1
R246		1	В	1	54	8	Benefited/Non-Imp	1
R247		1	B	1	54	8	Benefited/Non-Imp	1
R248		 1	B	1	53	9	Benefited/Non-Imp	1
R240		- 1	B	1	53	8	Benefited/Non-Imp	1
D250		- 1	B	1	53	7	Benefited/Non-Imp	1
R250		- ¦		1	53	^/	Denefited/Non-Imp	1
R201			В		53	0	Demented/Ivon-Imp	
R252		- 1	В	1	54	5	Benefited/Non-Imp	1
R253		1	В	1	52	1	Benefited/Non-Imp	1
R254		1	В	1	53	6	Benefited/Non-Imp	1
R255		1	В	1	54	5	Benefited/Non-Imp	1
R256		1	В	1	59	5	Benefited/Non-Imp	1
R257		1	В	1	58	4		
R258		1	В	1	58	3		
R259		1	В	1	58	3		
R260		1	В	1	57	3	-	
R261		 1	B	1	57	2	-	
R262		 1	B	1	56	3	-	
D262			D	4	50	3	-	
R203			В		00	3	Demofile all block	
R264		- 1	В	1	52	9	Benefited/Non-Imp	1
R265		1	В	1	52	9	Benefited/Non-Imp	1
R266		1	В	1	53	5	Benefited/Non-Imp	1
R267		1	В	1	56	3		
R268		1	В	1	58	4		
R269		1	В	1	59	4		
R270		1	В	1	59	4	-	
R271		1	B	1	60	5	Renefited/Impact	1
P272		- 1	D	1	60	5	Benefited/Impact	1
R2/2			D	4	00	0	Benefited/Impact	1
R2/3		1	в		62	5	Benefited/impact	i i

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3asic Noise Barrier Optimization Tool 8/5/2018												
I205CW Stafford Road to OR213												
	401	40	44		401	201	201	24	Unite			
	10	12	14	16	18	20	22	24	Units			
Average Wtd I.L. (benefited)			1						dBA			
Maximum I.L.	0	0	0	0	0	0	0	0	dBA			
Benefited/Impacted ≥ AFG	0	0	0	0	0	0	0	0	# of dwelling units			
Benefited/Non Impact ≥ AFG	0	0	0	0	0	0	0	0	# of dwelling units			
Total Benefited	0	0	0	0	0	0	0	0	# of dwelling units			
Impacted Units ≥ NRDG	0	0	0	0	0	0	0	0	# of dwelling units			
Benefited Units ≥ NRDG	0	0	0	0	0	0	0	0	# of dwelling units			
Percent of impacts ≥ AFG	0%	0%	0%	0%	0%	0%	0%	0%	%			
Percent of benefits ≥ NRDG									%			
"Cost-Reasonable" ?												
Surface Area	15,503	18,603	21,699	24,799	27,906	31,005	34,102	37,203	sq-feet			
Surface Area/Ben Rec									sq-ft / ben rec			
Barrier Length	1,550	1,550	1,550	1,550	1,550	1,550	1,550	1,550	ft			
Min Height	10	12	14	16	18	20	22	24	ft			
Max Height	10	12	14	16	18	20	22	24	ft			
Avg Height	10	12	14	16	18	20	22	24	ft			
Total Barrier Cost	310,060	372,060	433,980	619,975	697,650	775,125	852,550	930,075	\$			
Cost/Ben Rec									\$ / ben rec			
Effectiveness/Cost Metric (E/C)	- 1	-	- 1	-	-	-		-				

ODOT Acoustical Feasibilty Goal (dBA)	5
ODOT Acoustical Feasibilty Goal (%)	51%
ODOT Noise Reduction Design Goal (dBA)	7
ODOT Noise Reduction Design Goal (%)	1%



11/10/2018

I205CW Stafford Road to OR213												
Wall 6a												
	10'	12'	14'	16'	18'	20'	22'	24'	Units			
Average Wtd I.L. (benefited)	6.2	6.6	7	7.5	7.8	8.2	8.4	8.8	dBA			
Maximum I.L.	10	11	11	12	13	13	13	14	dBA			
Benefited/Impacted ≥ AFG	39	43	45	47	48	52	53	53	# of dwelling units			
Benefited/Non Impact ≥ AFG	15	24	29	35	37	40	44	48	# of dwelling units			
Total Benefited	54	67	74	82	85	92	97	101	# of dwelling units			
Impacted Units ≥ NRDG	21	30	39	44	46	48	51	52	# of dwelling units			
Benefited Units ≥ NRDG	21	32	44	55	65	74	80	83	# of dwelling units			
Percent of impacts ≥ AFG	71%	78%	82%	85%	87%	95%	96%	96%	%			
Percent of benefits ≥ NRDG	39%	48%	59%	67%	76%	80%	82%	82%	%			
"Cost-Reasonable" ?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes				
Surface Area	37,066	44,469	51,887	59,294	66,707	74,119	81,538	88,958	sq-feet			
Surface Area/Ben Rec	686	664	701	723	785	806	841	881	sq-ft / ben rec			
Barrier Length	3,697	3,697	3,697	3,697	3,697	3,697	3,697	3,697	ft			
Min Height	10	12	14	16	18	20	22	24	ft			
Max Height	10	12	14	16	18	20	22	24	ft			
Avg Height	10	12	14	16	18	20	22	24	ft			
Total Barrier Cost	741,320	889,380	1,037,740	1,482,350	1,667,675	1,852,975	2,038,450	2,223,950	\$			
Cost/Ben Rec	13,728	13,274	14,024	18,077	19,620	20,141	21,015	22,019	\$ / ben rec			
Effectiveness/Cost Metric (E/C)	10.1	14.9	18.4	20.1	19.4	19.7	20.1	19.5				

ODOT Acoustical Feasibilty Goal (dBA)	5
ODOT Acoustical Feasibilty Goal (%)	51%
ODOT Noise Reduction Design Goal (dBA)	7
ODOT Noise Reduction Design Goal (%)	1%

Draigat Ir	nformation			No Barrier A	Analysis			10	-ft Wall			12-	-ft Wall			1	4-ft Wall	
Project in	nformation			No Barrier			Wall	6a 2018-11			W	all 6a 2018-11			Wa	all 6a 2018-11		
							Average Wtd I.L	(benefited)	6.	2 dB I.L. Avg	Average Wtd I	.L.	6.	6 dB I.L. Avg	Average Wtd I.L		1	7.0 dB I.L. Avg
							Maximum I.L.		1	0 dB I.L. Max	Maximum I.L.		1	1 dB I.L. Max	Maximum I.L.			11 dB I.L. Max
I205CW Staffor	rd Road to OR213		Total Units Expos	sed to Impact		55	Benefited/Impac	ted ≥ AFG	3	9 # Prot Units	Benefited/Impa	acted ≥ AFG	4	3 # Prot Units	Benefited/Impac	ted ≥ AFG		45 # Prot Units
Contract N	lo. K19786CW		# Impacts - NAC o	nly		55	5 Benefited/Non Ir	npact ≥ AFG	1	5 # Units	Benefited/Non	Impact ≥ AFG	2	4 # Units	Benefited/Non Ir	mpact ≥ AFG		29 # Units
1205CW_BU	all 6a		# Impacts - SI only			(I otal Benefited		5	4 # Ben Units	Innacted Units		<u> </u>	# Ben Units	I otal Benefited			74 # Ben Units
H	ап ба ММН		# Impacts - Botti N	AC & SI		(Benefited Units	≥ NRDG	2	1 # Units	Repetited Units	s ≥ NRDG	3	2 # I Inits	Renefited Units	≥ NRDG		44 # Units
Sco	ott Noel						Percent of impac	cts ≥ AFG	719	% Ben Units	Percent of imp	acts ≥ AFG	789	% 8 Ben Units	Percent of impa	cts ≥ AFG	8	2% % Ben Units
11/1	10/2018						Percent of benef	fits ≥ NRDG	39%	6 % NRDG Units	Percent of ben	nefits ≥ NRDG	489	% NRDG Units	Percent of bene	fits ≥ NRDG	5	9% % NRDG Units
							"Cost-Reasonab	le" ?	Ye	s	"Cost-Reasona	able" ?	Ye	S	"Cost-Reasonab	ole" ?	Y	es
							Surface Area		3706	6 Sq Feet	Surface Area		4446	9 Sq Feet	Surface Area		518	87 Sq Feet
U.S. Depa	artment of Transporte	ation					Surface Area/Be	en Rec	68	6 Sq Feet	Surface Area/E	Ben Rec	66	4 Sq Feet	Surface Area/Be	∋n Rec	7	01 Sq Feet
Fede	ral Highwo	ay					Barrier Length		3,69	7 Feet	Barrier Length		3,69	7 Feet	Barrier Length		3,6	97 Feet
Adm	inistration						Max Height		10.		Max Height		12.	0 Feel	Max Height		14	1.0 Feel
							Ava Height		10.	0 Feet	Ava Height	·	12.	0 Feet	Ava Height		14	4.0 Feet
							Total Barrier Cos	st	\$741,32	0	Total Barrier C	ost	\$889,380	0	Total Barrier Cos	st	\$1,037,7	40
				Enter SI Info			Cost/Ben Rec		\$13,72	8	Cost/Ben Rec	•	\$13,27	4	Cost/Ben Rec		\$14,0)24
	FHW	Δ No. of	Type of I	mpact		NO. OT	With B	Barrier Sound L	evels, Impact and	l Benefit	With	Barrier Sound Lo	evels, Impact and	Benefit	With	Barrier Sound	Levels, Impact and	d Benefit
Receiver ID	Row Act C	Dwelling	Rid Log > NAC2	Sub Inc.2	Impact?	Impacted		II. (db)	luun aata dQ	No Popofitod		II. (db)	luun aata dQ	No Bonofitad		II. (db)	luur a at a dO	No. Reposited
ST 0	4	Units	Blu Leq > NAC?	Sub. Inc. ?	lun a still	Units	Leq(dBA)		Impacted ?	NO. Denenteu	Leq(dBA)	(db)	Impacted?	No. Denented	Leq(dBA)		Impacted?	No. Denenteu
51-9 1 T 2/ST 10	I B	1	64		Impacu	1	<u>62</u>	5	Repetited/Non-Imp	1	6Z 58	3	Repetited/Non-Imp	1	0Z 58	3	Benefited/Non-Imp	1
R306	1 B	1	65		Impact	1	62	3	Impactl w/ Bar	'	61	4	ImpactI w/ Bar	1	61	4	Impactl w/ Bar	· ·
R307	1 B	1	64		inpuot.	•	60	4	impuot. W Dur		60	4	impuot. II/ Dui		59	5	Benefited/Non-Imp	1
R308	1 B	1	64		I		60	4			59	5	Benefited/Non-Imp	1	59	5	Benefited/Non-Imp	1
R309	1 B	1	64		L		60	4			59	5	Benefited/Non-Imp	1	59	5	Benefited/Non-Imp	1
R310	1 B	1	65		Impact!	1	60	5	Benefited/Impact	1	59	6	Benefited/Impact	1	59	6	Benefited/Impact	1
R311	1 B	1	65		Impact!	1	60	5	Benefited/Impact	1	59	6	Benefited/Impact	1	59	6	Benefited/Impact	1
R312	1 B	1	64				60	4	Panafitad/Nan Imn	1	59	5	Benefited/Non-Imp	1	58	6	Benefited/Non-Imp	1
R314	1 B	1	63				59		Benefited/Non-Imp	'	58	5	Benefited/Non-Imp	1	58	5	Benefited/Non-Imp	1
R315	1 В	1	64				59	5	Benefited/Non-Imp	1	59	5	Benefited/Non-Imp	1	58	6	Benefited/Non-Imp	1
R316	1 B	1	64				59	5	Benefited/Non-Imp	1	59	5	Benefited/Non-Imp	1	58	6	Benefited/Non-Imp	1
R317	1 B	1	64				60	4		-	59	5	Benefited/Non-Imp	1	59	5	Benefited/Non-Imp	1
R318	1 B	1	64				60	4		_	59	5	Benefited/Non-Imp	1	58	6	Benefited/Non-Imp	1
R319	1 B	1	64				59	5	Benefited/Non-Imp	1	59	5	Benefited/Non-Imp	1	58	6	Benefited/Non-Imp	1
R320	1 B	1	64				59	5	Benefited/Non-Imp	1	59	5	Benefited/Non-Imp	1	58	6	Benefited/Non-Imp	1
R321	1 B	1	64		lucus a sél	4	59	5	Benefited/Non-Imp	1	59	5	Benefited/Non-Imp	1	58	6	Benefited/Non-Imp	1
R322 R323	1 B	1	68		Impact	1	59 64	6 4	Impact w/ Bar	• ·	59 62	6	Benefited/Impact	1	58 61	7	Benefited/Impact	1
R324	1 B	1	68		Impact	1	63	5	Renefited/Impact	1	62	6	Benefited/Impact	1	60	8	Benefited/Impact	1
R325	1 B	1	67		Impact!	1	61	6	Benefited/Impact	1	60	7	Benefited/Impact	1	59	8	Benefited/Impact	1
R326	1 B	1	67		Impact!	1	61	6	Benefited/Impact	1	60	7	Benefited/Impact	1	60	7	Benefited/Impact	1
R327	1 B	1	68		Impact!	1	61	7	Benefited/Impact	1	60	8	Benefited/Impact	1	59	9	Benefited/Impact	1
R328	1 B	1	68		Impact!	1	60	8	Benefited/Impact	1	59	9	Benefited/Impact	1	59	9	Benefited/Impact	1
R329	1 B	1	68		Impact!	1	60	8	Benefited/Impact	1	60	8	Benefited/Impact	1	59	9	Benefited/Impact	1
R330	1 B	1	68		Impact!	1	60	8	Benefited/Impact	1	59	9	Benefited/Impact	1	59	9	Benefited/Impact	1
R331 R332	I В	1	64				61	2	-		60	3			60	4	-	
R333	<u> </u>	1	65		Impact!	1	63	2	Impact! w/ Bar		62	3	Impact! w/ Bar		61	4	Impact! w/ Bar	
R334	1 B	1	64				61	3			60	4			59	5	Benefited/Non-Imp	1
R335	1 B	1	63				60	3			59	4			58	5	Benefited/Non-Imp	1
R336	1 B	1	64				61	3			61	3			60	4		
R337	1 B	1	67		Impact!	1	60	7	Benefited/Impact	1	59	8	Benefited/Impact	1	59	8	Benefited/Impact	1
R338	1 B	1	67		Impact!	1	60	7	Benefited/Impact	1	59	8	Benefited/Impact	1	59	8	Benefited/Impact	
R339 R340	I B	1	67		Impact	1	60	7	Benefited/Impact	1	59	/ 8	Benefited/Impact	1	50	8	Benefited/Impact	
R341	1 B	1	67		Impact	1	60	7	Benefited/Impact	1	59	8	Benefited/Impact	1	59	8	Benefited/Impact	
R342	1 B	1	67		Impact!	1	60	7	Benefited/Impact	. 1	59	8	Benefited/Impact	1	59	8	Benefited/Impact	1
R343	1 B	1	69		Impact!	1	61	8	Benefited/Impact	1	60	9	Benefited/Impact	1	59	10	Benefited/Impact	1
R344	1 B	1	70		Impact!	1	62	8	Benefited/Impact	1	61	9	Benefited/Impact	1	60	10	Benefited/Impact	<mark></mark> 1
R345	1 B	1	68		Impact!	1	61	7	Benefited/Impact	1	60	8	Benefited/Impact	1	59	9	Benefited/Impact	1
R346	1 B	1	67 67		Impact!	1	60	7	Benefited/Impact	1	60	7	Benefited/Impact	1	59	8	Benefited/Impact	1
R348	<u> </u>	1	66		Impact	1	60	6	Benefited/Impact	1	59	7	Benefited/Impact	1	59	0	Benefited/Impact	1
R349	1 B	1	66		Impact	1	60	6	Benefited/Impact	1	59	7	Benefited/Impact	1	59	7	Benefited/Impact	1
R350	1 B	1	67		Impact!	1	60	7	Benefited/Impact	1	59	8	Benefited/Impact	1	59	8	Benefited/Impact	1
R351	1 B	1	67		Impact!	1	60	7	Benefited/Impact	1	59	8	Benefited/Impact	1	59	8	Benefited/Impact	1
R352	1 B	1	67		Impact!	1	60	7	Benefited/Impact	1	59	8	Benefited/Impact	1	59	8	Benefited/Impact	<mark>/</mark> 1
R353	1 B	1	64				61	3			60	4			59	5	Benefited/Non-Imp	1
R354	1 B	1	59		1		57	2	-		56	3			56	3		
R355	1 B	1	62				58	4	-		57	5	Benefited/Non-Imp	1	56	6	Benefited/Non-Imp	
R357	1 B	1	61 57		I		57	4	-		55	5	Benefited/Non-Imp	1	55	5	Benefited/Non-Imp	– 1
R358	1 B	1	59		I		56	3	-		56	3			55	4	-	
R359	1 B	1	58		I		56	2	-		55	3			55	3	-	
R360	1 B	1	67		Impact!	1	60	7	Benefited/Impact	1	59	8	Benefited/Impact	1	59	8	Benefited/Impact	 1
R361	1 B	1	67		Impact!	1	60	7	Benefited/Impact	1	59	8	Benefited/Impact	1	59	8	Benefited/Impact	1
R362	1 B	1	67		Impact!	1	60	7	Benefited/Impact	1	59	8	Benefited/Impact	1	59	8	Benefited/Impact	<mark></mark> 1
R363	1 B	1	66	I	Impact!	1	60	6	Benefited/Impact	1	59	7	Benefited/Impact	1	59	7	Benefited/Impact	– 1

a_Optimization.xlsx Summary

Broject Inf	ormation			No Barrier A	nalysis			10	-ft Wall			12 [.]	-ft Wall			1	4-ft Wall	
Project Info	ormation			No Barrier			Wa	all 6a 2018-11			W	/all 6a 2018-11			W	Vall 6a 2018-11		
							Average Wtd I	.L. (benefited)	6	.2 dB I.L. Avg	Average Wtd	I.L.	6.6	δ dB I.L. Avg	Average Wtd I.	.L.	7.	0 dB I.L. Avg
							Maximum I.L.		1	0 dB I.L. Max	Maximum I.L.		1	1 dB I.L. Max	Maximum I.L.			1 dB I.L. Max
1205CW Stafford	Road to OR213		Total Units Expos	sed to Impact		5:	Benefited/Imp	acted \geq AFG	3	9 # Prot Units	Benefited/Imp	bacted \geq AFG	4	3 # Prot Units	Benefited/Impa	acted $\geq AFG$		5 # Prot Units
LONTRACT NO.	N 19786CW		# Impacts - NAC 0	niy ,		55	Total Benefite	Impact ≥ AFG		# Units	Total Benefite	n impact ≥ AFG	24	# # UNILS 7 # Ben L Inits	Total Benefited	Impact 2 AFG		74 # Ben Linits
Wall	6a		# Impacts - Both N	, IAC & SI		(Impacted Units	s ≥ NRDG	2	1 # Units	Impacted Unit	ts ≥ NRDG	3	# Units	Impacted Units	s ≥ NRDG		39 # Units
нми	ИН		·· ··· [- · · · ·				Benefited Unit	s ≥ NRDG	2	1 # Units	Benefited Uni	ts ≥ NRDG	3	2 # Units	Benefited Units	s ≥ NRDG		44 # Units
Scott	Noel						Percent of imp	acts ≥ AFG	719	% Ben Units	Percent of im	pacts ≥ AFG	78%	6 % Ben Units	Percent of imp	acts ≥ AFG	82	% Ben Units
11/10/2	2018						Percent of ber	lefits ≥ NRDG	399	% NRDG Units	Percent of be	nefits ≥ NRDG	48%	6 % NRDG Units	Percent of ben	efits ≥ NRDG	59	% NRDG Units
							"Cost-Reason	able" ?	Ye	S Cr. Fast	"Cost-Reason	nable" ?	Yes	S C = Fast	"Cost-Reasona	able" ?	Ye 5400	S Z Dr. Frank
US Decada	mont of Irantoortali	0.0					Surface Area/	Ben Rec	3700	Sq Feel	Surface Area	Ben Rec	4440	Sq Feel	Surface Area/F	Ren Rec	5188	1 Sq Feet
Fodor	al Highwa	N/					Barrier Length		3,69	7 Feet	Barrier Length	1	3,697	/ Feet	Barrier Length	Sentree	3,69	7 Feet
Admin	aintration	У					Min Height		10	.0 Feet	Min Height		12.0) Feet	Min Height		14.	0 Feet
Admin	Istration						Max Height		10	.0 Feet	Max Height		12.0) Feet	Max Height		14.	0 Feet
							Avg Height	`oct	10. ¢7/1 22	0 Feet	Avg Height	Cost	12.0) Feet	Avg Height	oct	14. ¢1 027 74	0 Feet
				Enter SI Info			Cost/Ben Rec	ost	\$13.72	28	Cost/Ben Rec		\$13.27	4	Cost/Ben Rec	USI	\$1,037,74	24
	F1 194/4	No. of	Type of l	mpact		NO. OT	With	Barrier Sound I	evels, Impact and	d Benefit	With	Barrier Sound L	evels, Impact and	Benefit	With	h Barrier Sound	Levels, Impact and	Benefit
Receiver ID	Row Act Cat	Dwelling			Impact?	Impacted							•••••,paor a				,	
	Act Cat	Units	Bld Leq > NAC?	Sub. Inc.?		Units	Leq(dBA)	IL (db)	Impacted?	No. Benefited	Leq(dBA)	IL (db)	Impacted?	No. Benefited	Leq(dBA)	IL (db)	Impacted?	No. Benefited
R364	1 B	1	66		Impact!	1	60	6	Benefited/Impact	1	59	7	Benefited/Impact	1	59	7	Benefited/Impact	1
R365	1 B	1	57				55	2	-		54	3			54	3	-	
R367	1 B	1	55				54	1	-		54	1	1		53	2	-	
R368	1 B	1	54				53	1	-		53	1			52	2	-	
R369	1 B	1	52				52	0			52	0			52	0		
R370	1 B	1	53				52	1		_	52	1		_	52	1		
R371	1 B	1	66		Impact!	1	61	5	Benefited/Impact	1	60	6	Benefited/Impact	1	60	6	Benefited/Impact	1
R372 P373	1 B	1	00 71		Impact!	1	61	3	Benefited/Impact	1	60	6	Benefited/Impact	1	60	5	Benefited/Impact	1
R374	1 B	1	72		Impact!	1	70	2	Impact! w/ Bar		69	3	Impact! w/ Bar		69	3	Impact! w/ Bar	_
R375	1 B	1	72		Impact!	1	71	1	Impact! w/ Bar		71	1	Impact! w/ Bar		70	2	Impact! w/ Bar	
R376	1 B	1	72		Impact!	1	71	1	Impact! w/ Bar		71	1	Impact! w/ Bar		70	2	Impact! w/ Bar	
R377	1 B	1	71		Impact!	1	70	1	Impact! w/ Bar		69	2	Impact! w/ Bar		67	4	Impact! w/ Bar	
R378	1 B	1	72		Impact!	1	72	0	Impact! w/ Bar		72	0	Impact! w/ Bar		71	1	Impact! w/ Bar	- 1
R379 R380	<u> </u>	1	71		Impact!	1	09 71	2	Impact w/ Bar		71	4	Impact! w/ Bar		65 70	2	Impact w/ Bar	_ '
R381	1 B	1	70		Impact!	1	66	4	Impact! w/ Bar		64	6	Benefited/Impact	1	63	7	Benefited/Impact	– 1
R382	1 B	1	69		Impact!	1	65	4	Impact! w/ Bar		63	6	Benefited/Impact	1	61	8	Benefited/Impact	1
R383	1 B	1	67		Impact!	1	62	5	Benefited/Impact	1	61	6	Benefited/Impact	1	60	7	Benefited/Impact	1
R384	1 B	1	66		Impact!	1	60	6	Benefited/Impact	1	59	7	Benefited/Impact	1	58	8	Benefited/Impact	1
R385	1 B	1	66 68		Impact!	1	60	6	Benefited/Impact	1	59	7	Benefited/Impact	1	59	7	Benefited/Impact	1
R387	1 B	1	62		impacti	1	58	4	Impact: w/ bai		58	о 4	Benenteu/Impact	• •	57	5	Benefited/Mon-Imp	1
R388	1 B	1	63				58	5	Benefited/Non-Imp	1	58	5	Benefited/Non-Imp	1	57	6	Benefited/Non-Imp	1
R389	1 B	1	64				58	6	Benefited/Non-Imp	1	58	6	Benefited/Non-Imp	1	57	7	Benefited/Non-Imp	1
R390	1 B	1	61				58	3		_	58	3		_	57	4		_
R391	1 B	1	60				58	2	Dawa Chaddh Law Jawa		57	3	Development (New Jose		57	3	David Charles Incom	
R392 P303	1 B	1	64 64				59	5	Benefited/Non-Imp	1	58	6	Benefited/Non-Imp	1	58	6	Benefited/Non-Imp	1
R394	1 B	1	63				59	4	Denented/Non-Imp		58	5	Benefited/Non-Imp	1	57	6	Benefited/Non-Imp	1
R395	1 B	1	65		Impact!	1	59	6	Benefited/Impact	1	59	6	Benefited/Impact	1	58	7	Benefited/Impact	1
R396	1 B	1	63				58	5	Benefited/Non-Imp	1	57	6	Benefited/Non-Imp	1	57	6	Benefited/Non-Imp	1
R397	1 B	1	63				58	5	Benefited/Non-Imp	1	57	6	Benefited/Non-Imp	1	56	7	Benefited/Non-Imp	1
R398	1 B	1	64 64				58	6	Benefited/Non-Imp	1	57	7	Benefited/Non-Imp	1	57	7	Benefited/Non-Imp	1
R400	1 B	1	61				57	4	Benefited/Non-imp	I	57	4	Benefited/Non-Imp		57	4	Benefited/Non-Imp	_ '
R401	1 B	1	60				57	3	-		57	3			57	3	-	
R402	1 B	1	58				57	1			57	1			56	2		
R403	1 B	1	60				58	2		_	57	3			57	3		
R404	1 B	1	68		Impact!	1	62	6	Benefited/Impact	1	62	6	Benefited/Impact	1	61	7	Benefited/Impact	1
R405	1 B	1	73		Impact!	1	63	10	Benefited/Impact	1	62	11	Benefited/Impact	1	62	11	Benefited/Impact	_ 1
R400	1 B	1	53				51	2	-		51	2			51	2	-	
R408	1 B	1	53				52	1	-		52	1			52	1	-	
R409	1 B	1	54				52	2	-		52	2	1		52	2	-	
R410	1 B	1	56				54	2			54	2			54	2		
R411	1 B	1	55				54	1			54	1			54	1		
R412	1 B	1	56				55	1	-		55	1			55	1	-	
R413	1 B	1	57				56	1	-		50	1			56	1	-	
R415	1 B	1	58				57	1	-		57	1			57	1	-	
R416	1 B	1	61				60	1	-		60	1			60	1	-	
R417	1 B	1	56				56	0			56	0			56	0		
R418	1 B	1	56				56	0			56	0			56	0		
R419	1 B	1	56				56	0	_		56	0			56	0	-	
R420 R421	1 B	1	56				56	0	-		56	0			56	0	-	
R422	1 B	1	59 64				59	1	-		63	1			63	1	-	
1.722			04	I	1	l	00				03				00			

Project Information	No Barrier Analysis		10-	-ft Wall	12	-ft Wall	14-ft Wall				
Project Information	No Barrier		Wall 6a 2018-11		Wall 6a 2018-11		Wall 6a 2018-11				
	-		Average Wtd I.L. (benefited)	6.2 dB I.L. Avg	Average Wtd I.L.	6.6 dB I.L. Avg	Average Wtd I.L.	7.0 dB I.L. Avg			
			Maximum I.L.	10 dB I.L. Max	Maximum I.L.	11 dB I.L. Max	Maximum I.L.	11 dB I.L. Max			
I205CW Stafford Road to OR213	Total Units Exposed to Impact	55	Benefited/Impacted ≥ AFG	39 # Prot Units	Benefited/Impacted ≥ AFG	43 # Prot Units	Benefited/Impacted ≥ AFG	45 # Prot Units			
Contract No. K19786CW	# Impacts - NAC only	55	Benefited/Non Impact ≥ AFG	15 # Units	Benefited/Non Impact ≥ AFG	24 # Units	Benefited/Non Impact ≥ AFG	29 # Units			
I205CW_Build_Walls6to9	# Impacts - SI only	C	Total Benefited	54 # Ben Units	Total Benefited	67 # Ben Units	Total Benefited	74 # Ben Units			
Wall 6a	# Impacts - Both NAC & SI	C	Impacted Units ≥ NRDG	21 # Units	Impacted Units ≥ NRDG	30 # Units	Impacted Units ≥ NRDG	39 # Units			
НММН			Benefited Units ≥ NRDG	21 # Units	Benefited Units ≥ NRDG	32 # Units	Benefited Units ≥ NRDG	44 # Units			
Scott Noel			Percent of impacts ≥ AFG	71% % Ben Units	Percent of impacts ≥ AFG	78% % Ben Units	Percent of impacts ≥ AFG	82% % Ben Units			
11/10/2018			Percent of benefits ≥ NRDG	39% % NRDG Units	Percent of benefits ≥ NRDG	48% % NRDG Units	Percent of benefits ≥ NRDG	59% % NRDG Units			
			"Cost-Reasonable" ?	Yes	"Cost-Reasonable" ?	Yes	"Cost-Reasonable" ?	Yes			
			Surface Area	37066 Sq Feet	Surface Area	44469 Sq Feet	Surface Area	51887 5d Feet			
U.S. Department of Transportation			Surface Area/Ben Rec	2 607 Feet	Surface Area/Ben Rec	2 607 Feet	Surface Area/Ben Rec	701 Sq Feel			
Federal Highway			Min Height	10.0 Feet	Min Height	12.0 East	Damer Lengin Min Hoight	3,097 Feel			
Administration			Max Height		Max Height	12.0 Feet	Max Height	14.0 Feet			
			Ava Height	10.0 Feet	Ava Height	12.0 Feet	Ava Height	14.0 Feet			
			Total Barrier Cost	\$741.320	Total Barrier Cost	\$889.380	Total Barrier Cost	\$1.037.740			
	Enter SI Info		Cost/Ben Rec	\$13,728	Cost/Ben Rec	\$13,274	Cost/Ben Rec	\$14,024			
ELIMA No. of	Type of Impact	NO. OT	With Barrier Sound L	evels, Impact and Benefit	With Barrier Sound L	evels, Impact and Benefit	With Barrier Sound	Levels, Impact and Benefit			
Receiver ID Row Act Cat Dwelling	Impact?	Impacted									
Units	Bid Leq > NAC? Sub. Inc.?	Units	Leq(dBA) IL (db)	Impacted? No. Benefited	Leq(dBA) IL (db)	Impacted? No. Benefited	Leq(dBA) IL (db)	Impacted? No. Benefited			
R423 1 B 1	65 Impact!	1	64 1	Impact! w/ Bar	64 1	Impact! w/ Bar	64 1	Impact! w/ Bar			
R885(6a) 1 B 1	60		59 1		59 2		59 2				
R886(6a) 1 B 1	60		59 2		58 2		58 2				
R887(6a) 1 B 1	60		58 2		58 2		58 2				
R888(6a) 1 B 1	60		58 2		57 2		57 3				
	60		58 2		57 2		57 3				
R890(6a) 1 B 1	59		57 2		57 3		56 3				
	60		58 2		57 3		5/ 3				
	59		50 2	-	50 5		50 5				
P80/(6a) 1 B 1	60		57 3	-	56 3		56 4				
R895(6a) 1 B 1	60		57 3		56 4		56 4				
R896(6a) 1 B 1	62		59 3		58 4		57 4				
	02	I	00 0				57 4	_			
Project Information	16-ft Wall			18-ft Wall			20	-ft Wall	22-ft Wall		
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Project Information	Wall 6a 2018-11			Wall 6a 2018-11			Wall 6a 2018-11		Wall 6a 2018-11		
	Average Wtd I.L.	7.5 dl	B I.L. Avg	Average Wtd I.L.	7.8 dB l.	L. Avg	Average Wtd I.L.	8.2 dB I.L. Avg	Average Wtd I.L.	8.4 dB I.L. Avg	
	Maximum I.L.	12 dl	B I.L. Max	Maximum I.L.	13 dB l.	.L. Max	Maximum I.L.	13 dB I.L. Max	Maximum I.L.	13 dB I.L. Max	
1205CW Stafford Road to OR213	Benefited/Impacted ≥ AFG	47 #	Prot Units	Benefited/Impacted \geq AFG	48 # Pr	ot Units	Benefited/Impacted ≥ AFG	52 # Prot Units	Benefited/Impacted ≥ AFG	53 # Prot Units	
Contract No. K19786CW	Benefited/Non Impact ≥ AFG	35 #	Units Ban Unite	Benefited/Non Impact ≥ AFG	37 # Ur	nits	Benefited/Non Impact ≥ AFG	40 # Units	Benefited/Non Impact ≥ AFG	44 # Units	
1205CW_Build_Wallsoto9		82 #	Ben Units		85 # Be	en Units		92 # Ben Units	Impacted Units > NPDC	97 # Ben Units	
Wali ба НММН	Renefited Units > NRDG	44 # 55 #	Units	Renefited Units > NRDG	40 # 01	nite	Renefited Units > NRDG		Repetited Units > NRDG		
Scott Noel	Percent of impacts $\geq AFG$	85% %	Ben Units	Percent of impacts $\geq AEG$	87% % B	en Units	Percent of impacts $\geq AEG$	95% % Ben Units	Percent of impacts > AEG	96% % Ben Units	
11/10/2018	Percent of benefits \geq NRDG	67% %	6 NRDG Units	Percent of benefits \geq NRDG	76% % N	RDG Units	Percent of benefits \geq NRDG	80% % NRDG Units	Percent of benefits \geq NRDG	82% % NRDG Units	
11,10,2010	"Cost-Reasonable" ?	Yes		"Cost-Reasonable" ?	Yes		"Cost-Reasonable" ?	Yes	"Cost-Reasonable" ?	Yes	
	Surface Area	59294 S	q Feet	Surface Area	66707 Sq F	eet	Surface Area	74119 Sq Feet	Surface Area	81538 Sq Feet	
U.S. Department of Transportation	Surface Area/Ben Rec	723 S	q Feet	Surface Area/Ben Rec	785 Sq F	eet	Surface Area/Ben Rec	806 Sq Feet	Surface Area/Ben Rec	841 Sq Feet	
Federal Highway	Barrier Length	3,697 F	eet	Barrier Length	3,697 Feet		Barrier Length	3,697 Feet	Barrier Length	3,697 Feet	
Administration	Min Height	16.0 F	eet	Min Height	18.0 Feet		Min Height	20.0 Feet	Min Height	22.0 Feet	
Administration	Max Height	16.0 F	eet	Max Height	18.0 Feet		Max Height	20.0 Feet	Max Height	22.0 Feet	
	Avg Height	16.0 F	eet	Avg Height	18.0 Feet		Avg Height	20.0 Feet	Avg Height	22.0 Feet	
	Cost/Ben Rec	\$1,482,350		Cost/Ben Rec	\$1,007,075		Cost/Ben Rec	\$1,852,975	Cost/Ben Rec	\$2,038,450	
No. of	With Parrier Sound Lo	vola Impact and E	Donofit	With Parrier Sound L	wels. Impact and Ban	ofit	With Parrier Sound L		With Parrier Sound L	avola Impact and Panafit	
Receiver ID Row FHWA Dwelling	With Barner Sound Le	evers, impact and i	Senen	With Barner Sound L	evers, impact and ben	ent	With Barner Sound L	evers, impact and benefit	With Barner Sound L	avers, impact and benefit	
Act Cat Units	Leq(dBA) IL (db)	Impacted?	No. Benefited	Leq(dBA) IL (db)	Impacted? No.	Benefited	Leq(dBA) IL (db)	Impacted? No. Benefited	Leq(dBA) IL (db)	Impacted? No. Benefited	
ST-9 1 B 1	62 3	Impact! w/ Bar		62 3	Impact! w/ Bar		62 3	Impact! w/ Bar	62 3	Impact! w/ Bar	
LT-2/ST-10 1 B 1	57 7	Benefited/Non-Imp	1	57 7	Benefited/Non-Imp	1	56 8	Benefited/Non-Imp 1	56 8	Benefited/Non-Imp 1	
R306 1 B 1	61 4	Impact! w/ Bar		61 4	Impact! w/ Bar		60 5	Benefited/Impact 1	60 5	Benefited/Impact 1	
R307 1 B 1	59 5	Benefited/Non-Imp	1	59 5	Benefited/Non-Imp	1	58 6	Benefited/Non-Imp 1	58 6	Benefited/Non-Imp 1	
R308 1 B 1	58 6	Benefited/Non-Imp	1	58 6	Benefited/Non-Imp	1	58 6	Benefited/Non-Imp 1	58 6	Benefited/Non-Imp 1	
R309 1 B 1	58 6	Benefited/Non-Imp	1	58 6	Benefited/Non-Imp	1	58 6	Benefited/Non-Imp 1	57 7	Benefited/Non-Imp 1	
R310 1 B 1	58 7	Benefited/Impact	1	58 7	Benefited/Impact	1	57 8	Benefited/Impact 1	57 8	Benefited/Impact 1	
R311 1 B 1	58 7	Benefited/Impact	1	58 7	Benefited/Impact	1	57 8	Benefited/Impact 1	57 8	Benefited/Impact 1	
R312 1 B 1	58 6	Benefited/Non-Imp	1	58 6	Benefited/Non-Imp	1	57 7	Benefited/Non-Imp 1	57 7	Benefited/Non-Imp 1	
R313 1 B 1	58 6	Benefited/Non-Imp	1	57 7	Benefited/Non-Imp	1	57 7	Benefited/Non-Imp 1	56 8	Benefited/Non-Imp 1	
R314 1 B 1	58 5	Benefited/Non-Imp	1	<u>57</u> 6	Benefited/Non-Imp	1	57 6	Benefited/Non-Imp 1	56 7	Benefited/Non-Imp 1	
R315 1 B 1	58 6	Benefited/Non-Imp	1	<u>57</u> 7	Benefited/Non-Imp	1	57 7	Benefited/Non-Imp 1	56 8	Benefited/Non-Imp 1	
R316 1 B 1	58 6	Benefited/Non-Imp	1	57 7	Benefited/Non-Imp	1	57 7	Benefited/Non-Imp 1	56 8	Benefited/Non-Imp 1	
R317 1 B 1	58 6	Benefited/Non-Imp	1	57 7	Benefited/Non-Imp	1	57 7	Benefited/Non-Imp 1	57 7	Benefited/Non-Imp 1	
R318 1 B 1	58 6	Benefited/Non-Imp	1	57 7	Benefited/Non-Imp	1	57 7	Benefited/Non-Imp 1	56 8	Benefited/Non-Imp 1	
R319 1 B 1	57 7	Benefited/Non-Imp	1	57 7	Benefited/Non-Imp	1	57 7	Benefited/Non-Imp 1	56 8	Benefited/Non-Imp 1	
R320 1 B 1	57 7	Benefited/Non-Imp	1	5/ /	Benefited/Non-Imp	1	5/ 7	Benefited/Non-Imp 1	56 8	Benefited/Non-Imp 1	
R321 1 B 1	57 7	Benefited/Non-Imp	1	5/ /	Benefited/Non-Imp	1	5/ /	Benefited/Non-Imp 1	56 8	Benefited/Non-Imp 1	
R322 I B I P202 1 P 1	57 8	Benefited/Impact	1	50 9	Benefited/Impact	1	57 8	Benefited/Impact	58 10	Benefited/Impact	
R323 I B I R324 I B I	50 0	Benefited/Impact	1	59 9	Benefited/Impact	1	58 10	Benefited/Impact	58 10	Repetited/Impact 1	
R324 I B I R325 I B I	59 9	Benefited/Impact	1	58 9	Benefited/Impact	1	57 10	Benefited/Impact	57 10	Benefited/Impact 1	
R326 1 B 1	59 8	Benefited/Impact	1	59 8	Benefited/Impact	1	58 9	Benefited/Impact 1	58 9	Benefited/Impact 1	
R327 1 B 1	58 10	Benefited/Impact	1	58 10	Benefited/Impact	1	57 11	Benefited/Impact 1	57 11	Benefited/Impact 1	
R328 1 B 1	58 10	Benefited/Impact	1	58 10	Benefited/Impact	1	57 11	Benefited/Impact 1	57 11	Benefited/Impact 1	
R329 1 B 1	58 10	Benefited/Impact	1	58 10	Benefited/Impact	1	57 11	Benefited/Impact 1	57 11	Benefited/Impact 1	
R330 1 B 1	58 10	Benefited/Impact	1	58 10	Benefited/Impact	1	57 11	Benefited/Impact 1	57 11	Benefited/Impact 1	
R331 1 B 1	59 5	Benefited/Non-Imp	1	58 6	Benefited/Non-Imp	1	57 7	Benefited/Non-Imp 1	56 8	Benefited/Non-Imp 1	
R332 1 B 1	58 6	Benefited/Non-Imp	1	58 6	Benefited/Non-Imp	1	57 7	Benefited/Non-Imp 1	56 8	Benefited/Non-Imp 1	
R333 1 B 1	60 5	Benefited/Impact	1	59 6	Benefited/Impact	1	58 7	Benefited/Impact 1	57 8	Benefited/Impact 1	
R334 1 B 1	58 6	Benefited/Non-Imp	1	57 7	Benefited/Non-Imp	1	57 7	Benefited/Non-Imp 1	56 8	Benefited/Non-Imp 1	
R335 1 B 1	58 5	Benefited/Non-Imp	1	57 6	Benefited/Non-Imp	1	56 7	Benefited/Non-Imp 1	56 7	Benefited/Non-Imp 1	
R336 1 B 1	59 5	Benefited/Non-Imp	1	58 6	Benefited/Non-Imp	1	57 7	Benefited/Non-Imp 1	56 8	Benefited/Non-Imp 1	
R337 1 B 1	58 9	Benefited/Impact	1	58 9	Benefited/Impact	1	57 10	Benefited/Impact 1	57 10	Benefited/Impact 1	
R338 1 B 1	58 9	Benefited/Impact	1	58 9	Benefited/Impact	1	57 10	Benefited/Impact 1	57 10	Benefited/Impact 1	
R339 1 B 1	58 8	Benefited/Impact	1	57 9	Benefited/Impact	1	57 9	Benefited/Impact 1	57 9	Benefited/Impact 1	
R340 1 B 1	58 9	Benefited/Impact	1	58 9	Benefited/Impact	1	57 10	Benefited/Impact 1	57 10	Benefited/Impact 1	
R341 1 B 1	58 9	Benefited/Impact	1	58 9	Benefited/Impact	1	57 10	Benefited/Impact 1	57 10	Benefited/Impact 1	
R342 1 B 1	58 9	Benefited/Impact	1	58 9	Benefited/Impact	1	5/ 10	Benefited/Impact 1	5/ 10	Benefited/impact 1	
	59 10	Benefited/Impact	1	58 11	Benefited/impact	1		Benefited/Impact		Benefited/impact	
	59 11 50 0	Benefited/Impact	1	59 11	Benefited/Impact	1	58 12	Benefited/impact	59 10	Benefited/Impact	
	59 9	Benefited/Impact	1		Benefited/Impact	1	57 10	Benefited/Impact	57 10	Penefited/impact	
	58 0	Benefited/Impact	1	58 0	Benefited/Impact	1	57 10	Benefited/Impact 1	57 10	Benefited/Impact 1	
	58 9	Benefited/Impact	1	58 8	Benefited/Impact	1	57 0	Benefited/Impact 1	57 0	Benefited/Impact 1	
R340 1 B 1	58 8	Benefited/Impact	1	58 8	Benefited/Impact	1	57 9	Benefited/Impact 1	57 9	Benefited/Impact 1	
R350 1 B 1	58 9	Benefited/Impact	1	58 9	Benefited/Impact	1	57 10	Benefited/Impact 1	57 10	Benefited/Impact 1	
R351 1 B 1	58 9	Benefited/Impact	1	58 9	Benefited/Impact	1	57 10	Benefited/Impact 1	57 10	Benefited/Impact 1	
R352 1 B 1	58 9	Benefited/Impact	1	58 9	Benefited/Impact	1	57 10	Benefited/Impact 1	57 10	Benefited/Impact 1	
R353 1 B 1	58 6	Benefited/Non-Imp	1	57 7	Benefited/Non-Imp	1	57 7	Benefited/Non-Imp	56 8	Benefited/Non-Imp	
R354 1 B 1	55 4		-	55 4			54 5	Benefited/Non-Imp	54 5	Benefited/Non-Imp 1	
R355 1 B 1	56 6	Benefited/Non-Imp	1	56 6	Benefited/Non-Imp	1	55 7	Benefited/Non-Imp	55 7	Benefited/Non-Imp	
R356 1 B 1	55 6	Benefited/Non-Imp	1	55 6	Benefited/Non-Imp	1	55 6	Benefited/Non-Imp	54 7	Benefited/Non-Imp 1	
R357 1 B 1	54 3		-	54 3			53 4		53 4		
R358 1 B 1	55 4	-		54 5	Benefited/Non-Imp	1	54 5	Benefited/Non-Imp 1	54 5	Benefited/Non-Imp 1	
R359 1 B 1	54 4			54 4			54 4		54 4		
R360 1 B 1	58 9	Benefited/Impact	1	58 9	Benefited/Impact	1	57 10	Benefited/Impact 1	57 10	Benefited/Impact 1	
R361 1 B 1	58 9	Benefited/Impact	1	58 9	Benefited/Impact	1	57 10	Benefited/Impact 1	57 10	Benefited/Impact 1	
R362 1 B 1	58 9	Benefited/Impact	1	58 9	Benefited/Impact	1	57 10	Benefited/Impact 1	57 10	Benefited/Impact 1	
R363 1 B 1	58 8	Benefited/Impact	1	58 8	Benefited/Impact	1	57 9	Benefited/Impact 1	57 9	Benefited/Impact 1	

a_Optimization.xlsx Summary

	Project Information	16-	ft Wall	18	3-ft Wall	20	-ft Wall	22-ft Wall		
	rioject information	Wall 6a 2018-11		Wall 6a 2018-11		Wall 6a 2018-11		Wall 6a 2018-11		
		Average Wtd I.L.	7.5 dB I.L. Avg	Average Wtd I.L.	7.8 dB I.L. Avg	Average Wtd I.L.	8.2 dB I.L. Avg	Average Wtd I.L.	8.4 dB I.L. Avg	
	1205CW Stafford Poad to OP212	Maximum I.L.	12 dB I.L. Max	Maximum I.L.	13 dB I.L. Max	Maximum I.L.	13 dB I.L. Max	Maximum I.L.	13 dB I.L. Max	
	Contract No. K19786CW	Benefited/Non Impact > AFG	35 # Units	Benefited/Non Impact > AFG	37 #Units	Benefited/Mon Impacted 2 AFG	40 # Units	Benefited/Non Impact > AFG	44 # Units	
	I205CW_Build_Walls6to9	Total Benefited	82 # Ben Units	Total Benefited	85 # Ben Units	Total Benefited	92 # Ben Units	Total Benefited	97 # Ben Units	
	Wall 6a	Impacted Units ≥ NRDG	44 # Units	Impacted Units ≥ NRDG	46 # Units	Impacted Units ≥ NRDG	48 # Units	Impacted Units ≥ NRDG	51 # Units	
	НММН	Benefited Units ≥ NRDG	55 # Units	Benefited Units ≥ NRDG	65 # Units	Benefited Units ≥ NRDG	74 # Units	Benefited Units ≥ NRDG	80 # Units	
	Scott Noel	Percent of impacts ≥ AFG	85% % Ben Units	Percent of impacts ≥ AFG	87% % Ben Units	Percent of impacts ≥ AFG	95% % Ben Units	Percent of impacts ≥ AFG	96% % Ben Units	
	11/10/2018	"Cost-Reasonable" 2	67% % NRDG Units	"Cost-Reasonable" 2	76% % NRDG Units	"Cost-Reasonable" 2	80% % NRDG Units	"Cost-Reasonable" 2	82% % NRDG Units	
		Surface Area	59294 Sg Feet	Surface Area	66707 Sq Feet	Surface Area	74119 Sg Feet	Surface Area	81538 Sg Feet	
	U.S. Department of Transportation	Surface Area/Ben Rec	723 Sq Feet	Surface Area/Ben Rec	785 Sq Feet	Surface Area/Ben Rec	806 Sq Feet	Surface Area/Ben Rec	841 Sq Feet	
	Federal Highway	Barrier Length	3,697 Feet	Barrier Length	3,697 Feet	Barrier Length	3,697 Feet	Barrier Length	3,697 Feet	
Image: Contract of the second seco	Administration	Min Height Max Haight	16.0 Feet	Min Height	18.0 Feet	Min Height	20.0 Feet	Min Height Max Haight	22.0 Feet	
New Year No. 2007		Ava Height	16.0 Feet	Ava Height	18.0 Feet	Ava Height	20.0 Feet	Ava Height	22.0 Feet	
Image: product		Total Barrier Cost	\$1,482,350	Total Barrier Cost	\$1,667,675	Total Barrier Cost	\$1,852,975	Total Barrier Cost	\$2,038,450	
Norm Norm Norm Norm With Burier Sound Levik, Inpose and Barrier Norm Norm Norm Norm <t< td=""><td></td><td>Cost/Ben Rec</td><td>\$18,077.44</td><td>Cost/Ben Rec</td><td>\$19,620</td><td>Cost/Ben Rec</td><td>\$20,141</td><td>Cost/Ben Rec</td><td>\$21,015</td></t<>		Cost/Ben Rec	\$18,077.44	Cost/Ben Rec	\$19,620	Cost/Ben Rec	\$20,141	Cost/Ben Rec	\$21,015	
box box <td>FHWA No. of</td> <td>With Barrier Sound Le</td> <td>evels, Impact and Benefit</td> <td>With Barrier Sound L</td> <td>evels, Impact and Benefit</td> <td>With Barrier Sound L</td> <td>evels, Impact and Benefit</td> <td>With Barrier Sound L</td> <td>evels, Impact and Benefit</td>	FHWA No. of	With Barrier Sound Le	evels, Impact and Benefit	With Barrier Sound L	evels, Impact and Benefit	With Barrier Sound L	evels, Impact and Benefit	With Barrier Sound L	evels, Impact and Benefit	
Traff I <td>Receiver ID Row Act Cat Units</td> <td>Leg(dBA) IL (db)</td> <td>Impacted? No. Benefited</td>	Receiver ID Row Act Cat Units	Leg(dBA) IL (db)	Impacted? No. Benefited	Leg(dBA) IL (db)	Impacted? No. Benefited	Leg(dBA) IL (db)	Impacted? No. Benefited	Leg(dBA) IL (db)	Impacted? No. Benefited	
	R364 1 B 1	58 8	Benefited/Impact 1	58 8	Benefited/Impact 1	57 9	Benefited/Impact 1	57 9	Benefited/Impact 1	
Body 1 0 1 0 5 3 4 3 4 Station 1 0 5 3 4 3 4 3 4 Station 1 0 1 0 1 0 1 0 1 Station 1 0 1 0 1 0 1 0 1 Station 1 0 1 0 1 0 1 0 1 Station 1 0 1 0 1 0 1 0 1 0 0 0 Station 1 0 1 0 1 0 1 0 0 0 0 Station 1 0 1 0 1 0 1 0 0 0 0 0 Station 1 0 1 0 1 0 1 0 0 0 0 0 Station 1 0 0 0 0 0 0 0 0 0 0 0 Station 1 0 0 0 0 0 0	R365 1 B 1	54 3		54 3		53 4		53 4		
Product	R366 1 B 1	54 3		53 4		53 4		53 4		
	R367 1 B 1	53 2	-	53 2	_	52 3	_	52 3	_	
	R368 1 B 1 B260 1 P 1	52 2	-	52 2	-	52 2	-	51 3	-	
	R309 1 B 1	52 0	-	52 1	-	51 2	-	51 2	-	
TOP 1 0 1 S T Nording of a base	R371 1 B 1	59 7	Benefited/Impact 1	59 7	Benefited/Impact 1	58 8	Benefited/Impact 1	57 9	Benefited/Impact 1	
	R372 1 B 1	59 7	Benefited/Impact 1	59 7	Benefited/Impact 1	58 8	Benefited/Impact 1	57 9	Benefited/Impact 1	
100 1 0 0 -<	R373 1 B 1	65 6	Benefited/Impact 1	63 8	Benefited/Impact 1	61 10	Benefited/Impact 1	60 11	Benefited/Impact 1	
100 1 0	R374 1 B 1	68 4	Impact! w/ Bar	66 6	Benefited/Impact 1	64 8	Benefited/Impact 1	62 10	Benefited/Impact 1	
Diff Diff <th< td=""><td>R3/5 1 B 1 P376 1 B 1</td><td>69 <u>3</u> 70 2</td><td>Impact! W/ Bar</td><td>60 3</td><td>Impact! w/ Bar</td><td>67 5</td><td>Benefited/Impact</td><td>65 7</td><td>Benefited/Impact</td></th<>	R3/5 1 B 1 P376 1 B 1	69 <u>3</u> 70 2	Impact! W/ Bar	60 3	Impact! w/ Bar	67 5	Benefited/Impact	65 7	Benefited/Impact	
103 1 10 1 10 1 10 1 10 1 10 1 10 1 10 1 10 1 10 1 10 1 10 1 10 1 10 1 10 <	R377 1 B 1	65 6	Benefited/Impact 1	63 8	Benefited/Impact 1	62 9	Benefited/Impact 1	61 10	Benefited/Impact 1	
107 1 0 0<	R378 1 B 1	70 2	Impact! w/ Bar	70 2	Impact! w/ Bar	69 3	Impact! w/ Bar	66 6	Benefited/Impact 1	
Lend 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0	R379 1 B 1	63 8	Benefited/Impact 1	62 9	Benefited/Impact 1	61 10	Benefited/Impact 1	60 11	Benefited/Impact 1	
1000 1 0	R380 1 B 1	70 2	Impact! w/ Bar	68 4	Impact! w/ Bar	66 6	Benefited/Impact 1	64 8	Benefited/Impact 1	
1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0	R381 1 B 1	61 9	Benefited/Impact 1	60 10	Benefited/Impact 1	59 11 50 10	Benefited/Impact 1	59 11	Benefited/Impact 1	
TX31 1 <th1< th=""> 1 1 1</th1<>	R383 1 B 1	59 8	Benefited/Impact 1	59 10	Benefited/Impact 1	57 10	Benefited/Impact 1	57 10	Benefited/Impact 1	
TASS 1 SS 8 0 1 SS 8 Device/induction 1 S7 9 Device/induction 1 S7 9 Device/induction 1 1 77 9 Device/induction 1 </td <td>R384 1 B 1</td> <td>57 9</td> <td>Benefited/Impact 1</td> <td>57 9</td> <td>Benefited/Impact 1</td> <td>56 10</td> <td>Benefited/Impact 1</td> <td>56 10</td> <td>Benefited/Impact 1</td>	R384 1 B 1	57 9	Benefited/Impact 1	57 9	Benefited/Impact 1	56 10	Benefited/Impact 1	56 10	Benefited/Impact 1	
250 1 8 1 80 8 Perfectives 1 50 8 Perfectives 1 50 8 Perfectives 1 1 50 8 Perfectives 1 1 1 50 8 1 1 50 8 1 1 50 8 1 1 50 8 1 1 50 8 1 1 50 8 1 1 50 8 1 1 50 8 1 1 50 8 1 50 8 1 50 8 1 50 8 1 50 8 1 50 8 1 50 8 1 50 8 1 50 8 1 1 50 8 1 1 50 8 1 1 50 8 1 1 50 8 1 1 50 8 1 1 50 8 1 1 50 8 1 1 50 8 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	R385 1 B 1	58 8	Benefited/Impact 1	58 8	Benefited/Impact 1	57 9	Benefited/Impact 1	57 9	Benefited/Impact 1	
State 1 6 1 7 5 Bendfald Norm 1 63 6 Deterded Norm 1 63 7 Deterded Norm 1 63 8 Deterded Norm 1 63 8 Deterded Norm 1 63 8 Deterded Norm 1 <td>R386 1 B 1</td> <td>60 8</td> <td>Benefited/Impact 1</td> <td>59 9</td> <td>Benefited/Impact 1</td> <td>59 9</td> <td>Benefited/Impact 1</td> <td>58 10</td> <td>Benefited/Impact 1</td>	R386 1 B 1	60 8	Benefited/Impact 1	59 9	Benefited/Impact 1	59 9	Benefited/Impact 1	58 10	Benefited/Impact 1	
PARS 1 9	R387 1 B 1	57 5	Benefited/Non-Imp 1	56 6	Benefited/Non-Imp 1	56 6	Benefited/Non-Imp 1	56 6	Benefited/Non-Imp 1	
NS00 1 8 1 57 4 58 8 9 9 56 4<	R389 1 B 1	57 7	Benefited/Non-Imp 1	56 8	Benefited/Non-Imp	56 8	Benefited/Non-Imp 1	56 8	Benefited/Non-Imp 1	
R391 1 65 4 56 4 56 4 56 8 Bendicit/kosting 1 R392 1 57 7 Bendicit/kosting 1 55 8 Bendicit/kosting 1 56 8 Bendicit/kosting 1 R393 1 57 7 Bendicit/kosting 1 55 8 Bendicit/kosting 1 56 8 Bendicit/kosting 1 R393 1 57 7 Bendicit/kosting 1 55 8 Bendicit/kosting 1 55 9 Bendicit/kosting 1 55 9 Bendicit/kosting 1 55 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 <td>R390 1 B 1</td> <td>57 4</td> <td></td> <td>56 5</td> <td>Benefited/Non-Imp 1</td> <td>56 5</td> <td>Benefited/Non-Imp 1</td> <td>56 5</td> <td>Benefited/Non-Imp 1</td>	R390 1 B 1	57 4		56 5	Benefited/Non-Imp 1	56 5	Benefited/Non-Imp 1	56 5	Benefited/Non-Imp 1	
R502 1 B 1 57 7 BendledNo.hrup 1 56 6 BendledNo.hrup 1 56 8 BendledNo.hrup 1 57 7 BendledNo.hrup 1 56 8 BendledNo.hrup 1 56 8 BendledNo.hrup 1 57 7 BendledNo.hrup 1 57 7 BendledNo.hrup 1 57 8 BendledNo.hrup 1 55 8 BendledNo.hrup 1 55 9 BendledNo.hrup	R391 1 B 1	56 4		56 4		56 4		55 5	Benefited/Non-Imp 1	
1 1 8 1 7 7 1 100 100 100 100 1 100 100 100 <t< td=""><td>R392 1 B 1</td><td>57 7</td><td>Benefited/Non-Imp 1</td><td>57 7</td><td>Benefited/Non-Imp 1</td><td>56 8</td><td>Benefited/Non-Imp 1</td><td>56 8</td><td>Benefited/Non-Imp 1</td></t<>	R392 1 B 1	57 7	Benefited/Non-Imp 1	57 7	Benefited/Non-Imp 1	56 8	Benefited/Non-Imp 1	56 8	Benefited/Non-Imp 1	
N256 1 0 <th0< th=""> 0 0 0</th0<>	R393 1 B 1	57 7	Benefited/Non-Imp 1	56 8	Benefited/Non-Imp 1	56 8	Benefited/Non-Imp 1	56 8	Benefited/Non-Imp 1	
R336 1 66 7 Bendfield Noning 1 55 8 Bendfield Noning 1 R339 1 50 8 Bendfield Noning 1 55 9 Bendfield Noning 1	R395 1 B 1	58 7	Benefited/Impact 1	57 8	Benefited/Impact	57 8	Benefited/Impact 1	57 8	Benefited/Impact 1	
R397 1 8 1 56 7 Benefice/Monimp 1 55 8 Benefice/Monimp 1 55 8 Benefice/Monimp 1 R398 1 56 8 Benefice/Monimp 1 55 9 Benefice/Mon	R396 1 B 1	56 7	Benefited/Non-Imp 1	56 7	Benefited/Non-Imp 1	55 8	Benefited/Non-Imp 1	55 8	Benefited/Non-Imp 1	
R398 1 56 8 Beneficid Non-ing 1 55 9 Beneficid Non-ing 1 55 1 <td>R397 1 B 1</td> <td>56 7</td> <td>Benefited/Non-Imp 1</td> <td>55 8</td> <td>Benefited/Non-Imp 1</td> <td>55 8</td> <td>Benefited/Non-Imp 1</td> <td>55 8</td> <td>Benefited/Non-Imp 1</td>	R397 1 B 1	56 7	Benefited/Non-Imp 1	55 8	Benefited/Non-Imp 1	55 8	Benefited/Non-Imp 1	55 8	Benefited/Non-Imp 1	
Norm Norm O O O O O S <t< td=""><td>R398 1 B 1</td><td>56 8</td><td>Benefited/Non-Imp 1</td><td>56 8</td><td>Benefited/Non-Imp 1</td><td>55 9</td><td>Benefited/Non-Imp 1</td><td>55 9</td><td>Benefited/Non-Imp</td></t<>	R398 1 B 1	56 8	Benefited/Non-Imp 1	56 8	Benefited/Non-Imp 1	55 9	Benefited/Non-Imp 1	55 9	Benefited/Non-Imp	
Arrith C <td>R400 1 B 1</td> <td>56 5</td> <td>Benefited/Non-Imp 1</td> <td>56 8</td> <td>Benefited/Non-Imp 1</td> <td>56 5</td> <td>Benefited/Non-Imp 1</td> <td>55 9</td> <td>Benefited/Non-Imp</td>	R400 1 B 1	56 5	Benefited/Non-Imp 1	56 8	Benefited/Non-Imp 1	56 5	Benefited/Non-Imp 1	55 9	Benefited/Non-Imp	
fad2 1 56 2 56 2 1243 1 57 3 68 4 56 1 56 1 56 1 56 1 56 1 56 1 56 1 56	R401 1 B 1	56 4	Schencerhon-imp	56 4		56 4		55 5	Benefited/Non-Imp	
R403 1 8 1 67 3 56 4 R404 1 61 7 Benefited/inpact 1 60 8 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 <td< td=""><td>R402 1 B 1</td><td>56 2</td><td></td><td>56 2</td><td></td><td>56 2</td><td></td><td>55 3</td><td></td></td<>	R402 1 B 1	56 2		56 2		56 2		55 3		
R404 1 61 7 Benefited/inpact 1 60 8 Benefited/inpact 1 60 8 Benefited/inpact 1 60 8 Benefited/inpact 1 60 8 Benefited/inpact 1 60	R403 1 B 1	57 3		56 4		56 4		56 4		
rx405 1 61 12 Hendinguingant 1 60 13 Hendingant 1 60 13	R404 1 B 1	61 7	Benefited/Impact 1	60 8	Benefited/Impact 1	60 8	Benefited/Impact 1	60 8	Benefited/Impact 1	
1 0 1 51 2 1 52 1 R407 1 6 1 51 2 51 2 51 2 51 2 51 2 51 2 51 2 51 2 51 2 51 2 51 2 51 2 51 2 51 3 R409 1 8 1 52 1 51 2 51 3 53 3 56 1 56 <td< td=""><td>R405 1 B 1 R406 1 P 1</td><td>61 12</td><td>Benefited/Impact 1</td><td>60 13</td><td>Benefited/Impact 1</td><td>60 13</td><td>Benefited/Impact 1</td><td>60 13</td><td>Benefited/impact 1</td></td<>	R405 1 B 1 R406 1 P 1	61 12	Benefited/Impact 1	60 13	Benefited/Impact 1	60 13	Benefited/Impact 1	60 13	Benefited/impact 1	
Rt00 1 B 1 50 2 Rt409 1 B 1 52 1 51 2 Rt410 1 B 1 53 3 51 3 Rt411 1 B 1 54 1 3 53 3 Rt412 1 B 1 56 1 55 1 56 1 Rt413 1 1 57 0 56 1 56 1 56 1 Rt414 1 B 1 57 0 56 1 56 1 56 1 Rt413 1 B 1 57 1 56 1 56 1 56 1 Rt416 1 B 1 56 0 1 56 1 56 1 Rt416 1 B 1 56 0 56 0 56 0 56 0 Rt417 1 B 1 56	R400 1 B 1	51 2	-	51 2	-	51 2	-	52 1	-	
R409 1 B 1 52 2 R410 1 B 1 53 3 53 3 R410 1 B 1 54 1 53 3 R412 1 B 1 55 1 53 3 R412 1 B 1 55 1 55 1 R412 1 B 1 56 1 55 1 56 1 R412 1 B 1 57 0 56 1 56 </td <td>R408 1 B 1</td> <td>52 1</td> <td>-</td> <td>51 2</td> <td>-</td> <td>51 2</td> <td>-</td> <td>52 1</td> <td>-</td>	R408 1 B 1	52 1	-	51 2	-	51 2	-	52 1	-	
R410 1 B 1 53 3 R411 1 B 1 54 1 R412 1 B 1 55 1 53 2 R413 1 B 1 56 1 56 1 R414 1 B 1 56 1 56 1 R414 1 B 1 57 0 56 1 56 1 R415 1 B 1 57 0 57 1 56 1 R416 1 B 1 60 1 57 1 57 1 R416 1 B 1 56 0 56 0 56 0 R417 1 B 1 56 0 56 0 56 0 56 0 56 0 56 0 56 0 56 0 56 0 56 0 56 0 56 0 56	R409 1 B 1	52 2		51 3		51 3		51 3		
R411 1 B 1 54 1 R412 1 56 1 R413 1 56 1 R413 1 56 1 R414 1 B 1 57 0 R415 1 57 0 R416 1 B 1 56 1 R416 1 B 1 56 0 R417 1 B 1 56 0 R418 1 56 0 R419 1 56 0 R420 1 B 1 56 0 R421 1 56 0 R422 1 B 1 56 0 R422 1 B 1 63 1	R410 1 B 1	53 3	-	53 3	_	53 3	-	53 3		
1 B 1	R411 1 B 1	54 1	-	54 1	_	53 2		53 2	1	
RA14 1 B 1 50 1 50 1 RA14 1 B 1 57 0 56 1 56 1 R415 1 B 1 57 1 57 1 57 1 R416 1 B 1 60 1 56 0 60 1 R417 1 B 1 56 0 56 0 56 0 56 0 R418 1 56 0 56 0 56 0 56 0 56 0 R420 1 B 1 56 0 56<	R412 1 B 1 R413 1 B 1	50 1 56 1	-	56 1	-	50 1 56 1	-	56 1	-	
R415 1 B 1 57 1 R416 1 B 1 60 1 R416 1 B 1 60 1 R417 1 B 1 56 0 R418 1 B 1 56 0 R418 1 56 0 56 0 R419 1 56 0 56 0 R418 1 56 0 56 0 R419 1 56 0 56 0 R420 1 B 1 59 0 59 0 R421 1 B 1 59 0 59 0 59 0 R422 1 B 1 63 1 63 1 63	R414 1 B 1	57 0	-	56 1	-	56 1	-	56 1	-	
R416 1 B 1 60 1 R417 1 B 1 56 0 R417 1 B 1 56 0 R418 1 B 1 56 0 R418 1 B 1 56 0 R419 1 56 0 56 0 R420 1 B 1 56 0 56 0 R421 1 B 1 59 0 59 0 R422 1 B 1 63 1 60 1	R415 1 B 1	57 1	-	57 1	-	57 1	-	57 1	-	
R417 1 B 1 56 0 R418 1 B 1 56 0 R418 1 B 1 56 0 R419 1 B 1 56 0 R420 1 B 1 56 0 R421 1 B 1 59 0 R422 1 B 1 63 1	R416 1 B 1	60 1		60 1		60 1		60 1		
R418 1 B 1 56 0 R419 1 B 1 56 0 R420 1 B 1 56 0 R420 1 B 1 56 0 R421 1 B 1 59 0 R422 1 B 1 63 1	R417 1 B 1	56 0	-	56 0	_	56 0	-	56 0	1	
N410 1 B 1 50 0 R420 1 B 1 56 0 R421 1 B 1 59 0 R422 1 B 1 63 1 63 1 63 1 63 1	R418 1 B 1	56 0	-	56 0	_	56 0		56 0	1	
R421 1 B 1 59 0 R422 1 B 1 63 1	R419 1 B 1 R420 1 B 1		-		-	56 U	-		-	
R422 1 B 1 63 1 63 1 63 1	R421 1 B 1	59 0	-	59 0		59 0	-	59 0	-	
	R422 1 B 1	63 1		63 1		63 1		63 1		

Drain of Information	16-ft Wall		18	-ft Wall	20	-ft Wall	22	-ft Wall
Project Information	Wall 6a 2018-11		Wall 6a 2018-11		Wall 6a 2018-11		Wall 6a 2018-11	
	Average Wtd I.L.	7.5 dB I.L. Avg	Average Wtd I.L.	7.8 dB I.L. Avg	Average Wtd I.L.	8.2 dB I.L. Avg	Average Wtd I.L.	8.4 dB I.L. Avg
	Maximum I.L.	12 dB I.L. Max	Maximum I.L.	13 dB I.L. Max	Maximum I.L.	13 dB I.L. Max	Maximum I.L.	13 dB I.L. Max
I205CW Stafford Road to OR213	Benefited/Impacted ≥ AFG	47 # Prot Units	Benefited/Impacted ≥ AFG	48 # Prot Units	Benefited/Impacted ≥ AFG	52 # Prot Units	Benefited/Impacted ≥ AFG	53 # Prot Units
Contract No. K19786CW	Benefited/Non Impact ≥ AFG	35 # Units	Benefited/Non Impact ≥ AFG	37 # Units	Benefited/Non Impact ≥ AFG	40 # Units	Benefited/Non Impact ≥ AFG	44 # Units
I205CW_Build_Walls6to9	Total Benefited	82 # Ben Units	Total Benefited	85 # Ben Units	Total Benefited	92 # Ben Units	Total Benefited	97 # Ben Units
Wall 6a	Impacted Units ≥ NRDG	44 # Units	Impacted Units ≥ NRDG	46 # Units	Impacted Units ≥ NRDG	48 # Units	Impacted Units ≥ NRDG	51 # Units
НММН	Benefited Units ≥ NRDG	55 # Units	Benefited Units ≥ NRDG	65 # Units	Benefited Units ≥ NRDG	74 # Units	Benefited Units ≥ NRDG	80 # Units
Scott Noel	Percent of impacts ≥ AFG	85% % Ben Units	Percent of impacts ≥ AFG	87% % Ben Units	Percent of impacts ≥ AFG	95% % Ben Units	Percent of impacts ≥ AFG	96% % Ben Units
11/10/2018	Percent of benefits ≥ NRDG	67% % NRDG Units	Percent of benefits ≥ NRDG	76% % NRDG Units	Percent of benefits ≥ NRDG	80% % NRDG Units	Percent of benefits ≥ NRDG	82% % NRDG Units
	"Cost-Reasonable" ?	Yes	"Cost-Reasonable" ?	Yes	"Cost-Reasonable" ?	Yes	"Cost-Reasonable" ?	Yes
	Surface Area	59294 Sq Feet	Surface Area	66707 Sq Feet	Surface Area	74119 Sq Feet	Surface Area	81538 Sq Feet
U.S. Department of Transportation	Surface Area/Ben Rec	723 Sq Feet	Surface Area/Ben Rec	785 Sq Feet	Surface Area/Ben Rec	806 Sq Feet	Surface Area/Ben Rec	841 Sq Feet
Federal Highway	Barrier Length	3,697 Feet	Barrier Length	3,697 Feet	Barrier Length	3,697 Feet	Barrier Length	3,697 Feet
Administration	Min Height	16.0 Feet	Min Height	18.0 Feet	Min Height	20.0 Feet	Min Height	22.0 Feet
Administration	Max Height	16.0 Feet	Max Height	18.0 Feet	Max Height	20.0 Feet	Max Height	22.0 Feet
	Avg Height	16.0 Feet	Avg Height	18.0 Feet	Avg Height	20.0 Feet	Avg Height	22.0 Feet
	Total Barrier Cost	\$1,482,350	I otal Barrier Cost	\$1,667,675	I otal Barrier Cost	\$1,852,975	lotal Barrier Cost	\$2,038,450
	Cost/Ben Rec	\$18,077.44	Cost/Ben Rec	\$19,620	Cost/Ben Rec	\$20,141	Cost/Ben Rec	\$21,015
FHWA No. of	With Barrier Sound Le	vels, Impact and Benefit	With Barrier Sound L	evels, Impact and Benefit	With Barrier Sound Lo	evels, Impact and Benefit	With Barrier Sound Le	evels, Impact and Benefit
Receiver ID Row Dwelling Act Cat Units	Leq(dBA) IL (db)	Impacted? No. Benefited	Leg(dBA) IL (db)	Impacted? No. Benefited	Leg(dBA) IL (db)	Impacted? No. Benefited	Leg(dBA) IL (db)	Impacted? No. Benefited
R423 1 B 1	64 1	Impact! w/ Bar	64 1	Impact! w/ Bar	64 1	Impact! w/ Bar	64 1	Impact! w/ Bar
R885(6a) 1 B 1	59 2		59 2		59 2		59 2	· ·
R886(6a) 1 B 1	58 3		58 3		58 3		57 3	
R887(6a) 1 B 1	57 3		57 3		57 3		57 3	
R888(6a) 1 B 1	56 3		56 3		56 4		56 4	
R889(6a) 1 B 1	56 3		56 4		56 4		55 4	
R890(6a) 1 B 1	56 3		56 4		55 4		55 4	
R891(6a) 1 B 1	56 4		56 4		56 4		55 5	Benefited/Non-Imp 1
R892(6a) 1 B 1	55 4		55 4		54 4		54 5	Benefited/Non-Imp 1
R893(6a) 1 B 1	56 4		55 4		55 5	Benefited/Non-Imp 1	55 5	Benefited/Non-Imp 1
R894(6a) 1 B 1	55 4		55 4		55 5	Benefited/Non-Imp 1	55 5	Benefited/Non-Imp 1
R895(6a) 1 B 1	56 5	Benefited/Non-Imp 1	56 5	Benefited/Non-Imp 1	55 5	Benefited/Non-Imp 1	55 5	Benefited/Non-Imp 1
R896(6a) 1 B 1	57 5	Benefited/Non-Imp 1	56 6	Benefited/Non-Imp 1	56 6	Benefited/Non-Imp 1	55 6	Benefited/Non-Imp 1

					24-ft Wall							
	Project Inform	mation			14/0		t wan					
					vva	1 6a 2018-11						
					Average Wtd I.	.L.	8.8	dB I.L. Avg				
1206	SCW Stafford Po	ad to OF	2212		Repofited/Impo	acted > AFC	14	UD I.L. IVIAX				
1200	Contract No. K1	0786CW	1213		Benefited/Mon	$ mpact \ge AFG $	48	# Flot Offits # Unite				
	1205CW Build V	Valle6to	, G		Total Renefited		40	# Onits # Ren I Inits				
	Wall 6a	vansolo	5		Impacted Units		52	# Units				
	ими				Renefited Units			# Units				
	Scott Nor				Borcont of imp		06%	# Office % Ron Unite				
	11/10/201	8			Percent of here	efits > NRDG	82%	% NRDG Units				
	11/10/201	0			"Cost-Reasona	able" 2	Ves					
					Surface Area		88958	Sa Feet				
	US Departmen	at of Iran	toortativ	00	Surface Area/B	Sen Rec	881	Sa Feet				
	Endoral	Limi	spondin		Barrier Length		3 697	Feet				
	rederal	nigi	wa	У	Min Height		24.0	Feet				
	Adminis	strati	on		Max Height		24.0	Feet				
					Ava Height		24.0	Feet				
					Total Barrier C	ost	\$2,223,950					
					Cost/Ben Rec		\$22,019					
				No. of	With F	Barrier Sound Le	vals Imnact and	Benefit				
Receiv	ver ID	Row	FHWA	Dwelling	, viiii i		vers, impact and	Denent				
			Act Cat	Units	Leq(dBA)	IL (db)	Impacted?	No. Benefited				
ST-9		1	В	1	62	3	Impact! w/ Bar					
LT-2/ST-10		1	В	1	56	8	Benefited/Non-Imp	1				
R306		1	В	1	60	5	Benefited/Impact	1				
R307		1	В	1	58	6	Benefited/Non-Imp	1				
R308		1	В	1	57	7	Benefited/Non-Imp	1				
R309		1	В	1	57	7	Benefited/Non-Imp	1				
R310		1	В	1	57	8	Benefited/Impact	1				
R311		1	В	1	56	9	Benefited/Impact	1				
R312		1	B	1	56	8	Benefited/Non-Imp	1				
R313		1	B	1	56	8	Benefited/Non-Imp	1				
R314		1	В	1	56	7	Benefited/Non-Imp	1				
R315		1	B	1	56	8	Benefited/Non-Imp	1				
R316		1	B	1	56	8	Benefited/Non-Imp	1				
R317		1	B	1	56	8	Benefited/Non-Imp	1				
R318		1	B	1	56	8	Benefited/Non-Imp	1				
R319		1	B	1	56	8	Benefited/Non-Imp	1				
R320		1	B	1	56	8	Benefited/Non-Imp	1				
P321		• 1	B	1	56	8	Benefited/Non-Imp	1				
R321		- 1 1	B	1	56	8	Benefited/Impact	1				
R322		- 1 1	B	1	57	9 11	Benefited/Impact	1				
R323		• 1	D	1	57	11	Benefited/Impact	1				
R324 D225		• ¦	D	1	57	10	Benefited/Impact	1				
R325		• 1	D	1	57	10	Benefited/Impact	1				
R320		•	В	1	57	10	Benefited/Impact	1				
RJ21			D	1	56	12	Benefited/Impact	1				
R320		-	D	1	56	12	Denefited/Impact	1				
R329			D	1	56	12	Benefited/Impact	1				
R330		-	D	1	56	12	Denefited/Impact	1				
R331		-	В	1	50	8	Benefited/Non-Imp	1				
R332			В	1	50	8	Benefited/Non-Imp	1				
R333		- !	В	1	57	8	Benefited/Impact	1				
R334		- 1	В	1	56	8	Benefited/Non-Imp	1				
R335		- 1	В	1	56	1	Benefited/INon-Imp	1				
R336		- 1	в	1	56	8	Benefited/Non-Imp	1				
R337		1	в	1	56	11	Benefited/Impact	1				
R338		1	В	1	56	11	Benefited/Impact	1				
R339		1	В	1	56	10	Benefited/Impact	1				
R340		1	В	1	56	11	Benefited/Impact	1				
R341		1	В	1	56	11	Benefited/Impact	1				
R342		1	В	1	56	11	Benefited/Impact	1				
R343		1	В	1	57	12	Benefited/Impact	1				
R344		1	В	1	57	13	Benefited/Impact	1				
R345		1	В	1	57	11	Benefited/Impact	1				
R346		1	В	1	56	11	Benefited/Impact	1				
R347		1	В	1	57	10	Benefited/Impact	1				
R348		1	В	1	56	10	Benefited/Impact	1				
R349		1	В	1	56	10	Benefited/Impact	1				
R350		1	В	1	56	11	Benefited/Impact	1				
R351		1	В	1	56	11	Benefited/Impact	1				
R352		1	В	1	57	10	Benefited/Impact	1				
R353		1	В	1	56	8	Benefited/Non-Imp	1				
R354		1	В	1	54	5	Benefited/Non-Imp	1				
R355		1	В	1	54	8	Benefited/Non-Imp	1				
R356		1	В	1	54	7	Benefited/Non-Imp	1				
R357		1	В	1	53	4						
R358		1	В	1	53	6	Benefited/Non-Imp	1				
R359		1	В	1	53	5	Benefited/Non-Imp	1				
R360		1	В	1	56	11	Benefited/Impact	1				
R361		1	В	1	56	11	Benefited/Impact	1				
R362		1	В	1	56	11	Benefited/Impact	1				
R363		1	В	1	56	10	Benefited/Impact	1				
					L							

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						24-	ft Wall	
	Project Inform	natior	า		14/-1	24-1		
					vva	16a 2018-11		
					Average Wtd I.	L.	8.8	dB I.L. Avg
	1995 CW/ Staff and Day	a d 4 a 0	D040		Maximum I.L.		14	dB I.L. Max
	Contract No. K1		N 13		Benefited/Impa		03	# Prot Units
	1205CW Build W	Jalle6to	7V nQ		Total Renefited	Impact 2 AFG	40	# Onits # Ren I Inits
	Wall 6a	anson	55		Impacted Units	≥ NRDG	52	# Units
	нммн				Benefited Units	≥ NRDG	83	# Units
	Scott Noe	<u>.</u>			Percent of imp	acts ≥ AFG	96%	% Ben Units
	11/10/201	8			Percent of ben	efits ≥ NRDG	82%	% NRDG Units
					"Cost-Reasona	ble" ?	Yes	
					Surface Area		88958	Sq Feet
	U.S. Departmen	nt of Tra	nsportatio	nc	Surface Area/B	en Rec	881	Sq Feet
	Federal	Hia	hwa	V	Barrier Length		3,697	Feet
	Adminis	trat	ion		Min Height		24.0	Feet
	Adminis	indi			Max Height		24.0	Feet
					Avg Height		24.0	Feet
					Total Barrier C	OSI	\$2,223,950	
				No. of	COSI/Dell Rec		\$22,019	Demefit
	Receiver ID	Row	FHWA	Dwelling		Sarrier Sound Le	evers, impact and	Benefit
		now.	Act Cat	Units	Lea(dBA)	IL (db)	Impacted?	No. Benefited
R364		1	В	1	57	9	Benefited/Impact	1
R365		1	В	1	53	4		i i
R366		1	В	1	52	5	Benefited/Non-Imp	1
R367		1	В	1	52	3		i
R368		1	В	1	51	3		
R369		1	В	1	51	1		
R370		1	В	1	51	2		
R371		1	В	1	57	9	Benefited/Impact	1
R372		1	В	1	57	9	Benefited/Impact	1
R373		1	В	1	59	12	Benefited/Impact	1
R374		1	В	1	61	11	Benefited/Impact	1
R375		1	В	1	62	10	Benefited/Impact	1
R376		1	В	1	63	9	Benefited/Impact	1
R377		1	В	1	60	11	Benefited/Impact	1
R378		1	в	1	64	8	Benefited/Impact	1
R379		1	в	1	59	12	Benefited/Impact	1
R380		1	в	1	62	10	Benefited/Impact	1
R381		1	в	1	58	12	Benefited/Impact	1
R382		1	в	1	57	12	Benefited/Impact	1
R383		1	В	1	56	11	Benefited/Impact	1
R384		1	В	1	55	11	Benefited/Impact	1
R385		1	В	1	56	10	Benefited/Impact	1
R386		1	В	1	58	10	Benefited/Impact	1
R387		1	В	1	56	6	Benefited/Non-Imp	1
R388		1	В	1	56	7	Benefited/Non-Imp	1
R389		1	В	1	56	8	Benefited/Non-Imp	1
R390		1	В	1	55	6	Benefited/Non-Imp	1
R391		1	В	1	55	5	Benefited/Non-Imp	1
R392		1	В	1	56	8	Benefited/Non-Imp	1
R393		1	В	1	56	8	Benefited/Non-Imp	1
R394		1	В	1	55	8	Benefited/Non-Imp	1
R395		1	В	1	57	8	Benefited/Impact	1
R396		1	В	1	55	8	Benefited/Non-Imp	1
R397		1	В	1	54	9	Benefited/Non-Imp	1
R398		1	В	1	54	10	Benefited/Non-Imp	1
R399		1	В	1	54	10	Benefited/Non-Imp	1
R400		1	В	1	55	6	Benefited/Non-Imp	1
R401		1	В	1	55	5	Benefited/INOn-Imp	1
R402		4	B	1	55	3 F	Popofitod/Mon. Issa	4
R403		1	B	1	55 60	J Q	Benefited/Impost	1
R404		4	P	1	50	14	Benefited/Impact	1
R403		' 1	D	1	52	14	Benefited/impact	
R400		' 1	D	1	52	1		
R407		1	B	1	52	1		
R400		' 1	B	1	51	3		
R410		1	B	1	53	3	-	
R411		1	B	1	53	2	-	
R412		1	B	1	54	2	-	
R413		1	B	1	56	1		
R414		1	В	1	56	1		
R415		1	B	1	57	1		
R416		1	B	1	60	1		
R417		1	B	1	56	0		
R418		1	B	1	56	0		
R410		1	B	1	56	0		
R420		1	B	1	56	0		
R420		1	B	1	59	0		
R421		1	B	1	63	1		
11422			ы		05	1		

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Desired by				24	-ft Wall		
Project Inte	ormatio	n		Wall	6a 2018-11		
·				Average Wtd I.L.		8.8	dB I.L. Avg
				Maximum I.L.		14	dB I.L. Max
I205CW Stafford	Road to C	DR213		Benefited/Impac	ted ≥ AFG	53	# Prot Units
Contract No.	K19786C	w		Benefited/Non In	npact ≥ AFG	48	# Units
I205CW_Build	d_Walls6t	o9		Total Benefited		101	# Ben Units
Wall	6a			Impacted Units ≥	≥ NRDG	52	# Units
HMN	ИН			Benefited Units 2	≥ NRDG	83	# Units
Scott	Noel			Percent of impac	cts ≥ AFG	96%	% Ben Units
11/10/2	2018			Percent of benef	ïts ≥ NRDG	82%	% NRDG Units
				"Cost-Reasonab	le" ?	Yes	
				Surface Area		88958	Sq Feet
U.S. Departm	nent of Iro	nsportati	on	Surface Area/Be	n Rec	881	Sq Feet
P Feder	al Hic	hwa	V	Barrier Length		3,697	Feet
	1		y	Min Height		24.0	Feet
Admir	istrat	ION		Max Height		24.0	Feet
				Avg Height		24.0	Feet
				Total Barrier Cos	st	\$2,223,950	
				Cost/Ben Rec		\$22,019	
		FHWA	No. of	With Ba	arrier Sound L	evels, Impact and	Benefit
Receiver ID	Row	Act Cat	Dwelling Units	Leq(dBA)	IL (db)	Impacted?	No. Benefited
R423	1	В	1	64	1	Impact! w/ Bar	
R885(6a)	1	В	1	58	2		
R886(6a)	1	В	1	57	3		
R887(6a)	1	В	1	57	4		
R888(6a)	1	В	1	55	4		
R889(6a)	1	В	1	55	4		
R890(6a)	1	В	1	55	5	Benefited/Non-Imp	1
R891(6a)	1	В	1	55	5	Benefited/Non-Imp	1
R892(6a)	1	В	1	54	5	Benefited/Non-Imp	1
R893(6a)	1	В	1	54	5	Benefited/Non-Imp	1
R894(6a)	1	В	1	54	5	Benefited/Non-Imp	1
R895(6a)	1	В	1	55	6	Benefited/Non-Imp	1
R896(6a)	1	В	1	55	7	Benefited/Non-Imp	1

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I205CW Stafford Road to OR213										
			v	/all 6b						
	10'	12'	14'	16'	18'	20'	22'	24'	Units	
Average Wtd I.L. (benefited)	5.8	6.4	6.8	7.7	8.8	9.1	9.4	9.9	dBA	
Maximum I.L.	8	9	10	10	11	11	12	12	dBA	
Benefited/Impacted ≥ AFG	4	7	10	10	10	10	10	10	# of dwelling units	
Benefited/Non Impact ≥ AFG	1	1	1	1	1	3	4	4	# of dwelling units	
Total Benefited	5	8	11	11	11	13	14	14	# of dwelling units	
Impacted Units ≥ NRDG	1	3	5	9	10	10	10	10	# of dwelling units	
Benefited Units ≥ NRDG	1	3	5	10	11	11	11	11	# of dwelling units	
Percent of impacts ≥ AFG	40%	70%	100%	100%	100%	100%	100%	100%	%	
Percent of benefits ≥ NRDG	20%	38%	45%	91%	100%	85%	79%	79%	%	
"Cost-Reasonable" ?	No									
Surface Area	11,636	13,960	16,294	18,619	20,953	23,268	25,603	27,927	sq-feet	
Surface Area/Ben Rec	2,327	1,745	1,481	1,693	1,905	1,790	1,829	1,995	sq-ft / ben rec	
Barrier Length	1,165	1,165	1,165	1,165	1,165	1,165	1,165	1,165	ft	
Min Height	10	12	14	16	18	20	22	24	ft	
Max Height	10	12	14	16	18	20	22	24	ft	
Avg Height	10	12	14	16	18	20	22	24	ft	
Total Barrier Cost	232,720	279,200	325,880	465,475	523,825	581,700	640,075	698,175	\$	
Cost/Ben Rec	46,544	34,900	29,625	42,316	47,620	44,746	45,720	49,870	\$ / ben rec	
Effectiveness/Cost Metric (E/C)	4.3	17.2	33.8	53.2	52.5	55.9	54.7	50.1		

ODOT Acoustical Feasibilty Goal (dBA)	5
ODOT Acoustical Feasibilty Goal (%)	51%
ODOT Noise Reduction Design Goal (dBA)	7
ODOT Noise Reduction Design Goal (%)	1%

Dreizet Information	No Barrier Analysis				10	D-ft Wall			12	-ft Wall		14-ft Wall			
Project information	No Barrier			Wall	6b 2018-11			Wa	all 6b 2018-11			Wa	all 6b 2018-11		
	-			Average Wtd I.L.	(benefited)	5.8	dB I.L. Avg	Average Wtd I.I	L.	6.4	4 dB I.L. Avg	Average Wtd I.L		6.8	dB I.L. Avg
				Maximum I.L.		8	dB I.L. Max	Maximum I.L.			9 dB I.L. Max	Maximum I.L.		10	dB I.L. Max
I205CW Stafford Road to OR213	Total Units Exposed to Impact		10	Benefited/Impacte	ed ≥ AFG	4	# Prot Units	Benefited/Impa	cted ≥ AFG		7 # Prot Units	Benefited/Impac	ted ≥ AFG	1(# Prot Units
Contract No. K19786CW	# Impacts - NAC only		10	Benefited/Non Im	pact ≥ AFG	1	# Units	Benefited/Non I	Impact ≥ AFG		1 # Units	Benefited/Non Ir	npact ≥ AFG		1 # Units
I205CW_Build_Walls6to9	# Impacts - SI only		0	Total Benefited		5	# Ben Units	Total Benefited			8 # Ben Units	Total Benefited		11	# Ben Units
Wall 6b	# Impacts - Both NAC & SI		0	Impacted Units ≥	NRDG	1	# Units	Impacted Units	≥ NRDG		3 # Units	Impacted Units 2	≥ NRDG		5 # Units
НММН				Benefited Units ≥	NRDG	1	# Units	Benefited Units	≥ NRDG		3 # Units	Benefited Units	≥ NRDG	ł	5 # Units
Scott Noel				Percent of impact	s ≥ AFG	40%	% Ben Units	Percent of impa	acts ≥ AFG	70%	6 % Ben Units	Percent of impac	cts ≥ AFG	100%	% Ben Units
11/10/2018				Percent of benefit	ts ≥ NRDG	20%	% NRDG Units	Percent of bene	efits ≥ NRDG	389	6 % NRDG Units	Percent of benef	fits ≥ NRDG	45%	% NRDG Units
				"Cost-Reasonable	e" ?	No		"Cost-Reasonal	ble" ?	N	D	"Cost-Reasonab	le" ?	No	
				Surface Area		11636	Sq Feet	Surface Area		1396) Sq Feet	Surface Area		16294	Sq Feet
U.S. Department of Transportation				Surface Area/Ben	Rec	2327	Sq Feet	Surface Area/B	en Rec	174	5 Sq Feet	Surface Area/Be	en Rec	1481	Sq Feet
Federal Highway				Barrier Length		1,165	Feet	Barrier Length		1,16	5 Feet	Barrier Length		1,165	Feet
Administration				Min Height		10.0	Feet	Min Height		12.0) Feet	Min Height		14.0	Feet
Administration				Max Height		10.0	Feet	Max Height		12.0) Feet	Max Height		14.0	Feet
				Avg Height		10.0	Feet	Avg Height		12.) Feet	Avg Height		14.0	Feet
				Total Barrier Cost	t	\$232,720		I otal Barrier Co	ost	\$279,200)	l otal Barrier Cos	st	\$325,880	-
	Enter SI Info	N/C		Cost/Ben Rec		\$46,544		Cost/Ben Rec		\$34,90	0	Cost/Ben Rec		\$29,62	
FHWA No. of	Type of Impact		acted	With Ba	arrier Sound I	Levels, Impact and	Benefit	With	Barrier Sound Lo	evels, Impact and	Benefit	With	Barrier Sound	Levels, Impact and I	Benefit
Receiver ID Row Act Cat Units	Bid Leq > NAC? Sub. Inc.?	Impact? Ur	nits	Leg(dBA)	IL (db)	Impacted?	No. Benefited	Leg(dBA)	IL (db)	Impacted?	No. Benefited	Leg(dBA)	IL (db)	Impacted?	No. Benefited
R295 1 B 1	64	1		59	5	Benefited/Non-Imp	1	58	6	Benefited/Non-Imp	1	58	6	Benefited/Non-Imp	1
R296 1 B 1	65	Impact!	1	60	5	Benefited/Impact	1	60	5	Benefited/Impact	1	59	6	Benefited/Impact	1
R297 1 B 1	68	Impact!	1	64	4	Impact! w/ Bar	•	64	4	Impact! w/ Bar		63	5	Benefited/Impact	1
R298 1 B 1	71	Impact!	1	67	4	Impact! w/ Bar		66	5	Benefited/Impact	1	65	6	Benefited/Impact	1
R299 1 B 1	72	Impact!	1	70	2	Impact! w/ Bar		69	3	Impact! w/ Bar		67	5	Benefited/Impact	1
R300 1 B 1	71	Impact!	1	68	3	Impact! w/ Bar		66	5	Benefited/Impact	1	64	7	Benefited/Impact	1
R301 1 B 1	69	Impact!	1	67	2	Impact! w/ Bar		65	4	Impact! w/ Bar		63	6	Benefited/Impact	1
R302 1 B 1	70	Impact!	1	67	3	Impact! w/ Bar		64	6	Benefited/Impact	1	63	7	Benefited/Impact	1
R303 1 B 1	69	Impact!	1	64	5	Benefited/Impact	1	62	7	Benefited/Impact	1	61	8	Benefited/Impact	1
R304 1 B 1	69	Impact!	1	63	6	Benefited/Impact	1	61	8	Benefited/Impact	1	60	9	Benefited/Impact	1
R305 1 B 1	68	Impact!	1	60	8	Benefited/Impact	1	59	9	Benefited/Impact	1	58	10	Benefited/Impact	1
R879(6b) 1 B 1	59			59	0		•	59	0		-	59	1		
R880(6b) 1 B 1	59			59	0			59	1			58	1		
R881(6b) 1 B 1	63			62	1			61	2			60	3		
R882(6b) 1 B 1	62			61	1			60	2			59	3		
R883(6b) 1 B 1	62			60	2			59	3			59	3		
R884(6b) 1 B 1	62			60	2			60	2			59	2		

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Duo is et lute un etie u	16	-ft Wall	18	-ft Wall	20	-ft Wall	22-	ft Wall
Project Information	Wall 6b 2018-11		Wall 6b 2018-11		Wall 6b 2018-11		Wall 6b 2018-11	
	Average Wtd I.L.	7.7 dB I.L. Avg	Average Wtd I.L.	8.8 dB I.L. Avg	Average Wtd I.L.	9.1 dB I.L. Avg	Average Wtd I.L.	9.4 dB I.L. Avg
	Maximum I.L.	10 dB I.L. Max	Maximum I.L.	11 dB I.L. Max	Maximum I.L.	11 dB I.L. Max	Maximum I.L.	12 dB I.L. Max
I205CW Stafford Road to OR213	Benefited/Impacted ≥ AFG	10 # Prot Units	Benefited/Impacted ≥ AFG	10 # Prot Units	Benefited/Impacted ≥ AFG	10 # Prot Units	Benefited/Impacted ≥ AFG	10 # Prot Units
Contract No. K19786CW	Benefited/Non Impact ≥ AFG	1 # Units	Benefited/Non Impact ≥ AFG	1 # Units	Benefited/Non Impact ≥ AFG	3 # Units	Benefited/Non Impact ≥ AFG	4 # Units
I205CW_Build_Walls6to9	Total Benefited	11 # Ben Units	Total Benefited	11 # Ben Units	Total Benefited	13 # Ben Units	Total Benefited	14 # Ben Units
Wall 6b	Impacted Units ≥ NRDG	9 # Units	Impacted Units ≥ NRDG	10 # Units	Impacted Units ≥ NRDG	10 # Units	Impacted Units ≥ NRDG	10 # Units
НММН	Benefited Units ≥ NRDG	10 # Units	Benefited Units ≥ NRDG	11 # Units	Benefited Units ≥ NRDG	11 # Units	Benefited Units ≥ NRDG	11 # Units
Scott Noel	Percent of impacts ≥ AFG	100% % Ben Units	Percent of impacts ≥ AFG	100% % Ben Units	Percent of impacts ≥ AFG	100% % Ben Units	Percent of impacts ≥ AFG	100% % Ben Units
11/10/2018	Percent of benefits ≥ NRDG	91% % NRDG Units	Percent of benefits ≥ NRDG	100% % NRDG Units	Percent of benefits ≥ NRDG	85% % NRDG Units	Percent of benefits ≥ NRDG	79% % NRDG Units
	"Cost-Reasonable" ?	No	"Cost-Reasonable" ?	No	"Cost-Reasonable" ?	No	"Cost-Reasonable" ?	No
	Surface Area	18619 Sq Feet	Surface Area	20953 Sq Feet	Surface Area	23268 Sq Feet	Surface Area	25603 Sq Feet
U.S. Department of Transportation	Surface Area/Ben Rec	1693 Sq Feet	Surface Area/Ben Rec	1905 Sq Feet	Surface Area/Ben Rec	1790 Sq Feet	Surface Area/Ben Rec	1829 Sq Feet
Federal Highway	Barrier Length	1,165 Feet	Barrier Length	1,165 Feet	Barrier Length	1,165 Feet	Barrier Length	1,165 Feet
Administration	Min Height	16.0 Feet	Min Height	18.0 Feet	Min Height	20.0 Feet	Min Height	22.0 -eet
Administration	Max Height	16.0 Feet	Max Height	18.0 Feet	Max Height	20.0 Feet	Max Height	22.0 Feet
	Avg Height	16.0 Feet	Avg Height	18.0 Feet	Avg Height	20.0 Feet	Avg Height	22.0 -eet
	Cost/Ron Roo	\$405,475	Cost/Ron Roo	\$523,825	Cost/Ron Roo	\$381,700	Cost/Ron Roo	\$040,075
	COSUDEITIVEC	J42.313.31		J47,020		344.740		JHJ. 120
No. of	With Derrier Cound I	avala Impact and Banafit	With Downion Cound L	avala, Impact and Banafit	With Derrier Cound L	avela Impact and Departit	With Dermier Cound La	vola Impact and Banafit
FHWA No. of FHWA Dwellin	With Barrier Sound L	evels, Impact and Benefit	With Barrier Sound L	evels, Impact and Benefit	With Barrier Sound L	evels, Impact and Benefit	With Barrier Sound Le	evels, Impact and Benefit
Receiver ID Row FHWA Dwellin Act Cat Units	With Barrier Sound L g Leq(dBA) IL (db)	evels, Impact and Benefit Impacted? No. Benefited	With Barrier Sound L Leq(dBA) IL (db)	evels, Impact and Benefit Impacted? No. Benefited	With Barrier Sound L Leq(dBA) IL (db)	evels, Impact and Benefit Impacted? No. Benefited	With Barrier Sound Le	evels, Impact and Benefit Impacted? No. Benefited
Receiver ID Row FHWA Act Cat No. of Dwellin Units R295 1 B 1	g With Barrier Sound L Leq(dBA) IL (db) 57 7	evels, Impact and Benefit Impacted? No. Benefited Benefited/Non-Imp 1	With Barrier Sound L Leq(dBA) IL (db) 56 8	evels, Impact and Benefit Impacted? No. Benefited Benefited/Non-Imp 1	With Barrier Sound L Leq(dBA) IL (db) 55 9	evels, Impact and Benefit Impacted? No. Benefited Benefited/Non-Imp 1	With Barrier Sound Le Leq(dBA) IL (db) 54 10	evels, Impact and Benefit Impacted? No. Benefited Benefited/Non-Imp 1
Receiver ID Row FHWA Act Cat No. of Dwellin Units R295 1 B 1 R296 1 B 1	With Barrier Sound L g Leq(dBA) IL (db) 57 7 58 7	evels, Impact and Benefit Impacted? No. Benefited Benefited/Non-Imp 1 Benefited/Impact 1	With Barrier Sound L Leq(dBA) IL (db) 56 8 57 8	evels, Impact and Benefit Impacted? No. Benefited Benefited/Non-Imp 1 Benefited/Impact 1	With Barrier Sound L Leq(dBA) IL (db) 55 9 56 9	evels, Impact and Benefit Impacted? No. Benefited Benefited/Non-Imp 1 Benefited/Impact 1	With Barrier Sound Le Leq(dBA) IL (db) 54 10 55 10	Impact and Benefit Impacted? No. Benefited Benefited/Non-Imp 1 Benefited/Impact 1
Receiver ID Row FHWA Act Cat No. of Dwellin Units R295 1 B 1 R296 1 B 1 R297 1 B 1	With Barrier Sound L Leq(dBA) IL (db) 57 7 58 7 62 6	evels, Impact and Benefit Impacted? No. Benefited Benefited/Inpact 1 Benefited/Impact 1	With Barrier Sound L Leq(dBA) IL (db) 56 8 57 8 61 7	evels, Impact and Benefit Impacted? No. Benefited Benefited/Impact 1 Benefited/Impact 1	With Barrier Sound L Leq(dBA) IL (db) 55 9 56 9 60 8	evels, Impact and Benefit Impacted? No. Benefited Benefited/Impact 1 Benefited/Impact 1	With Barrier Sound Le Leq(dBA) IL (db) 54 10 55 10 58 10	Impact and Benefit Impacted? No. Benefited Benefited/Non-Imp 1 Benefited/Impact 1 Benefited/Impact 1
Receiver ID Row FHWA Act Cat No. of Dwellin Units R295 1 B 1 R296 1 B 1 R297 1 B 1 R298 1 B 1	g With Barrier Sound L Leq(dBA) IL (db) 57 7 58 7 62 6 64 7	evels, Impact and Benefit Impacted? No. Benefited Benefited/Inon-Imp 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1	With Barrier Sound L Leq(dBA) IL (db) 56 8 57 8 61 7 62 9	evels, Impact and Benefit Impacted? No. Benefited Benefited/Non-Imp 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1	With Barrier Sound L Leq(dBA) IL (db) 55 9 56 9 60 8 60 11	evels, Impact and Benefit Impacted? No. Benefited Benefited/Non-Imp 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1	With Barrier Sound Le Leq(dBA) IL (db) 54 10 55 10 58 10 59 12	Impact and Benefit Impacted? No. Benefited Benefited/Non-Imp 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1
Receiver ID Row FHWA Act Cat No. of Dwellin Units R295 1 B 1 R296 1 B 1 R297 1 B 1 R298 1 B 1 R299 1 B 1	With Barrier Sound L Leq(dBA) IL (db) 57 7 58 7 62 6 64 7 65 7	evels, Impact and Benefit Impacted? No. Benefited Benefited/Non-Imp 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1	With Barrier Sound L Leq(dBA) IL (db) 56 8 57 8 61 7 62 9 63 9	evels, Impact and Benefit Impacted? No. Benefited Benefited/Non-Imp 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1	With Barrier Sound L Leq(dBA) IL (db) 55 9 56 9 60 8 60 11 62 10	evels, Impact and Benefit Impacted? No. Benefited Benefited/Non-Imp 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1	With Barrier Sound Let Leq(dBA) IL (db) 54 10 55 10 58 10 59 12 61 11	wels, Impact and Benefit Impacted? No. Benefited Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1
Receiver ID Row FHWA Act Cat No. of Dwellin Units R295 1 B 1 R296 1 B 1 R297 1 B 1 R298 1 B 1 R299 1 B 1 R290 1 B 1	With Barrier Sound L Leq(dBA) IL (db) 57 7 58 7 62 6 64 7 65 7 63 8	evels, Impact and Benefit Impacted? No. Benefited Benefited/Non-Imp 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1	With Barrier Sound L Leq(dBA) IL (db) 56 8 57 8 61 7 62 9 63 9 62 9	evels, Impact and Benefit Impacted? No. Benefited Benefited/Non-Imp 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1	With Barrier Sound L Leq(dBA) IL (db) 55 9 56 9 60 8 60 11 62 10 61 10	evels, Impact and Benefit Impacted? No. Benefited Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1	With Barrier Sound Let Leq(dBA) IL (db) 54 10 55 10 58 10 59 12 61 11 60 11	Impact and Benefit Impacted? No. Benefited Benefited/Inpact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1
Receiver ID Row FHWA Act Cat No. of Dwellin Units R295 1 B 1 R296 1 B 1 R297 1 B 1 R298 1 B 1 R299 1 B 1 R300 1 B 1 R301 1 B 1	With Barrier Sound L Leq(dBA) IL (db) 57 7 58 7 62 6 64 7 65 7 63 8 62 7	evels, Impact and Benefit Impacted? No. Benefited Benefited/Inpact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1	With Barrier Sound L Leq(dBA) IL (db) 56 8 57 8 61 7 62 9 63 9 62 9 61 8	evels, Impact and Benefit Impacted? No. Benefited Benefited/Non-Imp 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1	With Barrier Sound L Leq(dBA) IL (db) 55 9 56 9 60 8 60 11 62 10 61 10 60 9	evels, Impact and Benefit Impacted? No. Benefited Benefited/Non-Imp 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1	With Barrier Sound Let Leq(dBA) IL (db) 54 10 55 10 58 10 59 12 61 11 60 11 60 9	Impact and Benefit Impacted? No. Benefited Benefited/Non-Imp 1 Benefited/Impact 1
Receiver ID Row FHWA Act Cat No. of Dwellin Units R295 1 B 1 R296 1 B 1 R297 1 B 1 R298 1 B 1 R299 1 B 1 R300 1 B 1 R301 1 B 1 R302 1 B 1	With Barrier Sound L 2 6 57 7 58 7 62 6 64 7 63 8 62 7 63 8 62 7 63 8 62 7 62 8	evels, Impact and Benefit Impacted? No. Benefited Benefited/Non-Imp 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1	With Barrier Sound L Leq(dBA) IL (db) 56 8 57 8 61 7 62 9 63 9 62 9 61 8 61 9 61 9	evels, Impact and Benefit Impacted? No. Benefited Benefited/Non-Imp 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1	With Barrier Sound L Leq(dBA) IL (db) 55 9 56 9 60 8 60 11 62 10 61 10 60 9 60 10	evels, Impact and Benefit Impacted? No. Benefited Benefited/Non-Imp 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1	With Barrier Sound Let Leq(dBA) IL (db) 54 10 55 10 58 10 59 12 61 11 60 11 60 9 60 10	Impact and Benefit Impacted? No. Benefited Benefited/Non-Imp 1 Benefited/Impact 1
Receiver ID Row FHWA Act Cat No. of Dwellin Units R295 1 B 1 R296 1 B 1 R297 1 B 1 R298 1 B 1 R299 1 B 1 R300 1 B 1 R302 1 B 1 R303 1 B 1	With Barrier Sound L Leq(dBA) IL (db) 57 7 58 7 62 6 64 7 65 7 63 8 62 7 63 9	evels, Impact and Benefit Impacted? No. Benefited Benefited/Inon-Imp 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1	With Barrier Sound L Leq(dBA) IL (db) 56 8 57 8 61 7 62 9 63 9 61 8 61 9 61 8 61 9 61 9 60 9	evels, Impact and Benefit Impacted? No. Benefited Benefited/Inpact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1	With Barrier Sound L Leq(dBA) IL (db) 55 9 56 9 60 8 60 11 62 10 61 10 60 9 60 10 59 10	evels, Impact and Benefit Impacted? No. Benefited Benefited/Inpact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1	With Barrier Sound Lee Leq(dBA) IL (db) 54 10 55 10 58 10 59 12 61 11 60 9 60 10 59 10	Impact and Benefit Impacted? No. Benefited Benefited/Inpact 1 Benefited/Impact 1
Receiver ID Row FHWA Act Cat No. of Dwellin Units R295 1 B 1 R296 1 B 1 R297 1 B 1 R298 1 B 1 R299 1 B 1 R300 1 B 1 R301 1 B 1 R303 1 B 1 R304 1 B 1	With Barrier Sound L g Leq(dBA) IL (db) 57 7 58 7 62 6 64 7 65 7 63 8 62 7 62 8 60 9 60 9	evels, Impact and Benefit Impacted? No. Benefited Benefited/Inpact 1 Benefited/Impact 1	With Barrier Sound L Leq(dBA) IL (db) 56 8 57 8 61 7 62 9 63 9 61 8 61 9 63 9 61 8 61 9 61 9 61 9 61 9 60 9 59 10	evels, Impact and Benefit Impacted? No. Benefited Benefited/Inpact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1	With Barrier Sound L Leq(dBA) IL (db) 55 9 56 9 60 8 60 11 62 10 61 10 60 9 60 10 55 9	evels, Impact and Benefit Impacted? No. Benefited Benefited/Inpact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1 Benefited/Impact 1	With Barrier Sound Lee Leq(dBA) IL (db) 54 10 55 10 58 10 59 12 61 11 60 9 60 10 59 10 58 10	Wels, Impact and Benefit Impacted? No. Benefited Benefited/Non-Imp 1 Benefited/Impact 1
Receiver ID Row FHWA Act Cat No. of Dwellin Units R295 1 B 1 R296 1 B 1 R297 1 B 1 R298 1 B 1 R300 1 B 1 R301 1 B 1 R302 1 B 1 R303 1 B 1 R304 1 B 1	With Barrier Sound L Leq(dBA) IL (db) 57 7 58 7 62 6 64 7 65 7 62 7 63 8 62 7 63 8 62 7 63 8 60 9 58 10	evels, Impact and Benefit Impacted? No. Benefited Benefited/Inon-Imp 1 Benefited/Impact 1	With Barrier Sound L Leq(dBA) IL (db) 56 8 57 8 61 7 62 9 63 9 61 8 61 9 63 9 61 8 61 9 61 9 61 9 60 9 59 10 57 11	evels, Impact and Benefit Impacted? No. Benefited Benefited/Inpact 1 Benefited/Impact 1	Leq(dBA) IL (db) 55 9 56 9 60 8 60 11 62 10 61 10 60 9 60 10 59 10 58 11 57 11	evels, Impact and Benefit Impacted? No. Benefited Benefited/Inpact 1 Benefited/Impact 1	With Barrier Sound Lee Leq(dBA) IL (db) 54 10 55 10 58 10 59 12 61 11 60 9 60 10 59 10 59 10 59 10 59 10	Wels, Impact and Benefit Impacted? No. Benefited Benefited/Impact 1
Receiver ID Row FHWA Act Cat No. of Dwellin Units R295 1 B 1 R296 1 B 1 R297 1 B 1 R298 1 B 1 R299 1 B 1 R300 1 B 1 R301 1 B 1 R302 1 B 1 R303 1 B 1 R304 1 B 1 R379(6b) 1 B 1	With Barrier Sound L Leq(dBA) IL (db) 57 7 58 7 62 6 64 7 65 7 63 8 62 7 63 8 62 8 60 9 60 9 58 10 58 1	evels, Impact and Benefit Impacted? No. Benefited Benefited/Inon-Imp 1 Benefited/Impact 1	With Barrier Sound L Leq(dBA) IL (db) 56 8 57 8 61 7 62 9 63 9 61 8 61 9 62 9 61 8 61 9 62 9 61 8 61 9 59 10 57 11 57 2	evels, Impact and Benefit Impacted? No. Benefited Benefited/Inpact 1 Benefited/Impact 1	With Barrier Sound L Leq(dBA) IL (db) 55 9 56 9 60 8 60 11 62 10 61 10 60 9 60 10 59 10 58 11 57 11 56 3	evels, Impact and Benefit Impacted? No. Benefited Benefited/Non-Imp 1 Benefited/Impact 1	With Barrier Sound Lee Leq(dBA) IL (db) 54 10 55 10 58 10 59 12 61 11 60 9 60 10 59 10 58 10 59 12 61 11 60 9 60 10 59 10 58 11 56 12 56 4	Impact and Benefit Impacted? No. Benefited Benefited/Impact 1
Receiver ID Row FHWA Act Cat No. of Dwellin Units R295 1 B 1 R296 1 B 1 R297 1 B 1 R298 1 B 1 R300 1 B 1 R301 1 B 1 R302 1 B 1 R303 1 B 1 R304 1 B 1 R379(6b) 1 B 1 R880(6b) 1 B 1	With Barrier Sound L Leq(dBA) IL (db) 57 7 58 7 62 6 64 7 65 7 63 8 62 7 63 8 62 7 63 8 62 7 63 8 60 9 60 9 58 10 58 1 58 2	evels, Impact and Benefit Impacted? No. Benefited Benefited/Inon-Imp 1 Benefited/Impact 1	With Barrier Sound L Leq(dBA) IL (db) 56 8 57 8 61 7 62 9 63 9 61 8 61 9 63 9 61 8 61 9 63 9 61 8 61 9 59 10 57 11 57 2 57 2	evels, Impact and Benefit Impacted? No. Benefited Benefited/Non-Imp 1 Benefited/Impact 1	With Barrier Sound L Leq(dBA) IL (db) 55 9 56 9 60 8 60 11 62 10 61 10 60 9 60 10 55 11 58 11 57 11 56 3 56 3	evels, Impact and Benefit Impacted? No. Benefited Benefited/Non-Imp 1 Benefited/Impact 1	With Barrier Sound Let Leq(dBA) IL (db) 54 10 55 10 58 10 59 12 61 11 60 9 60 10 58 11 56 12 56 4 56 3	Impact and Benefit Impacted? No. Benefited Benefited/Inpact 1 Benefited/Impact 1
Receiver ID Row FHWA Act Cat No. of Dwellin Units R295 1 B 1 R296 1 B 1 R297 1 B 1 R298 1 B 1 R300 1 B 1 R300 1 B 1 R301 1 B 1 R303 1 B 1 R304 1 B 1 R879(6b) 1 B 1 R880(6b) 1 B 1	With Barrier Sound L Leq(dBA) IL (db) 57 7 58 7 62 6 64 7 65 7 62 6 64 7 62 7 62 8 60 9 60 9 58 10 58 1 58 2 59 3	evels, Impact and Benefit Impacted? No. Benefited Benefited/Inpact 1 Benefited/Impact 1	With Barrier Sound L Leq(dBA) IL (db) 56 8 57 8 61 7 62 9 63 9 61 8 61 9 61 8 61 9 61 9 59 10 57 2 57 2 57 2 58 4	evels, Impact and Benefit Impacted? No. Benefited Benefited/Inpact 1 Benefited/Impact 1	With Barrier Sound L Leq(dBA) IL (db) 55 9 56 9 60 8 60 11 62 10 61 10 60 9 60 10 59 10 58 11 57 11 56 3 56 3 56 3	evels, Impact and Benefit Impacted? No. Benefited Benefited/Inpact 1 Benefited/Impact 1	With Barrier Sound Lee Leq(dBA) IL (db) 54 10 55 10 58 10 59 12 61 11 60 9 60 10 59 10 56 4 56 12 56 4 56 3 57 5	Wels, Impact and Benefit Impacted? No. Benefited Benefited/Inpact 1 Benefited/Impact 1
Receiver ID Row FHWA Act Cat No. of Dwellin Units R295 1 B 1 R296 1 B 1 R297 1 B 1 R298 1 B 1 R299 1 B 1 R300 1 B 1 R301 1 B 1 R302 1 B 1 R304 1 B 1 R379(6b) 1 B 1 R880(6b) 1 B 1 R881(6b) 1 B 1	With Barrier Sound L Leq(dBA) IL (db) 57 7 58 7 62 6 64 7 65 7 62 8 62 7 62 8 60 9 58 10 58 1 58 2 59 3 58 4	evels, Impact and Benefit Impacted? No. Benefited Benefited/Inon-Imp 1 Benefited/Impact 1	With Barrier Sound L Leq(dBA) IL (db) 56 8 57 8 61 7 62 9 63 9 61 7 62 9 61 8 61 9 61 8 61 9 60 9 59 10 57 2 57 2 57 2 58 4	evels, Impact and Benefit Impacted? No. Benefited Benefited/Inpact 1 Benefited/Impact 1	Leq(dBA) IL (db) 55 9 56 9 60 8 60 11 62 10 61 10 60 9 60 11 56 9 60 11 61 10 59 10 58 11 56 3 56 3 56 3 58 5 57 5	evels, Impact and Benefit Impacted? No. Benefited Benefited/Inpact 1 1 Benefited/Impact 1 1	With Barrier Sound Lee Leq(dBA) IL (db) 54 10 55 10 58 10 59 12 61 11 60 11 60 9 60 10 58 11 56 12 56 4 56 3 57 5	Evels, Impact and Benefit Impacted? No. Benefited Benefited/Ionact 1 Benefited/Impact 1
Receiver ID Row FHWA Act Cat No. of Dwellin Units R295 1 B 1 R296 1 B 1 R297 1 B 1 R298 1 B 1 R299 1 B 1 R300 1 B 1 R300 1 B 1 R300 1 B 1 R300 1 B 1 R301 1 B 1 R303 1 B 1 R304 1 B 1 R305 1 B 1 R880(6b) 1 B 1 R888(6b) 1 B 1 R888(6b) 1 B 1 R883(6b) 1 B 1	With Barrier Sound L Leq(dBA) IL (db) 57 7 58 7 62 6 64 7 65 7 63 8 62 7 63 8 62 7 63 8 60 9 60 9 58 10 58 2 59 3 58 4	evels, Impact and Benefit Impacted? No. Benefited Benefited/Inpact 1 Benefited/Impact 1	With Barrier Sound L Leq(dBA) IL (db) 56 8 57 8 61 7 62 9 63 9 62 9 61 8 61 9 61 9 61 9 61 9 60 9 57 11 57 2 57 2 58 4 58 4 58 4	evels, Impact and Benefit Impacted? No. Benefited Benefited/Inpact 1 Benefited/Impact 1	Leq(dBA) IL (db) 55 9 56 9 60 8 60 11 62 10 61 10 60 9 60 11 52 10 61 10 59 10 58 11 56 3 56 3 56 3 58 5 57 5 58 4	evels, Impact and Benefit Impacted? No. Benefited Benefited/Inpact 1 Benefited/Impact 1 Benefited/Impact 1 1 1 <	With Barrier Sound Let Leq(dBA) IL (db) 54 10 55 10 58 10 59 12 61 11 60 10 59 10 59 12 61 11 60 10 59 10 58 11 56 12 56 4 56 3 57 5 57 5	Wels, Impact and Benefit Impacted? No. Benefited Benefited/Non-Imp 1 Benefited/Impact 1 Benefited/Non-Imp 1 Benefited/Non-Imp 1 Benefited/Non-Imp 1

Due is at luft			24-ft Wall						
Project Info	ormatio	n		Wall	6b 2018-11				
				Average Wtd I.L.		9.9	dB I.L. Avg		
				Maximum I.L.		12	dB I.L. Max		
I205CW Stafford	Road to C	DR213		Benefited/Impact	ted ≥ AFG	10	# Prot Units		
Contract No.	K19786C	w		Benefited/Non Im	npact ≥ AFG	4	# Units		
I205CW_Build	L_Walls6t	o9		Total Benefited		14	# Ben Units		
Wall	6b			Impacted Units ≥	NRDG	10	# Units		
HMM	1H			Benefited Units ≥	≥ NRDG	11	# Units		
Scott N	loel			Percent of impac	ts ≥ AFG	100%	% Ben Units		
11/10/2	2018			Percent of benefi	its ≥ NRDG	79%	% NRDG Units		
				"Cost-Reasonabl	le" ?	No			
				Surface Area		27927	Sq Feet		
U.S. Departm	nent of Tro	insportati	on	Surface Area/Ber	n Rec	1995	Sq Feet		
Federa	al Hic	hwa	V	Barrier Length		1,165	Feet		
Admin	intro	ion	,	Min Height		24.0	Feet		
Admin	1511 01	1011		Max Height		24.0	Feet		
				Avg Height		24.0	Feet		
						¢c00.475			
				Total Barrier Cos	st	\$098,175			
				Total Barrier Cos Cost/Ben Rec	st	\$49,870			
		EHW/A	No. of	Total Barrier Cos Cost/Ben Rec With Ba	arrier Sound	\$698,175 \$49,870 Levels, Impact and	Benefit		
Receiver ID	Row	FHWA Act Cat	No. of Dwelling	Total Barrier Cos Cost/Ben Rec With Ba	arrier Sound	\$698,175 \$49,870 Levels, Impact and	Benefit		
Receiver ID	Row	FHWA Act Cat	No. of Dwelling Units	Total Barrier Cos Cost/Ben Rec With Ba Leq(dBA)	arrier Sound I IL (db)	\$698,175 \$49,870 Levels, Impact and Impacted?	Benefit No. Benefited		
Receiver ID	Row	FHWA Act Cat	No. of Dwelling Units	Total Barrier Cos Cost/Ben Rec With Ba Leq(dBA) 54	arrier Sound IL (db) 10	\$698,175 \$49,870 Levels, Impact and Impacted? Benefited/Non-Imp	Benefit No. Benefited		
Receiver ID R295 R296	Row 1 1	FHWA Act Cat B B	No. of Dwelling Units 1 1	Total Barrier Cos Cost/Ben Rec With Ba Leq(dBA) 54 55	arrier Sound IL (db) 10 10	\$698,175 \$49,870 Levels, Impact and Impacted? Benefited/Non-Imp Benefited/Impact	Benefit No. Benefited		
Receiver ID R295 R296 R297	Row 1 1 1	FHWA Act Cat B B B	No. of Dwelling Units 1 1 1	Total Barrier Cos Cost/Ben Rec With Ba Leq(dBA) 54 55 57	arrier Sound IL (db) 10 10 11	\$698,175 \$49,870 Levels, Impact and Impacted? Benefited/Non-Imp Benefited/Impact Benefited/Impact	Benefit No. Benefited 1 1 1		
Receiver ID R295 R296 R297 R298	Row 1 1 1 1	FHWA Act Cat B B B B B	No. of Dwelling Units 1 1 1 1	Total Barrier Cos Cost/Ben Rec With Ba Leq(dBA) 54 55 57 59	arrier Sound IL (db) 10 10 11 12	Levels, Impact and Impacted? Benefited/Non-Imp Benefited/Impact Benefited/Impact	Benefit No. Benefited 1 1 1 1		
Receiver ID R295 R296 R297 R298 R299	Row 1 1 1 1 1 1 1 1 1 1	FHWA Act Cat B B B B B B B	No. of Dwelling Units 1 1 1 1 1	Total Barrier Cos Cost/Ben Rec With Ba Leq(dBA) 54 55 57 59 60	arrier Sound L (db) 10 11 12 12 12	Several and the several severa	Benefit No. Benefited 1 1 1 1 1		
Receiver ID R295 R296 R297 R298 R299 R300	Row 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	FHWA Act Cat B B B B B B B B B	No. of Dwelling Units 1 1 1 1 1 1 1 1	Total Barrier Cos Cost/Ben Rec With Ba Leq(dBA) 54 55 57 59 60 59	arrier Sound IL (db) 10 11 11 12 12 12 12	Several and the several severa	Benefit No. Benefited 1 1 1 1 1 1 1 1		
Receiver ID R295 R296 R297 R298 R299 R300 R300 R301	Row 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	FHWA Act Cat B B B B B B B B B B B	No. of Dwelling Units 1 1 1 1 1 1 1 1 1 1	Total Barrier Cos Cost/Ben Rec With Ba Leq(dBA) 54 55 57 59 60 59 59 59	IL (db) 10 10 11 12 12 12 10	Several Severa	Benefit No. Benefited 1 1 1 1 1 1 1 1 1 1		
Receiver ID R295 R296 R297 R298 R299 R300 R301 R302	Row 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	FHWA Act Cat B B B B B B B B B B B B B B B B B B B	No. of Dwelling Units 1 1 1 1 1 1 1 1 1 1 1 1 1	Total Barrier Cos Cost/Ben Rec With Ba Leq(dBA) 54 55 57 59 60 59 59 59 59	arrier Sound I IL (db) 10 10 11 12 12 12 12 10 11	Several and the several severa	Benefit No. Benefited 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
Receiver ID R295 R296 R297 R298 R299 R300 R301 R302 R303	Row 1 1 1 1 1 1 1 1 1 1 1 1	FHWA Act Cat B B B B B B B B B B B B B B B B B B B	No. of Dwelling Units 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Total Barrier Cos Cost/Ben Rec With Ba Leq(dBA) 54 55 57 59 60 59 59 59 59 59 59	arrier Sound I IL (db) 10 11 12 12 12 12 10 11 11	Several and the several severa	Benefit No. Benefited 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
Receiver ID R295 R296 R297 R298 R299 R300 R300 R301 R302 R302 R303 R304	Row	FHWA Act Cat B B B B B B B B B B B B B B B B B B B	No. of Dwelling Units 1 1 1 1 1 1 1 1 1 1 1 1 1	Total Barrier Cos Cost/Ben Rec With Ba Leq(dBA) 54 55 57 59 60 59 59 59 59 59 59 59 59 59 59 59 59	arrier Sound IL (db) 10 10 11 12 12 12 12 10 11 11 11 12	Several and a se	Benefit No. Benefited 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
Receiver ID R295 R296 R297 R298 R299 R300 R301 R302 R303 R304 R304 R305	Row 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	FHWA Act Cat B B B B B B B B B B B B B B B B B B B	No. of Dwelling Units 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Total Barrier Cos Cost/Ben Rec With Ba Leq(dBA) 54 55 57 59 60 59 59 59 59 59 59 59 58 57 58 57 58	arrier Sound IL (db) 10 10 11 12 12 12 10 11 11 12 12 12 12 12 12 12 12	Several and the several and the several and the several and severa	Benefit No. Benefited 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
Receiver ID R295 R296 R297 R298 R309 R300 R301 R302 R302 R303 R304 R305 R879(6b)	Row 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	FHWA Act Cat B B B B B B B B B B B B B B B B B B B	No. of Dwelling Units 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Total Barrier Cos Cost/Ben Rec With Ba Leq(dBA) 54 55 57 59 60 59 59 59 59 59 59 59 59 59 59 59 59 59	arrier Sound IL (db) 10 10 11 12 12 12 10 11 11 12 12 12 12 12 12 12 12	Several Severa	Benefit No. Benefited 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
Receiver ID R295 R296 R297 R298 R300 R301 R302 R303 R304 R305 R879(6b) R880(6b)	Row 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	FHWA Act Cat B B B B B B B B B B B B B B B B B B B	No. of Dwelling Units 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Total Barrier Cos Cost/Ben Rec With Ba Leq(dBA) 54 55 57 59 60 59 59 59 59 59 59 59 59 59 59 59 59 59	arrier Sound L (db) 10 10 11 12 12 12 10 11 11 11 12 12 4 4	Several Action of the	Benefit No. Benefited 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
Receiver ID R295 R296 R297 R298 R299 R300 R301 R302 R303 R304 R305 R879(6b) R881(6b)	Row 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	FHWA Act Cat B B B B B B B B B B B B B B B B B B B	No. of Dwelling Units 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Total Barrier Cos Cost/Ben Rec With Ba Leq(dBA) 54 55 57 59 60 59 59 59 59 59 59 59 59 59 59 59 59 59	arrier Sound I IL (db) 10 10 11 12 12 12 12 10 11 11 11 11 12 12 12 4 4 4 6	Several Action of the	Benefit No. Benefited 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
Receiver ID R295 R296 R297 R298 R299 R300 R301 R302 R303 R304 R305 R879(6b) R881(6b) R882(6b)	Row	FHWA Act Cat B B B B B B B B B B B B B B B B B B B	No. of Dwelling Units 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Total Barrier Cos Cost/Ben Rec With Ba Leq(dBA) 54 55 57 59 60 59 59 59 59 59 59 59 59 59 59 59 59 59	arrier Sound 1 IL (db) 10 10 11 12 12 12 12 12 11 11 12 12	Several and a se	Benefit No. Benefited 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
Receiver ID R295 R296 R297 R298 R299 R300 R301 R302 R303 R304 R305 R879(6b) R881(6b) R882(6b)	Row	FHWA Act Cat B B B B B B B B B B B B B B B B B B B	No. of Dwelling Units 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Total Barrier Cos Cost/Ben Rec With Ba Leq(dBA) 54 55 57 59 60 59 59 59 59 59 59 59 59 59 59 59 59 59	arrier Sound I IL (db) 10 10 11 12 12 12 12 12 10 11 11 11 12 12 4 4 4 6 6 5	Severited/Non-Imp Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact	Benefit No. Benefited 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		

12/3/2018 3:30 PM D-36



I205CW Stafford Road to OR213									
			W	/all 7					
	10'	12'	14'	16'	18'	20'	22'	24'	Units
Average Wtd I.L. (benefited)	6.2	6.4	6.7	7.3	8.2	8.8	8.8	9.3	dBA
Maximum I.L.	9	9	10	10	11	11	12	13	dBA
Benefited/Impacted ≥ AFG	6	8	11	12	12	12	12	12	# of dwelling units
Benefited/Non Impact ≥ AFG	0	1	1	1	1	2	4	4	# of dwelling units
Total Benefited	6	9	12	13	13	14	16	16	# of dwelling units
Impacted Units ≥ NRDG	2	4	6	8	10	11	12	12	# of dwelling units
Benefited Units ≥ NRDG	2	4	6	8	10	12	13	13	# of dwelling units
Percent of impacts ≥ AFG	38%	50%	69%	75%	75%	75%	75%	75%	%
Percent of benefits ≥ NRDG	33%	44%	50%	62%	77%	86%	81%	81%	%
"Cost-Reasonable" ?	No	No	Yes	Yes	No	No	No	No	
Surface Area	9,733	11,684	13,635	15,587	17,531	19,476	21,420	23,363	sq-feet
Surface Area/Ben Rec	1,622	1,298	1,136	1,199	1,349	1,391	1,339	1,460	sq-ft / ben rec
Barrier Length	989	989	989	989	989	989	989	989	ft
Min Height	10	12	14	16	18	20	22	24	ft
Max Height	10	12	14	16	18	20	22	24	ft
Avg Height	10	12	14	16	18	20	22	24	ft
Total Barrier Cost	194,660	233,680	272,700	311,740	438,275	486,900	535,500	584,075	\$
Cost/Ben Rec	32,443	25,964	22,725	23,980	33,713	34,779	33,469	36,505	\$ / ben rec
Effectiveness/Cost Metric (E/C)	4.8	12.0	20.6	26.1	29.0	30.9	35.0	32.1	

ODOT Acoustical Feasibilty Goal (dBA)	5
ODOT Acoustical Feasibilty Goal (%)	51%
ODOT Noise Reduction Design Goal (dBA)	7
ODOT Noise Reduction Design Goal (%)	1%

6/28/2018

Duciest Information	No Barrier Analysis	10)-ft Wall	12	2-ft Wall	14-ft Wall		
Project information	No Barrier	Wall 7 HDR 6-28-201	8	Wall 7 HDR 6-28-201	18	Wall 7 HDR 6-28-20	18	
		Average Wtd I.L. (benefited)	6.2 dB I.L. Avg	Average Wtd I.L.	6.4 dB I.L. Avg	Average Wtd I.L.	6.7 dB I.L. Avg	
		Maximum I.L.	9 dB I.L. Max	Maximum I.L.	9 dB I.L. Max	Maximum I.L.	10 dB I.L. Max	
I205CW Stafford Road to OR213	Total Units Exposed to Impact	16 Benefited/Impacted ≥ AFG	6 # Prot Units	Benefited/Impacted ≥ AFG	8 # Prot Units	Benefited/Impacted ≥ AFG	11 # Prot Units	
Contract No. K19786CW	# Impacts - NAC only	16 Benefited/Non Impact ≥ AFG	0 # Units	Benefited/Non Impact ≥ AFG	1 # Units	Benefited/Non Impact ≥ AFG	1 # Units	
I205CW_Build_Walls6to9	# Impacts - SI only	0 I otal Benefited	6 # Ben Units	I otal Benefited	9 # Ben Units	I otal Benefited	12 # Ben Units	
	# Impacts - Bour NAC & SI	Benefited Units > NRDG	2 # Units	Renefited Units > NRDG	4 # Units	Repetited Units > NRDG		
Scott Noel		Percent of impacts > AEG	38% % Ben Units	Percent of impacts $\geq AEG$	50% % Ben Units	Percent of impacts $\geq AEG$	69% % Ben Units	
6/28/2018		Percent of benefits \geq NRDG	33% % NRDG Units	Percent of benefits ≥ NRDG	44% % NRDG Units	Percent of benefits \geq NRDG	50% % NRDG Units	
		"Cost-Reasonable" ?	No	"Cost-Reasonable" ?	No	"Cost-Reasonable" ?	Yes	
		Surface Area	9733 Sq Feet	Surface Area	11684 Sq Feet	Surface Area	13635 Sq Feet	
U.S. Department of Transportation		Surface Area/Ben Rec	1622 Sq Feet	Surface Area/Ben Rec	1298 Sq Feet	Surface Area/Ben Rec	1136 Sq Feet	
Federal Highway		Barrier Length	989 Feet	Barrier Length	989 Feet	Barrier Length	989 Feet	
Administration		Min Height	10.0 Feet	Min Height	12.0 Feet	Min Height	14.0 Feet	
Administration		Max Height	10.0 Feet	Max Height	12.0 Feet	Max Height	14.0 Feet	
		Avg Height Total Barrier Cost	\$194,660	Avg Height Total Barrier Cost	\$233.680	Avg Height Total Barrier Cost	\$272 700	
	Enter SI Info	Cost/Ben Rec	\$32,443	Cost/Ben Rec	\$25,964	Cost/Ben Rec	\$22,700	
- No. of	Type of Impact No. of	With Barrier Sound I	evels Impact and Benefit	With Barrier Sound I	evels Impact and Benefit	With Barrier Sound	Levels Impact and Benefit	
Receiver ID Row Art Cat Dwelling	Impact? Impacted		ierolo, impaet and Benom		iorolo, impact and Donolit		zorolo, impaor and zonom	
Act Cat Units	Bld Leq > NAC? Sub. Inc.? Units	Leq(dBA) IL (db)	Impacted? No. Benefited	Leq(dBA) IL (db)	Impacted? No. Benefited	Leq(dBA) IL (db)	Impacted? No. Benefited	
R414 1 B 1	56	54 2		54 2		54 2		
R415 1 B 1	56	55 1	_	55 1		55 1		
R416 1 B 1	61	60 1	-	60 1		60 1		
R417 1 B 1	54	53 1	-	53 1	-	53 1		
	54	53 1	-	53 1	-	53 1	4	
R419 1 B 1	55	54 1	-	54 1	•	54 1	1	
R421 1 B 1	58	56 2		56 2	-	56 2		
R422 1 B 1	64	63 1	-	63 1	-	63 1		
R423 1 B 1	65 Impact! 1	65 0	Impact! w/ Bar	65 0	Impact! w/ Bar	65 0	Impact! w/ Bar	
R424 1 B 1	63	61 2		61 2		61 2		
R425 1 B 1	63	62 1		62 1		61 2	1	
R426 1 B 1	65 Impact! 1	64 1	Impact! w/ Bar	63 2	Impact! w/ Bar	63 2	Impact! w/ Bar	
R427 1 B 1	66 Impact! 1	64 2	Impact! w/ Bar	64 2	Impact! w/ Bar	64 2	Impact! w/ Bar	
R428 1 B 1	62	60 2		60 2		60 2		
R429 1 B 1	65 Impact! 1	63 2	Impact! w/ Bar	63 2	Impact! w/ Bar	62 3	Impact! w/ Bar	
	59	57 3	-	57 3	-	56 3	4	
R437 1 B 1	66 Impacting 1	61 5	Benefited/Impact 1	60 6	Benefited/Impact 1	50 4 59 7	Benefited/Impact 1	
R433 1 B 1	64	60 4	Denonted/impact	59 5	Benefited/Non-Imp	59 5	Benefited/Non-Imp	
R434 1 B 1	57	56 1	-	56 1		55 2		
R435 1 B 1	54	54 0		54 0		54 0		
R436 1 B 1	62	59 3		59 3		58 4		
R437 1 B 1	54	54 0		53 1		53 1	1	
R438 1 B 1	53	53 0	-	53 0		53 0		
R439 1 B 1	53	53 0		53 0		53 0		
R440 1 B 1	70 Impact! 1	61 9	Benefited/Impact 1	61 9	Benefited/Impact 1	60 10	Benefited/Impact 1	
R441 1 B 1	63 60	60 3	Repetited/Impact		Reposited/Impact		Repetited/Impact	
R443 1 B 1	60 Impact	64 5	Benefited/Impact 1	62 7	Benefited/Impact 1	61 8	Benefited/Impact 1	
R444 1 B 1	67 Impact 1	64 3	Impact! w/ Bar	62 5	Benefited/Impact 1	61 6	Benefited/Impact 1	
R445 1 B 1	66 Impact 1	63 3	Impact! w/ Bar	62 4	Impact! w/ Bar	61 5	Benefited/Impact 1	
R446 1 B 1	72 Impact! 1	70 2	Impact! w/ Bar	69 3	Impact! w/ Bar	67 5	Benefited/Impact 1	
R447 1 B 1	73 Impact! 1	70 3	Impact! w/ Bar	69 4	Impact! w/ Bar	68 5	Benefited/Impact 1	
R448 1 B 1	73 Impact! 1	68 5	Benefited/Impact 1	67 6	Benefited/Impact 1	66 7	Benefited/Impact 1	
R449 1 B 1	73 Impact! 1	67 6	Benefited/Impact 1	66 7	Benefited/Impact 1	65 8	Benefited/Impact 1	
R450 1 B 1	63	61 2		61 2		60 3		
R451 1 B 1	64	62 2		61 3		61 3		
R452 1 B 1	67 Impact! 1	64 3	Impact! w/ Bar	63 4	Impact! w/ Bar	63 4	Impact! w/ Bar	
R453 1 B 1	69 Impact! 1	65 4	Impact! w/ Bar	64 5	Benefited/Impact 1	63 6	Benefited/Impact 1	
R454 1 B 1	60	59 1	-	59 1	-	59 1		
R400 1 B 1 P456 4 D 4	60	59 1	_	59 1	-		, I	
R457 1 B 1	63	62 1	-		-	61 2	1	
R458 1 B 1	63	62 1	-	61 2	-	61 2	i i i i i i i i i i i i i i i i i i i	
R459 1 B 1	63	62 1	-	61 2	-	61 2		

Project Information	16-	ft Wall	18	-ft Wall	20)-ft Wall	22-ft Wall		
rojectimormation	Wall 7 HDR 6-28-2018	8	Wall 7 HDR 6-28-201	8	Wall 7 HDR 6-28-20 ²	18	Wall 7 HDR 6-28-201	8	
	Average Wtd I.L.	7.3 dB I.L. Avg	Average Wtd I.L.	8.2 dB I.L. Avg	Average Wtd I.L.	8.8 dB I.L. Avg	Average Wtd I.L.	8.8 dB I.L. Avg	
	Maximum I.L.	10 dB I.L. Max	Maximum I.L.	11 dB I.L. Max	Maximum I.L.	11 dB I.L. Max	Maximum I.L.	12 dB I.L. Max	
1205CW Statford Road to OR213	Benefited/Impacted ≥ AFG	12 # Prot Units	Benefited/Impacted ≥ AFG	12 # Prot Units	Benefited/Impacted ≥ AFG	12 # Prot Units	Benefited/Impacted ≥ AFG	12 # Prot Units	
1205CW Build Walls6to9	Total Repetited	13 # Ben Units	Total Repetited	13 # Ben Inits	Total Benefited	2 # Offics	Total Renefited	4 # Offics	
Wall 7	Impacted Units ≥ NRDG	8 # Units	Impacted Units ≥ NRDG	10 # Units	Impacted Units ≥ NRDG	11 # Units	Impacted Units ≥ NRDG	12 # Units	
НММН	Benefited Units ≥ NRDG	8 # Units	Benefited Units ≥ NRDG	10 # Units	Benefited Units ≥ NRDG	12 # Units	Benefited Units ≥ NRDG	13 # Units	
Scott Noel	Percent of impacts ≥ AFG	75% % Ben Units	Percent of impacts ≥ AFG	75% % Ben Units	Percent of impacts ≥ AFG	75% % Ben Units	Percent of impacts ≥ AFG	75% % Ben Units	
6/28/2018	Percent of benefits ≥ NRDG	62% % NRDG Units	Percent of benefits ≥ NRDG	77% % NRDG Units	Percent of benefits ≥ NRDG	86% % NRDG Units	Percent of benefits ≥ NRDG	81% % NRDG Units	
	"Cost-Reasonable" ?	Yes	"Cost-Reasonable" ?	No	"Cost-Reasonable" ?	No	"Cost-Reasonable" ?	No	
	Surface Area	15587 Sq Feet	Surface Area	17531 Sq Feet	Surface Area	19476 Sq Feet	Surface Area	21420 Sq Feet	
0.5. Department of Transportation	Surface Area/Ben Rec	080 Feet	Surface Area/Ben Rec	1349 Sq Feel	Surface Area/Ben Rec	080 Feet	Surface Area/Ben Rec	089 Feet	
rederal Highway	Min Height	16.0 Feet	Min Height	18.0 Feet	Min Height	20.0 Feet	Min Height	22.0 Feet	
Administration	Max Height	16.0 Feet	Max Height	18.0 Feet	Max Height	20.0 Feet	Max Height	22.0 Feet	
	Avg Height	16.0 Feet	Avg Height	18.0 Feet	Avg Height	20.0 Feet	Avg Height	22.0 Feet	
	Total Barrier Cost	\$311,740	Total Barrier Cost	\$438,275	Total Barrier Cost	\$486,900	Total Barrier Cost	\$535,500	
	Cost/Ben Rec	\$23,980.00	Cost/Ben Rec	\$33,713	Cost/Ben Rec	\$34,779	Cost/Ben Rec	\$33,469	
FHWA Boundary Discussion	With Barrier Sound Le	evels, Impact and Benefit	With Barrier Sound L	evels, Impact and Benefit	With Barrier Sound L	evels, Impact and Benefit	With Barrier Sound Le	evels, Impact and Benefit	
Act Cat Units	Leq(dBA) IL (db)	Impacted? No. Benefited	Leg(dBA) IL (db)	Impacted? No. Benefited	Leg(dBA) IL (db)	Impacted? No. Benefited	Leg(dBA) IL (db)	Impacted? No. Benefited	
R414 1 B 1	54 2		54 2	· ·	54 2	· · · · · · · · · · · · · · · · · · ·	53 3	•	
R415 1 B 1	55 1		54 2		54 2		54 2		
R416 1 B 1	60 1		60 1		59 2		59 2		
R417 1 B 1	53 1		53 1		53 1		53 1	_	
R418 1 B 1	53 1	_	53 1	-	53 1	-	53 1	-	
R419 1 B 1 R420 1 B 1	54 1	-	54 1	-	54 1	-	54 1	-	
R421 1 B 1	56 2	-	56 2	-	56 2	-	56 2	-	
R422 1 B 1	63 1		63 1		63 1		63 1	-	
R423 1 B 1	65 0	Impact! w/ Bar	65 0	Impact! w/ Bar	65 0	Impact! w/ Bar	65 0	Impact! w/ Bar	
R424 1 B 1	61 2		61 2		61 2		61 2		
R425 1 B 1	61 2		61 2		61 2		61 2		
R426 1 B 1	63 2	Impact! w/ Bar	63 2	Impact! w/ Bar	63 2	Impact! w/ Bar	63 2	Impact! w/ Bar	
R427 I B I	60 2	Impacti w/ Bai	60 2		60 2	Impacti w/ Bai	59 3		
R429 1 B 1	62 3	Impact! w/ Bar	62 3	Impact! w/ Bar	62 3	Impact! w/ Bar	62 3	Impact! w/ Bar	
R430 1 B 1	55 4		55 4		55 4		55 4		
R431 1 B 1	56 4		56 4		56 4		55 5	Benefited/Non-Imp 1	
R432 1 B 1	58 8	Benefited/Impact 1	58 8	Benefited/Impact 1	58 8	Benefited/Impact 1	57 9	Benefited/Impact 1	
R433 1 B 1	58 6	Benefited/Non-Imp 1	58 6	Benefited/Non-Imp 1	57 7	Benefited/Non-Imp 1	57 7	Benefited/Non-Imp 1	
R434 1 B 1	55 2	-	55 2	-	55 2	-	55 2	-	
R435 I B I	58 4	-	58 4	-	58 4	-	58 4	-	
R437 1 B 1	53 1	-	53 1	-	53 1	-	53 1	-	
R438 1 B 1	53 0	-	53 0	-	52 1	-	52 1	-	
R439 1 B 1	53 0		53 0		53 0		53 0		
R440 1 B 1	60 10	Benefited/Impact 1	59 11	Benefited/Impact 1	59 11	Benefited/Impact 1	59 11	Benefited/Impact 1	
R441 1 B 1	59 4		59 4		59 4		59 4		
R44Z 1 B 1	60 9	Benefited/Impact 1	59 10	Benefited/Impact 1	59 10	Benefited/Impact 1	58 11	Benefited/Impact 1	
R444 1 B 1	61 6	Benefited/Impact 1	60 7	Benefited/Impact 1	59 8	Benefited/Impact 1	59 8	Benefited/Impact 1	
R445 1 B 1	61 5	Benefited/Impact 1	60 6	Benefited/Impact 1	59 7	Benefited/Impact 1	59 7	Benefited/Impact 1	
R446 1 B 1	64 8	Benefited/Impact 1	62 10	Benefited/Impact 1	61 11	Benefited/Impact 1	60 12	Benefited/Impact 1	
R447 1 B 1	66 7	Benefited/Impact 1	64 9	Benefited/Impact 1	62 11	Benefited/Impact 1	61 12	Benefited/Impact 1	
R448 1 B 1	65 8	Benefited/Impact 1	64 9	Benefited/Impact 1	62 11	Benefited/Impact 1	61 12	Benefited/Impact 1	
R449 1 B 1	64 9	Benefited/Impact 1	63 10	Benefited/Impact 1	62 11	Benefited/Impact 1	61 12	Benefited/Impact 1	
R450 1 B 1	60 3	-	59 4	-	59 4	Popofited/Non Inc.	58 5	Benefited/Non-Imp 1	
R452 1 B 1	62 5	Benefited/Impact 1	62 5	Benefited/Impact 1	59 5 61 6	Benefited/Impact	59 5 60 7	Benefited/Impact	
R453 1 B 1	63 6	Benefited/Impact 1	62 7	Benefited/Impact 1	62 7	Benefited/Impact 1	61 8	Benefited/Impact 1	
R454 1 B 1	58 2		58 2		58 2		58 2		
R455 1 B 1	58 2	-	58 2		58 2	-	58 2	-	
R456 1 B 1	58 2		58 2		58 2		58 2		
R457 1 B 1	60 3		60 3		60 3		60 3		
R458 1 B 1	60 3		60 3		60 3		60 3		
R459 1 B 1	61 2		60 3		60 3		60 3		

	Due je ot lu fe u				24-ft Wall								
	Project Inform	natio	n		Wall 7 HDR 6-28-2018								
					Average Wtd I.	L.	9.3	dB I.L. Avg					
					Maximum I.L.		13	dB I.L. Max					
	I205CW Stafford Ro	ad to C	DR213		Benefited/Impa	icted ≥ AFG	12	# Prot Units					
	Contract No. K1	9786C	w		Benefited/Non	Impact ≥ AFG	4 # Units						
	I205CW_Build_V	Valls6t	o9		Total Benefited		16 # Ben Units						
	Wall 7				Impacted Units	≥ NRDG	12 # Units						
	НММН				Benefited Units	s ≥ NRDG	13	# Units					
	Scott Noe	el			Percent of imp	acts ≥ AFG	75%	% Ben Units					
	6/28/201	В			Percent of ben	efits ≥ NRDG	81%	% NRDG Units					
					"Cost-Reasona	ble" ?	No						
					Surface Area	_	23363	Sq Feet					
	U.S. Departmen	nt of Iro	insportatio	no	Surface Area/E	en Rec	1460	SqFeet					
	Federal	Hig	hwa	y i	Barrier Lengin		989	Feel					
	Adminis	strat	ion		Max Height		24.0	Feel					
					Ava Height		24.0	Feel					
					Total Barrier C	nst	\$584.075	1 661					
					Cost/Ben Rec	001	\$36,505						
				No. of	With F	Parrier Sound Le	vols Impact and	Bonofit					
	Receiver ID	Row	FHWA	Dwelling	vvitii L		weis, impact and	Denent					
			Act Cat	Units	Leq(dBA)	IL (db)	Impacted?	No. Benefited					
R414		1	В	1	53	3							
R415		1	В	1	54	2							
R416		1	В	1	59	2							
R417		1	В	1	53	1							
2418		1	В	1	53	1							
8419		1	В	1	53	1							
R420		1	В	1	54	1							
8421		1	В	1	56	2							
R422		1	В	1	63	1							
R423		1	В	1	65	0	Impact! w/ Bar						
R424		1	В	1	61	2							
3425		1	В	1	61	2							
R426		. 1	В	1	63	2	Impact! w/ Bar						
R427		1	В	1	63	3	Impact! w/ Bar						
428		- 1	В	1	59	3	have a state of Data						
R429		1	В	1	62	3	Impact! w/ Bar						
3430 2424			В	1	55	4	Demostra d/Mars June	4					
2431		• ¦	D	1	55	0	Benefited/Impact	1					
1432 2/33		- 1	B	1	57	<u> </u>	Benefited/Non-Imp	1					
2434		• 1	B	1	55	2	Denented/Non-Imp						
2435		· 1	B	1	53	1							
2436		· 1	B	1	58	4							
3437		1	В	1	53	1							
R438		1	В	1	52	1							
8439		1	В	1	52	1							
R440		1	В	1	58	12	Benefited/Impact	1					
441		1	В	1	59	4							
442		1	В	1	58	11	Benefited/Impact	1					
443		1	В	1	58	11	Benefited/Impact	1					
R444		1	В	1	58	9	Benefited/Impact	1					
R445		1	В	1	58	8	Benefited/Impact	1					
R446		1	В	1	60	12	Benefited/Impact	1					
R447		1	В	1	60	13	Benefited/Impact	1					
448		1	В	1	60	13	Benefited/Impact	1					
449		1	В	1	61	12	Benefited/Impact	1					
450		1	В	1	58	5	Benefited/Non-Imp	1					
451		1	В	1	58	6	Benefited/Non-Imp	1					
452		1	В	1	60	7	Benefited/Impact	1					
R453		1	В	1	60	9	Benefited/Impact	1					
R454		1	В	1	58	2							
₹455		1	В	1	58	2							
		1	В	1	58	2							
R456													
R456 R457		1	В	1	60	3							
R456 R457 R458		1 1	B B	1 1	60 60	3 3							

12/3/2018 3:32 PM D-40



I205CW Stafford Road to OR213													
			W	/all 8									
	10'	12'	14'	16'	18'	20'	22'	24'	Units				
Average Wtd I.L. (benefited)	6	6.9	7.1	7.8	7.4	7.4	7.4	7.6	dBA				
Maximum I.L.	9	10	10	11	11	12	12	13	dBA				
Benefited/Impacted ≥ AFG	7	8	10	10	11	12	12	12	# of dwelling units				
Benefited/Non Impact ≥ AFG	0	0	0	0	3	4	5	5	# of dwelling units				
Total Benefited	7	8	10	10	14	16	17	17	# of dwelling units				
Impacted Units ≥ NRDG	2	4	6	7	7	7	7	8	# of dwelling units				
Benefited Units ≥ NRDG	2	4	6	7	7	7	7	8	# of dwelling units				
Percent of impacts ≥ AFG	28%	32%	40%	40%	44%	48%	48%	48%	%				
Percent of benefits ≥ NRDG	29%	50%	60%	70%	50%	44%	41%	47%	%				
"Cost-Reasonable" ?	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes					
Surface Area	6,739	8,084	9,426	10,784	12,128	13,475	14,824	16,173	sq-feet				
Surface Area/Ben Rec	963	1,011	943	1,078	866	842	872	951	sq-ft / ben rec				
Barrier Length	683	683	683	683	683	683	683	683	ft				
Min Height	10	12	14	16	18	20	22	24	ft				
Max Height	10	12	14	16	18	20	22	24	ft				
Avg Height	10	12	14	16	18	20	22	24	ft				
Total Barrier Cost	134,780	161,680	188,520	269,600	303,200	336,875	370,600	404,325	\$				
Cost/Ben Rec	19,254	20,210	18,852	26,960	21,657	21,055	21,800	23,784	\$ / ben rec				
Effectiveness/Cost Metric (E/C)	3.3	6.3	10.2	10.4	12.9	13.3	12.8	13.5					

ODOT Acoustical Feasibilty Goal (dBA)	5
ODOT Acoustical Feasibilty Goal (%)	51%
ODOT Noise Reduction Design Goal (dBA)	7
ODOT Noise Reduction Design Goal (%)	1%

6/26/2018

Project Information No Barrier Ana			Analysis		10-ft Wall					12-ft Wall				14-ft Wall				
Project Info	ormation			No Barrier			Wall 8	HDR 6-26-201	8		Wall	8 HDR 6-26-201	18		Wal	8 HDR 6-26-20)18	
							Average Wtd I.L.	(benefited)	6.	0 dB I.L. Avg	Average Wtd I.I	L.	6	.9 dB I.L. Avg	Average Wtd I.L		7	1 dB I.L. Avg
							Maximum I.L.			9 dB I.L. Max	Maximum I.L.			10 dB I.L. Max	Maximum I.L.			10 dB I.L. Max
I205CW Stafford	Road to OR213		Total Units Expos	sed to Impact		25	Benefited/Impac	ted ≥ AFG		7 # Prot Units	Benefited/Impa	cted ≥ AFG		8 # Prot Units	Benefited/Impac	ted ≥ AFG		10 # Prot Units
Contract No.	K19786CW		# Impacts - NAC of	, ,		25	Benefited/Non In	ipact ≥ AFG		U # Units	Benefited/Non I	mpact ≥ AFG		0 # Units	Benefited/Non II	mpact ≥ AFG		0 # UNIts
Wall	1_1130109		# Impacts - St only # Impacts - Both N	/ IAC & SI		(Impacted Units ≥	NRDG		2 # Units	Impacted Units	≥ NRDG		4 # Linits	Impacted Units	≥ NRDG		6 # Units
HMN	лн						Benefited Units	NRDG		2 # Units	Benefited Units	≥ NRDG		4 # Units	Benefited Units	≥ NRDG		6 # Units
Scott	Noel						Percent of impac	ts ≥ AFG	289	% Ben Units	Percent of impa	acts ≥ AFG	32	% % Ben Units	Percent of impa	cts ≥ AFG	4(% % Ben Units
2/3/20	018						Percent of benefits ≥ NRDG		299	6 % NRDG Units	Percent of bene	efits ≥ NRDG	50	% NRDG Units	Percent of bene	fits ≥ NRDG	60	% NRDG Units
							"Cost-Reasonab	e" ?	Ye	S	"Cost-Reasonal	ble" ?	Ye	es	"Cost-Reasonab	ole" ?	Ye	S
							Surface Area	_	673	9 Sq Feet	Surface Area	_	808	34 Sq Feet	Surface Area	_	942	6 Sq Feet
U.S. Departr	nent of Transportati	ion					Surface Area/Be	n Rec	96	3 Sq Feet	Surface Area/B	en Rec	107	1 Sq Feet	Surface Area/Be	en Rec	92	3 Sq Feet
Feder	al Highwa	iy i					Min Height		10		Min Height		12		Min Height		14	0 Feet
Admir Admir	nistration	-					Max Height		10.	0 Feet	Max Height		12	0 Feet	Max Height		14	0 Feet
							Avg Height		10.	0 Feet	Avg Height		12	.0 Feet	Avg Height		14	0 Feet
							Total Barrier Cos	st	\$134,78	0	Total Barrier Co	ost	\$161,68	60	Total Barrier Cos	st	\$188,52	0
				Enter SI Info			Cost/Ben Rec		\$19,25	4	Cost/Ben Rec		\$20,2	10	Cost/Ben Rec		\$18,8	52
	_ FHWA	No. of	Type of li	mpact		Impacted	With B	arrier Sound L	evels, Impact and	Benefit	With	Barrier Sound L	evels, Impact and	Benefit	With	Barrier Sound	Levels, Impact and	Benefit
Receiver ID	Row Act Cat	Dwelling	Bid Leg > NAC2	Sub Inc.2	Impact?	Units		IL (db)	Impacted?	No. Benefited		ll (db)	Impacted?	No. Benefited		IL (db)	Impacted?	No. Benefited
R489	1 B		74		Impact	1	65	9	Benefited/Impact	1	64	10	Benefited/Impact	1	64	10	Benefited/Impact	1
R490	1 B	1	74		Impact	1	70	4	Impact! w/ Bar	•	70	4	Impact! w/ Bar		70	4	Impact! w/ Bar	
R491	1 B	1	70		Impact!	1	65	5	Benefited/Impact	1	64	6	Benefited/Impact	1	64	6	Benefited/Impact	1
R492	1 B	1	68		Impact!	1	65	3	Impact! w/ Bar	-	65	3	Impact! w/ Bar	_	65	3	Impact! w/ Bar	_
R493	1 B	1	65		Impact!	1	63	2	Impact! w/ Bar		62	3	Impact! w/ Bar		62	3	Impact! w/ Bar	
R494	1 B	1	64				63	1			63	1			62	2		
R495	1 B	1	63				62	1			62	1			62	1		
R496		1	66		Impact!	1	62	4	Impact! w/ Bar		62	4	Impact! w/ Bar		61	5	Benefited/Impact	1
R497 P408	<u> </u>	1	64		Impacu	I	61	4	Impact! w/ Bar		61	4	Impact! w/ Bar		60	5	Benefited/Impact	
R499	— 1 B	1	62				61	1	-		60	2	-		60	2	-	
R500	1 B	1	61				60	1	-		60	1	-		60	1	-	
R501	1 B	1	71		Impact!	1	64	7	Benefited/Impact	1	63	8	Benefited/Impact	1	62	9	Benefited/Impact	1
R502	1 B	1	71		Impact!	1	66	5	Benefited/Impact	1	65	6	Benefited/Impact	1	64	7	Benefited/Impact	1
R503	1 B	1	70		Impact!	1	65	5	Benefited/Impact	1	63	7	Benefited/Impact	1	62	8	Benefited/Impact	1
R504	1 B	1	72		Impact!	1	66	6	Benefited/Impact	1	65	7	Benefited/Impact	1	64	8	Benefited/Impact	1
R505	1 B	1	72		Impact!	1	67	5	Benefited/Impact	1	66	6	Benefited/Impact	1	65	7	Benefited/Impact	1
R506	- 1 B	1	72		Impact!	1	68	4	Impact! w/ Bar		67	5	Benefited/Impact	1	60	6	Benefited/Impact	1
R508	— 1 B	1	62		Inpace		61	1	Impact: W/ Dai		60	2	inipact: w/ Dai		60	2		
R509	1 B	1	64				62	2	-		61	3	-		60	4	-	
R510	1 B	1	64				61	3			61	3			60	4		
R511	1 B	1	64				61	3			61	3			60	4		
R512	1 B	1	64				61	3			61	3			60	4		
R513	1 B	1	63				61	2	-		60	3	-		60	3	_	
R514		1	62				50 50	2	-		60 50	2	-		60 50	2	-	
R516	1 B	1	60				59	1	-		59	1	-		59	1	-	
R517	1 B	1	59				59	0	-		59	0			59	0		
R518	1 B	1	61				61	0	-		61	0	-		61	0	-	
R519	1 B	1	56				56	0			56	0			56	0		
R520	1 B	1	55				54	1			55	0			55	0		
R521	1 B	1	67		Impact!	1	67	0	Impact! w/ Bar		67	0	Impact! w/ Bar		67	0	Impact! w/ Bar	
R522	1 B	1	67		Impact!	1	67	0	Impact! w/ Bar		67	0	Impact! w/ Bar		67	0	Impact! w/ Bar	
R523		1	67		Impact!	1	67	0	Impact! w/ Bar		67	0	Impact! w/ Bar		67	0	Impact! w/ Bar	
R524	I В	1	65		Impact	1	65	0	Impact w/ Bar		65	0	Impact! w/ Bar		65	0	Impact w/ Bar	
R526	— 1 B	1	61		inipact:		61	0	Impact: W/ Dai		61	0	inipact: w/ Dai		61	0		
R527	1 B	1	73		Impact!	1	73	Ŭ Ŭ	Impact! w/ Bar		73	0	Impact! w/ Bar		73	0	Impact! w/ Bar	
R528	1 B	1	71		Impact!	1	71	0	Impact! w/ Bar		71	0	Impact! w/ Bar		71	0	Impact! w/ Bar	
R529	1 B	1	70		Impact!	1	70	0	Impact! w/ Bar		70	0	Impact! w/ Bar		70	0	Impact! w/ Bar	
R530	1 B	1	73		Impact!	1	73	0	Impact! w/ Bar		73	0	Impact! w/ Bar		73	0	Impact! w/ Bar	
R531	1 B	1	72		Impact!	1	72	0	Impact! w/ Bar		72	0	Impact! w/ Bar		72	0	Impact! w/ Bar	
R532	1 B	1	70		Impact!	1	70	0	Impact! w/ Bar		70	0	Impact! w/ Bar		70	0	Impact! w/ Bar	
K533	1 B	1	56				56	0	-		56	0	-		56	0	-	
R535		1	62 55				0∠ 55	0	-		02 55	0	-		02 55	0	-	
R536	1 B	1	64				64	0	-		64	0	-		64	0	-	
			57	1			UT	· ·			57	5				5		

Product by formation	16	-ft Wall	18	-ft Wall	20-1	ft Wall	22-ft Wall		
Project Information	Wall 8 HDR 6-26-201	8	Wall 8 HDR 6-26-201	8	Wall 8 HDR 6-26-2018	}	Wall 8 HDR 6-26-2018	8	
	Average Wtd I.L.	7.8 dB I.L. Avg	Average Wtd I.L.	7.4 dB I.L. Avg	Average Wtd I.L.	7.4 dB I.L. Avg	Average Wtd I.L.	7.4 dB I.L. Avg	
	Maximum I.L.	11 dB I.L. Max	Maximum I.L.	11 dB I.L. Max	Maximum I.L.	12 dB I.L. Max	Maximum I.L.	12 dB I.L. Max	
I205CW Stafford Road to OR213	Benefited/Impacted ≥ AFG	10 # Prot Units	Benefited/Impacted ≥ AFG	11 # Prot Units	Benefited/Impacted ≥ AFG	12 # Prot Units	Benefited/Impacted ≥ AFG	12 # Prot Units	
Contract No. K19786CW	Benefited/Non Impact ≥ AFG	0 # Units	Benefited/Non Impact ≥ AFG	3 # Units	Benefited/Non Impact ≥ AFG	4 # Units	Benefited/Non Impact ≥ AFG	5 # Units	
I205CW_Build_Walls8to9	I otal Benefited	10 # Ben Units	I otal Benefited	14 # Ben Units	I otal Benefited	16 # Ben Units	I otal Benefited	17 # Ben Units	
	Repetited Units > NRDG	7 # Units	Repetited Units > NRDG	7 # Units	Repetited Units > NRDG	7 # Units	Repetited Units > NRDG		
	Bereatt of impacts > AEC	7 # Units	Bereant of impacts > AEC	7 # Units	Bereant of impacts > AEC	1 # Units	Bereant of impacts > AEC	1 # Units	
2/3/2018	Percent of henefits > NRDG	70% % NRDG Units	Percent of benefits > NRDG	50% NRDG Units	Percent of henefits > NRDG	46% % Den Onits	Percent of henefits > NRDG	40% % Den Onits	
	"Cost-Reasonable" ?	No	"Cost-Reasonable" ?	Yes	"Cost-Reasonable" ?	Yes	"Cost-Reasonable" ?	Yes	
	Surface Area	10784 Sq Feet	Surface Area	12128 Sq Feet	Surface Area	13475 Sq Feet	Surface Area	14824 Sq Feet	
U.S. Department of Transportation	Surface Area/Ben Rec	1078 Sq Feet	Surface Area/Ben Rec	866 Sq Feet	Surface Area/Ben Rec	842 Sq Feet	Surface Area/Ben Rec	872 Sq Feet	
Federal Highway	Barrier Length	683 Feet	Barrier Length	683 Feet	Barrier Length	683 Feet	Barrier Length	683 Feet	
Administration	Min Height	16.0 Feet	Min Height	18.0 Feet	Min Height	20.0 Feet	Min Height	22.0 Feet	
Administration	Max Height	16.0 Feet	Max Height	18.0 Feet	Max Height	20.0 Feet	Max Height	22.0 Feet	
	Avg Height Total Barrier Cost	10.0 Feel	Avg Height Total Barrier Cost	18.0 Feel	Avg Height Total Barrier Cost	20.0 Feel \$336.875	Avg Height Total Barrier Cost	\$370,600	
	Cost/Ben Rec	\$26,960.00	Cost/Ben Rec	\$21,657	Cost/Ben Rec	\$21.055	Cost/Ben Rec	\$21.800	
No. of	With Barrier Sound L	evels Impact and Benefit	With Barrier Sound I	evels Impact and Benefit	With Barrier Sound Le	vels Impact and Benefit	With Barrier Sound Le	vels Impact and Benefit	
Receiver ID Row Dwelling		istois, impact and Benefit		store, impact and Denent	that Barrier Sound Le	toto, impaor and bellent	than Barrier Sound Le	toio, impaor and benefit	
Act Cat Units	Leq(dBA) IL (db)	Impacted? No. Benefited	Leq(dBA) IL (db)	Impacted? No. Benefited	Leq(dBA) IL (db)	Impacted? No. Benefited	Leq(dBA) IL (db)	Impacted? No. Benefited	
R489 1 B 1	63 11	Benefited/Impact 1	63 11	Benefited/Impact 1	62 12	Benefited/Impact 1	62 12	Benefited/Impact 1	
R490 1 B 1	70 4	Impact! w/ Bar	69 5	Benefited/Impact 1	69 5	Benefited/Impact 1	69 5	Benefited/Impact 1	
R491 1 B 1	64 6	Benefited/Impact 1	64 6	Benefited/Impact 1	64 6	Benefited/Impact 1	64 6	Benefited/Impact 1	
R492 1 B 1	64 4	Impact! W/ Bar		Impact! w/ Bar	63 5	Benefited/impact	63 5	Benefited/Impact 1	
R493 I B I	62 3	Impact: w/ Bai	62 2		62 2	impact: w/ Bai	62 2	impact: w/ bar	
R495 1 B 1	61 2	-	61 2	-	61 2		61 2	•	
R496 1 B 1	61 5	Benefited/Impact 1	61 5	Benefited/Impact 1	60 6	Benefited/Impact 1	60 6	Benefited/Impact 1	
R497 1 B 1	61 5	Benefited/Impact 1	60 6	Benefited/Impact 1	60 6	Benefited/Impact 1	60 6	Benefited/Impact 1	
R498 1 B 1	60 4		60 4		59 5	Benefited/Non-Imp 1	59 5	Benefited/Non-Imp 1	
R499 1 B 1	60 2		59 3		59 3		59 3		
R500 1 B 1	59 2		59 2		59 2		59 2		
R501 1 B 1	61 10	Benefited/Impact 1	60 11	Benefited/Impact 1	<u>59</u> 12	Benefited/Impact 1	59 12	Benefited/Impact 1	
R502 1 B 1	63 8	Benefited/Impact 1	62 9	Benefited/Impact 1	61 10	Benefited/Impact 1	60 11	Benefited/Impact 1	
R503 1 B 1	61 9	Benefited/Impact 1	61 9	Benefited/Impact	60 10	Benefited/Impact 1	60 10	Benefited/Impact 1	
R504 1 B 1	64 9	Benefited/Impact	62 1 0	Benefited/Impact	61 11 63 0	Benefited/Impact	61 11 62 0	Benefited/Impact	
R506 1 B 1	65 7	Benefited/Impact 1	65 7	Benefited/Impact	65 7	Benefited/Impact 1	65 7	Benefited/Impact 1	
R507 1 B 1	63 2	Impact! w/ Bar	63 2	Impact! w/ Bar	63 2	Impact! w/ Bar	63 2	Impact! w/ Bar	
R508 1 B 1	60 2		60 2	- · · · · · · · · · · · · · · · · · · ·	60 2		59 3	, ,	
R509 1 B 1	60 4		60 4		60 4		59 5	Benefited/Non-Imp 1	
R510 1 B 1	60 4		59 5	Benefited/Non-Imp 1	59 5	Benefited/Non-Imp 1	59 5	Benefited/Non-Imp 1	
R511 1 B 1	60 4		59 5	Benefited/Non-Imp 1	59 5	Benefited/Non-Imp 1	59 5	Benefited/Non-Imp 1	
R512 1 B 1	60 4	_	59 5	Benefited/Non-Imp 1	59 5	Benefited/Non-Imp 1	59 5	Benefited/Non-Imp 1	
R513 1 B 1	60 3	_	59 4	-	59 4		59 4	-	
R515 1 B 1	59 1	_	59 3	-	59 3		59 3 59 1		
R516 1 B 1	59 1	-	59 1	-	59 1		59 1	1	
R517 1 B 1	58 1	-	58 1	-	58 1		58 1	i -	
R518 1 B 1	60 1	-	60 1	-	60 1		60 1	1	
R519 1 B 1	56 0		56 0		56 0		56 0	1	
R520 1 B 1	55 0		55 0		55 0		55 0	<u> </u>	
R521 1 B 1	67 0	Impact! w/ Bar	67 0	Impact! w/ Bar	67 0	Impact! w/ Bar	67 0	Impact! w/ Bar	
R522 1 B 1	67 0	Impact! w/ Bar	67 0	Impact! w/ Bar	67 0	Impact! w/ Bar	67 0	Impact! w/ Bar	
R523 1 B 1	67 0	Impact! w/ Bar	67 0	Impact! w/ Bar	67 0	Impact! w/ Bar	67 0	Impact! w/ Bar	
R024 1 B 1 P525 1 P 1		Impact w/ Bar		Impact! W/ Bar		Impacti w/ Bar		Impact! W/ Bar	
R323 I B I	61 0	Impact w Bar	61 0		61 0	Impacti w Bai	61 0	impact: w/ bar	
R527 1 B 1	73 0	Impact! w/ Bar	73 0	Impact! w/ Bar	73 0	Impact! w/ Bar	73 0	Impact! w/ Bar	
R528 1 B 1	71 0	Impact! w/ Bar	71 0	Impact! w/ Bar	71 0	Impact! w/ Bar	71 0	Impact! w/ Bar	
R529 1 B 1	70 0	Impact! w/ Bar	70 0	Impact! w/ Bar	70 0	Impact! w/ Bar	70 0	Impact! w/ Bar	
R530 1 B 1	73 0	Impact! w/ Bar	73 0	Impact! w/ Bar	73 0	Impact! w/ Bar	73 0	Impact! w/ Bar	
R531 1 B 1	72 0	Impact! w/ Bar	72 0	Impact! w/ Bar	72 0	Impact! w/ Bar	720	Impact! w/ Bar	
R532 1 B 1	70 0	Impact! w/ Bar	70 0	Impact! w/ Bar	70 0	Impact! w/ Bar	70 0	Impact! w/ Bar	
R533 1 B 1	56 0	_	56 0		56 0		56 0		
R534 1 B 1	62 0	_	62 0		62 0		62 0		
	55 0	_	55 0	-	55 0		55 0	-	
козо 1 B 1	64 U		64 U		64 U		64 U	<u> </u>	

	Day is set by from				24-ft Wall								
	Project Infor	matio	n		Wall	8 HDR 6-26-2018	8						
					Average Wtd I	L.	7.6	dB I.L. Ava					
					Maximum I.L.		13	dB I.L. Max					
	I205CW Stafford Ro	ad to (DR213		Benefited/Impa	acted ≥ AFG	12	# Prot Units					
	Contract No. K1	9786C	w		Benefited/Non	Impact ≥ AFG	5 # Units						
	I205CW_Build_V	Valls8t	o9		Total Benefited	i	17 # Ben Units						
	Wall 8				Impacted Units	s ≥ NRDG	8 # Units						
	НММН				Benefited Units	s ≥ NRDG	8 # Units						
	Scott Not	el			Percent of imp	acts ≥ AFG	48%	% Ben Units					
	2/3/2018	3			Percent of ben	efits ≥ NRDG	47%	% NRDG Units					
					"Cost-Reasona	able" ?	Yes						
					Surface Area		16173	SqFeet					
	U.S. Departmen	nt of Irc	insportatio	no	Surface Area/E	Ben Rec	951	SqFeet					
	Federal	Hig	hwa	y	Min Hoight		083	Feel					
	Adminis	ion		Max Height		24.0	Feel						
					Ava Height		24.0	Feet					
					Total Barrier C	ost	\$404.325	1 001					
				Cost/Ben Rec		\$23,784							
				No. of	With B	Barrier Sound Le	evels, Impact and	Benefit					
	Receiver ID	Act Cat	Dwelling		II (db)	1	No. Deposited						
P490		1	P	Units	Leq(dBA)	IL (0D)	Impacted?	NO. Benefited					
R409		1	B	1	69	5	Benefited/Impact	1					
R490		1	B	1	63	7	Benefited/Impact	1					
R491		- 1	B	1	63	5	Benefited/Impact	1					
R493		1	B	1	61	4	Impactl w/ Bar						
R494		1	B	1	61	3	inpact: w/ Dai						
R495		1	B	1	61	2							
R496		1	B	1	60	6	Benefited/Impact	1					
R497		1	B	1	60	6	Benefited/Impact	1					
R498		1	В	1	59	5	Benefited/Non-Imp	1					
R499		1	В	1	59	3							
R500		1	В	1	59	2							
R501		1	В	1	58	13	Benefited/Impact	1					
R502		1	В	1	60	11	Benefited/Impact	1					
R503		1	В	1	59	11	Benefited/Impact	1					
R504		1	В	1	60	12	Benefited/Impact	1					
R505		1	В	1	63	9	Benefited/Impact	1					
R506		1	В	1	65	7	Benefited/Impact	1					
R507		1	В	1	63	2	Impact! w/ Bar						
R508		1	В	1	59	3							
R509		1	В	1	59	5	Benefited/Non-Imp	1					
R510		1	В	1	59	5	Benefited/Non-Imp	1					
R511		1	В	1	59	5	Benefited/Non-Imp	1					
R512		1	В	1	59	5	Benefited/Non-Imp	1					
R513		1	В	1	59	4							
R514		- 1	В	1	59	3							
R515		- 1	В	1	59	1							
R516		- 1	В	1	59	1							
R317		- 1	B	1	58	1							
R510		• 1	D	1	56	0							
R520		1	B	1	55	0	-						
R521		1	B	1	67	0	ImpactI w/ Bar						
R522		1	B	1	67	0	Impact: w/ Bar						
R523		1	B	1	67	0	Impact! w/ Bar						
R524		1	B	1	66	0	Impactl w/ Bar						
R525		1	B	1	65	0	Impact! w/ Bar						
R526		1	В	1	61	0							
R527		1	B	1	73	0	Impact! w/ Bar						
R528		1	В	1	71	0	Impact! w/ Bar						
R529		1	В	1	70	0	Impact! w/ Bar						
R530		1	В	1	73	0	Impact! w/ Bar						
R531		1	В	1	72	0	Impact! w/ Bar						
R532		1	В	1	70	0	Impact! w/ Bar						
R533		1	В	1	56	0							
R534		1	В	1	62	0							
R535		1	В	1	55	0							
R536		1	В	1	64	0							

12/3/2018 3:33 PM D-44



K19786CW												
			W	/all 9								
	10'	12'	14'	16'	18'	20'	22'	24'	Units			
Average Wtd I.L. (benefited)	6.3	7.7	7	7.7	8.5	8.7	9.1	9.6	dBA			
Maximum I.L.	7	9	10	11	11	12	12	13	dBA			
Benefited/Impacted ≥ AFG	3	3	5	6	6	7	8	8	# of dwelling units			
Benefited/Non Impact ≥ AFG	0	0	0	0	0	0	0	0	# of dwelling units			
Total Benefited	3	3	5	6	6	7	8	8	# of dwelling units			
Impacted Units ≥ NRDG	2	2	2	4	6	6	6	7	# of dwelling units			
Benefited Units ≥ NRDG	2	2	2	4	6	6	6	7	# of dwelling units			
Percent of impacts ≥ AFG	18%	18%	29%	35%	35%	41%	47%	47%	%			
Percent of benefits ≥ NRDG	67%	67%	40%	67%	100%	86%	75%	88%	%			
"Cost-Reasonable" ?	No											
Surface Area	5,940	7,131	8,318	9,506	10,696	11,884	13,070	14,258	sq-feet			
Surface Area/Ben Rec	1,980	2,377	1,664	1,584	1,783	1,698	1,634	1,782	sq-ft / ben rec			
Barrier Length	594	594	594	594	594	594	594	594	ft			
Min Height	10	12	14	16	18	20	22	24	ft			
Max Height	10	12	14	16	18	20	22	24	ft			
Avg Height	10	12	14	16	18	20	22	24	ft			
Total Barrier Cost	118,800	142,620	166,360	190,120	267,400	297,100	326,750	356,450	\$			
Cost/Ben Rec	39,600	47,540	33,272	31,687	44,567	42,443	40,844	44,556	\$ / ben rec			
Effectiveness/Cost Metric (E/C)	3.5	2.9	4.2	8.7	11.6	12.2	12.7	13.6				

ODOT Acoustical Feasibilty Goal (dBA)	5
ODOT Acoustical Feasibilty Goal (%)	51%
ODOT Noise Reduction Design Goal (dBA)	7
ODOT Noise Reduction Design Goal (%)	1%

8/3/2018

Drojact Information	No Barrier A	nalysis			10' Wall			1	2' Wall				14' Wall	
Project information	No Barrier		W	/all 9v2			W	/all 9v2			W	/all 9v2		
	•		Average Wtd I.	L. (benefited)	6.3	dB I.L. Avg	Average Wtd I.I		7	7 dB I.L. Avg	Average Wtd I.L.		7.0) dB I.L. Avg
			Maximum I.L.		7	dB I.L. Max	Maximum I.L.			9 dB I.L. Max	Maximum I.L.		1	0 dB I.L. Max
K19786CW	Total Units Exposed to Impact		17 Benefited/Impa	acted ≥ AFG	3	# Prot Units	Benefited/Impac	cted ≥ AFG		3 # Prot Units	Benefited/Impact	ed ≥ AFG		5 # Prot Units
309180	# Impacts - NAC only		17 Benefited/Non	Impact ≥ AFG	(# Units	Benefited/Non I	mpact ≥ AFG		0 # Units	Benefited/Non Im	npact ≥ AFG		0 # Units
I205CW_Build_Walls9	# Impacts - SI only		0 Total Benefited	1	3	# Ben Units	Total Benefited			3 # Ben Units	Total Benefited			5 # Ben Units
Wall 9	# Impacts - Both NAC & SI		0 Impacted Units	0 Impacted Units ≥ NRDG 2 # Units Imp		Impacted Units	≥ NRDG		2 # Units	Impacted Units ≥	NRDG		2 # Units	
НММН		В		Benefited Units ≥ NRDG 2 # Units Bene		Benefited Units	≥ NRDG		2 # Units	Benefited Units ≥	NRDG		2 # Units	
Scott Noel	F		Percent of impa	acts ≥ AFG	18%	% Ben Units	Percent of impa	icts ≥ AFG	18	% Ben Units	Percent of impac	ts ≥ AFG	29%	6 % Ben Units
8/3/2018			Percent of ben	efits ≥ NRDG	67%	% NRDG Units	Percent of bene	efits ≥ NRDG	67	% NRDG Units	Percent of benefi	ts ≥ NRDG	40%	6 % NRDG Units
	"		"Cost-Reasona	ible" ?	No)	"Cost-Reasonal	ble" ?	Ν	0	"Cost-Reasonabl	e" ?	Nc	
			Surface Area		5940	Sq Feet	Surface Area		713	1 Sq Feet	Surface Area		8318	Sq Feet
U.S. Department of Transportation			Surface Area/B	Ben Rec	1980	Sq Feet	Surface Area/Be	en Rec	237	7 Sq Feet	Surface Area/Ber	n Rec	1664	Sq Feet
Federal Highway			Barrier Length		594	Feet	Barrier Length		59	4 Feet	Barrier Length		594	Feet
Administration			Min Height		10.0	Feet	Min Height		12	0 Feet	Min Height		14.0	Feet
Administration	Ν		Max Height	Max Height 10.0 Feet		Feet	Max Height		12	0 Feet	Max Height		14.0 Feet	
			Avg Height	4	10.0	Feet	Avg Height		12	0 Feet	Avg Height		14.0	-eet
	Entor SI Info		Total Barrier C	ost	\$118,800		Total Barrier Co	st	\$142,62	0	Total Barrier Cost	[\$166,360	
No. of	Enter Si Illo	NO. (Cost/Bell Rec		\$39,000	<u> </u>	COSI/Dell Rec		\$47,54		COSI/Dell Rec		\$33,27	2
FHWA FHWA	Type of Impact	Impaci	ed With	With Barrier Sound Le		Levels, impact and Benefit		Barrier Sound L	evels, Impact and	Benefit	With	Barrier Sound	Levels, Impact and	Benefit
Act Cat Units	Bld Leq > NAC? Sub. Inc.?	Unit:	Leq(dBA)	IL (db)	Impacted?	No. Benefited	Leq(dBA)	IL (db)	Impacted?	No. Benefited	Leq(dBA)	IL (db)	Impacted?	No. Benefited
R467 1 B 1	70	Impact! 1	63	7	Benefited/Impact	1	61	9	Benefited/Impact	1	60	10	Benefited/Impact	1
R468 1 B 1	71	Impact! 1	70	1	Impact! w/ Bar	•	69	2	Impact! w/ Bar	-	67	4	Impact! w/ Bar	
R469 1 B 1	68	Impact! 1	61	7	Benefited/Impact	1	60	8	Benefited/Impact	1	59	9	Benefited/Impact	1
R470 1 B 1	70	Impact! 1	67	3	Impact! w/ Bar	-	66	4	Impact! w/ Bar	-	65	5	Benefited/Impact	1
R471 1 B 1	70	Impact! 1	70	0	Impact! w/ Bar		70	0	Impact! w/ Bar		70	0	Impact! w/ Bar	
R472 1 B 1	66	Impact! 1	61	5	Benefited/Impact	1	60	6	Benefited/Impact	1	60	6	Benefited/Impact	1
R473 1 B 1	69	Impact! 1	66	3	Impact! w/ Bar		65	4	Impact! w/ Bar	_	64	5	Benefited/Impact	1
R474 1 B 1	70	Impact! 1	69	1	Impact! w/ Bar		68	2	Impact! w/ Bar		68	2	Impact! w/ Bar	
R475 1 B 1	68	Impact! 1	67	1	Impact! w/ Bar		67	1	Impact! w/ Bar		67	1	Impact! w/ Bar	
R476 1 B 1	68	Impact! 1	68	0	Impact! w/ Bar		68	0	Impact! w/ Bar		68	0	Impact! w/ Bar	
R477 1 B 1	68	Impact! 1	68	0	Impact! w/ Bar		68	0	Impact! w/ Bar		68	0	Impact! w/ Bar	
R478 1 B 1	66	Impact! 1	66	0	Impact! w/ Bar		66	0	Impact! w/ Bar		66	0	Impact! w/ Bar	
R479 1 B 1	67	Impact! 1	67	0	Impact! w/ Bar		66	1	Impact! w/ Bar		66	1	Impact! w/ Bar	
R480 1 B 1	67	Impact! 1	67	0	Impact! w/ Bar		67	0	Impact! w/ Bar		67	0	Impact! w/ Bar	
R481 1 B 1	65	Impact! 1	65	0	Impact! w/ Bar		65	0	Impact! w/ Bar		65	0	Impact! w/ Bar	
R482 1 B 1	66	Impact! 1	66	0	Impact! w/ Bar		66	0	Impact! w/ Bar		66	0	Impact! w/ Bar	
R483 1 B 1	66	Impact! 1	66	0	Impact! w/ Bar		66	0	Impact! w/ Bar		66	0	Impact! w/ Bar	

Design the formation	16	' Wall	1	8' Wall	2)' Wall	22' Wall		
Project information	Wall 9v2		Wall 9v2		Wall 9v2		Wall 9v2		
	Average Wtd I.L.	7.7 dB I.L. Avg	Average Wtd I.L.	8.5 dB I.L. Avg	Average Wtd I.L.	8.7 dB I.L. Avg	Average Wtd I.L.	9.1 dB I.L. Avg	
	Maximum I.L.	11 dB I.L. Max	Maximum I.L.	11 dB I.L. Max	Maximum I.L.	12 dB I.L. Max	Maximum I.L.	12 dB I.L. Max	
K19786CW	K19786CW Benefited/Impacted ≥ AFG 6 # Pro		Benefited/Impacted ≥ AFG	6 # Prot Units	Benefited/Impacted ≥ AFG	7 # Prot Units	Benefited/Impacted ≥ AFG	8 # Prot Units	
309180	Benefited/Non Impact ≥ AFG	0 # Units	Benefited/Non Impact ≥ AFG	0 # Units	Benefited/Non Impact ≥ AFG	0 # Units	Benefited/Non Impact ≥ AFG	0 # Units	
I205CW_Build_Walls9	Total Benefited	6 # Ben Units	Total Benefited	6 # Ben Units	Total Benefited	7 # Ben Units	Total Benefited	8 # Ben Units	
Wall 9	Impacted Units ≥ NRDG	4 # Units	Impacted Units ≥ NRDG	6 # Units	Impacted Units ≥ NRDG	6 # Units	Impacted Units ≥ NRDG	6 # Units	
НММН	Benefited Units ≥ NRDG	4 # Units	Benefited Units ≥ NRDG	6 # Units	Benefited Units ≥ NRDG	6 # Units	Benefited Units ≥ NRDG	6 # Units	
Scott Noel	Percent of impacts ≥ AFG	35% % Ben Units	Percent of impacts ≥ AFG	35% % Ben Units	Percent of impacts ≥ AFG	41% % Ben Units	Percent of impacts ≥ AFG	47% % Ben Units	
8/3/2018	Percent of benefits ≥ NRDG	67% % NRDG Units	Percent of benefits ≥ NRDG	100% % NRDG Units	Percent of benefits ≥ NRDG	86% % NRDG Units	Percent of benefits ≥ NRDG	75% % NRDG Units	
	"Cost-Reasonable" ?	No	"Cost-Reasonable" ?	No	"Cost-Reasonable" ?	No	"Cost-Reasonable" ?	No	
	Surface Area	9506 Sq Feet	Surface Area	10696 Sq Feet	Surface Area	11884 Sq Feet	Surface Area	13070 Sq Feet	
U.S. Department of Transportation	Surface Area/Ben Rec	1584 Sq Feet	Surface Area/Ben Rec	1783 Sq Feet	Surface Area/Ben Rec	1698 Sq Feet	Surface Area/Ben Rec	1634 Sq Feet	
Federal Highway	Barrier Length	594 Feet	Barrier Length	594 Feet	Barrier Length	594 Feet	Barrier Length	594 Feet	
Administration	Min Height	16.0 Feet	Min Height	18.0 Feet	Min Height	20.0 Feet	Min Height	22.0 Feet	
Administration	Max Height	16.0 Feet	Max Height	18.0 Feet	Max Height	20.0 Feet	Max Height	22.0 Feet	
	Avg Height	16.0 Feet	Avg Height	18.0 Feet	Avg Height	20.0 -eet	Avg Height	22.0 -eet	
	Total Barrier Cost	\$190,120	l otal Barrier Cost	\$267,400	I otal Barrier Cost	\$297,100	lotal Barrier Cost	\$326,750	
	Cost/Ben Rec	\$31,080.07	Cosi/Ben Rec	\$44,567	Cost/Ben Rec	\$42,443	Cost/Ben Rec	\$40,844	
FHWA NO. OT	With Barrier Sound Le	evels, Impact and Benefit	With Barrier Sound L	evels, Impact and Benefit	With Barrier Sound L	evels, Impact and Benefit	With Barrier Sound Le	evels, Impact and Benefit	
Receiver ID Row Act Cat	Leg(dBA) IL (db)	Impacted? No. Benefited	Leg(dBA) IL (db)	Impacted? No. Benefited	Leg(dBA) IL (db)	Impacted? No. Benefited	Leg(dBA) IL (db)	Impacted? No. Benefited	
P467 1 B 1		Benefited/Impact 1	50 11	Benefited/Impact 1		Benefited/Impact 1		Benefited/Impact 1	
R468 1 B 1	65 6	Benefited/Impact 1	63 8	Benefited/Impact 1	61 10	Benefited/Impact 1	60 11	Benefited/Impact 1	
R469 1 B 1	59 9	Benefited/Impact 1	58 10	Benefited/Impact 1	58 10	Benefited/Impact 1	57 11	Benefited/Impact 1	
R470 1 B 1	63 7	Benefited/Impact 1	62 8	Benefited/Impact 1	61 9	Benefited/Impact 1	59 11	Benefited/Impact 1	
R471 1 B 1	69 1	Impact! w/ Bar	67 3	Impact! w/ Bar	66 4	Impact! w/ Bar	65 5	Benefited/Impact 1	
R472 1 B 1	59 7	Benefited/Impact 1	59 7	Benefited/Impact 1	59 7	Benefited/Impact 1	58 8	Benefited/Impact 1	
R473 1 B 1	63 6	Benefited/Impact 1	62 7	Benefited/Impact 1	61 8	Benefited/Impact 1	60 9	Benefited/Impact 1	
R474 1 B 1	67 3	Impact! w/ Bar	66 4	Impact! w/ Bar	65 5	Benefited/Impact 1	64 6	Benefited/Impact 1	
R475 1 B 1	67 1	Impact! w/ Bar	67 1	Impact! w/ Bar	67 1	Impact! w/ Bar	66 2	Impact! w/ Bar	
R476 1 B 1	68 0	Impact! w/ Bar	68 0	Impact! w/ Bar	68 0	Impact! w/ Bar	68 0	Impact! w/ Bar	
R477 1 B 1	68 0	Impact! w/ Bar	68 0	Impact! w/ Bar	68 0	Impact! w/ Bar	68 0	Impact! w/ Bar	
R478 1 B 1	66 0	Impact! w/ Bar	65 1	Impact! w/ Bar	65 1	Impact! w/ Bar	65 1	Impact! w/ Bar	
R479 1 B 1	66 1	Impact! w/ Bar	66 1	Impact! w/ Bar	66 1	Impact! w/ Bar	66 1	Impact! w/ Bar	
R480 1 B 1	67 0	Impact! w/ Bar	67 0	Impact! w/ Bar	67 0	Impact! w/ Bar	67 0	Impact! w/ Bar	
R481 1 B 1	65 0	Impact! w/ Bar	65 0	Impact! w/ Bar	65 0	Impact! w/ Bar	65 0	Impact! w/ Bar	
R482 1 B 1	66 0	Impact! w/ Bar	66 0	Impact! w/ Bar	66 0	Impact! w/ Bar	66 0	Impact! w/ Bar	
R483 1 B 1	66 0	Impact! w/ Bar	66 0	Impact! w/ Bar	66 0	Impact! w/ Bar	66 0	Impact! w/ Bar	

	Due is at Justan				24' Wall							
	Project Infor	matio	n		Wa	all 9v2						
					Average Wtd I.I	L.	9.6	dB I.L. Avg				
					Maximum I.L.		13 dB l.L. Max					
	K19786C	W			Benefited/Impa	cted ≥ AFG	8	# Prot Units				
	309180)			Benefited/Non I	mpact ≥ AFG	0	# Units				
	I205CW_Build	_Walls)		Total Benefited		8	# Ben Units				
	Wall 9				Impacted Units	≥ NRDG	7	# Units				
	нммн				Benefited Units	≥ NRDG	7	# Units				
	Scott No	el			Percent of impa	acts ≥ AFG	47%	% Ben Units				
	8/3/201	8			Percent of bene	efits ≥ NRDG	88%	% NRDG Units				
					"Cost-Reasonal	ble" ?	No					
					Surface Area		14258	Sq Feet				
	U.S. Departme	nt of Tra	nsportati	on	Surface Area/B	en Rec	1782	Sq Feet				
	P Federal	Hic	hwa	V	Barrier Length		594	Feet				
	Admini	-	ion		Min Height		24.0	Feet				
	Admini	sinui	011		Max Height		24.0	Feet				
					Avg Height		24.0	Feet				
					Total Barrier Co	ost	\$356,450					
					Cost/Ben Rec		\$44,556					
					With Barrier Sound Levels, Impact and Benefit							
			FHW∆	No. of	With B	Barrier Sound L	evels, Impact and	Benefit				
	Receiver ID	Row	FHWA Act Cat	No. of Dwelling	With B	Barrier Sound L	evels, Impact and	Benefit				
	Receiver ID	Row	FHWA Act Cat	No. of Dwelling Units	With B Leq(dBA)	Barrier Sound L	evels, Impact and Impacted?	Benefit No. Benefited				
R467	Receiver ID	Row	FHWA Act Cat	No. of Dwelling Units	With B Leq(dBA) 57	Barrier Sound L IL (db) 13	evels, Impact and Impacted? Benefited/Impact	Benefit No. Benefited				
R467 R468	Receiver ID	Row	FHWA Act Cat B B	No. of Dwelling Units 1 1	With E Leq(dBA) 57 59	Barrier Sound L IL (db) 13 12	evels, Impact and Impacted? Benefited/Impact Benefited/Impact	Benefit No. Benefited 1 1				
R467 R468 R469	Receiver ID	Row 1 1 1	FHWA Act Cat B B B	No. of Dwelling Units 1 1 1	With B Leq(dBA) 57 59 57	Barrier Sound L IL (db) 13 12 11	evels, Impact and Impacted? Benefited/Impact Benefited/Impact Benefited/Impact	Benefit No. Benefited 1 1 1				
R467 R468 R469 R470	Receiver ID	Row 1 1 1 1 1 1	FHWA Act Cat B B B B	No. of Dwelling Units 1 1 1 1	With B Leq(dBA) 57 59 57 57 59	Barrier Sound L IL (db) 13 12 11 11	evels, Impact and Impacted? Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact	Benefit No. Benefited 1 1 1 1				
R467 R468 R469 R470 R471	Receiver ID	Row 1 1 1 1 1 1	FHWA Act Cat B B B B B B	No. of Dwelling Units 1 1 1 1 1	With B Leq(dBA) 57 59 57 59 59 64	Barrier Sound L IL (db) 13 12 11 11 6	evels, Impact and Impacted? Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact	No. Benefited 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				
R467 R468 R469 R470 R471 R472	Receiver ID	Row 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	FHWA Act Cat B B B B B B B B	No. of Dwelling Units 1 1 1 1 1 1 1	With E Leq(dBA) 57 59 57 59 64 58	Barrier Sound L IL (db) 13 12 11 11 6 8	evels, Impact and Impacted? Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact	No. Benefited				
R467 R468 R469 R470 R471 R472 R473	Receiver ID	Row 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	FHWA Act Cat B B B B B B B B B B	No. of Dwelling Units 1 1 1 1 1 1 1 1 1	With B Leq(dBA) 57 59 57 59 64 58 60	Barrier Sound L IL (db) 13 12 11 11 6 8 9	evels, Impact and Impacted? Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact	Benefit No. Benefited 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				
R467 R468 R469 R470 R471 R472 R473 R474	Receiver ID	Row 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	FHWA Act Cat B B B B B B B B B B B B	No. of Dwelling Units 1 1 1 1 1 1 1 1 1 1 1	With B Leq(dBA) 57 59 57 59 64 58 60 60 63	Barrier Sound L IL (db) 13 12 11 11 6 8 9 7	evels, Impact and Impacted? Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact	Benefit No. Benefited 1 1 1 1 1 1 1 1 1 1 1 1 1				
R467 R468 R469 R470 R471 R472 R473 R474 R475	Receiver ID	Row 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	FHWA Act Cat B B B B B B B B B B B B B B B	No. of Dwelling Units 1 1 1 1 1 1 1 1 1 1 1	With B Leq(dBA) 57 59 64 58 60 63 65 65	Barrier Sound L IL (db) 13 12 11 11 6 8 9 7 3	evels, Impact and Impacted? Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Impact! w/ Bar	Benefit No. Benefited 1 1 1 1 1 1 1 1 1 1 1				
R467 R468 R469 R470 R471 R472 R473 R474 R475 R476	Receiver ID	Row 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	FHWA Act Cat B B B B B B B B B B B B B B B B B B B	No. of Dwelling Units 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	With B Leq(dBA) 57 59 64 58 60 63 63 65 68	Barrier Sound L IL (db) 13 12 11 11 6 8 9 7 3 0	evels, Impact and Impacted? Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Impact! w/ Bar Impact! w/ Bar	Benefit No. Benefited 1 1 1 1 1 1 1 1 1 1				
R467 R468 R469 R470 R471 R472 R473 R474 R475 R476 R477	Receiver ID	Row 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	FHWA Act Cat B B B B B B B B B B B B B B B B B B B	No. of Dwelling Units 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	With B Leq(dBA) 57 59 64 58 60 63 63 65 65 68 68 68	Barrier Sound L IL (db) 13 12 11 11 6 8 9 7 3 0 0 0	evels, Impact and Impacted? Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Impact! w/ Bar Impact! w/ Bar	Benefit No. Benefited 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				
R467 R468 R470 R471 R472 R473 R474 R475 R476 R477 R478	Receiver ID	Row 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	FHWA Act Cat B B B B B B B B B B B B B B B B B B B	No. of Dwelling Units 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	With E Leq(dBA) 57 59 64 58 60 63 63 65 68 68 68 68 68	Barrier Sound L IL (db) 13 12 11 11 6 8 9 7 3 0 0 1	evels, Impact and Impacted? Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Impact! w/ Bar Impact! w/ Bar Impact! w/ Bar	Benefit No. Benefited 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				
R467 R468 R469 R470 R471 R472 R473 R474 R475 R476 R477 R478 R479	Receiver ID	Row 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	FHWA Act Cat B B B B B B B B B B B B B B B B B B B	No. of Dwelling Units 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	With B Leq(dBA) 57 59 64 58 60 63 65 68 68 68 65 66 65 66	Barrier Sound L IL (db) 13 12 11 11 6 8 9 7 3 0 0 1 1 1	evels, Impact and Impacted? Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Impact! w/ Bar Impact! w/ Bar Impact! w/ Bar Impact! w/ Bar	Benefit No. Benefited 1 1 1 1 1 1 1 1 1 1 1 1 1				
R467 R468 R469 R470 R471 R472 R473 R474 R475 R475 R476 R477 R478 R479 R480	Receiver ID	Row 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	FHWA Act Cat B B B B B B B B B B B B B B B B B B B	No. of Dwelling Units 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	With B Leq(dBA) 57 59 64 58 60 63 65 68 68 65 66 66 66 66	Barrier Sound L IL (db) 13 12 11 11 6 8 9 7 3 0 0 1 1 1 1	evels, Impact and Impacted? Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Impact! w/ Bar Impact! w/ Bar Impact! w/ Bar Impact! w/ Bar Impact! w/ Bar Impact! w/ Bar	Benefit No. Benefited 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				
R467 R468 R469 R470 R471 R472 R473 R474 R475 R476 R477 R478 R477 R478 R479 R480 R481	Receiver ID	Row 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	FHWA Act Cat B B B B B B B B B B B B B B B B B B B	No. of Dwelling Units 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	With B Leq(dBA) 57 59 64 58 60 63 65 68 65 68 68 65 66 66 66 66 66 65	Barrier Sound L IL (db) 13 12 11 11 6 8 9 7 3 0 0 1 1 1 1 0	evels, Impact and Impacted? Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Impact! w/ Bar Impact! w/ Bar Impact! w/ Bar Impact! w/ Bar Impact! w/ Bar Impact! w/ Bar	Benefit No. Benefited 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				
R467 R468 R469 R470 R471 R472 R473 R474 R475 R477 R476 R477 R478 R477 R478 R479 R481 R481 R482	Receiver ID	Row 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	FHWA Act Cat B B B B B B B B B B B B B B B B B B B	No. of Dwelling Units 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	With E Leq(dBA) 57 59 64 58 60 63 65 68 68 68 68 68 68 68 68 68 65 66 66 65 66	Barrier Sound L IL (db) 13 12 11 11 6 8 9 7 3 0 0 1 1 1 1 0 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0	evels, Impact and Impacted? Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Benefited/Impact Impact! w/ Bar Impact! w/ Bar	Benefit No. Benefited 1 1 1 1 1 1 1 1 1 1 1 1 1				

12/3/2018 3:35 PM D-48



8/27/2018

K19786CW										
		Wall 10)							
	9'	11'	13'	15'	17'	Units				
Average Wtd I.L. (benefited)		5.0	5.3	5.3636364	5.3333333	dBA				
Maximum I.L.	4.0	5.0	6.0	6.0	6.0	dBA				
Benefited/Impacted ≥ AFG	0	4	6	7	7	# of dwelling units				
Benefited/Non Impact ≥ AFG	0	0	0	4	8	# of dwelling units				
Total Benefited	0	4	6	11	15	# of dwelling units				
Impacted Units ≥ NRDG	0	0	0	0	0	# of dwelling units				
Benefited Units ≥ NRDG	0	0	0	0	0	# of dwelling units				
Percent of impacts ≥ AFG	0%	33%	50%	58%	58%	%				
Percent of benefits ≥ NRDG		0%	0%	0%	0%	%				
"Cost-Reasonable" ?		No	No	No	No					
Surface Area	28,255	34,773	41,285	47,805	54,323	sq-feet				
Surface Area/Ben Rec		8,693	6,881	4,346	3,622	sq-ft / ben rec				
Barrier Length	3,257	3,257	3,257	3,257	3,257	ft				
Min Height	9	11	13	15	17	ft				
Max Height	9	11	13	15	17	ft				
Avg Height	9	11	13	15	17	ft				
Total Barrier Cost	565,100	695,460	825,700	956,100	1,358,075	\$				
Cost/Ben Rec		173,865	137,617	86,918	90,538	\$ / ben rec				
Effectiveness/Cost Metric (E/C)	-	-	-	-	-					

ODOT Acoustical Feasibilty Goal (dBA)	5
ODOT Acoustical Feasibilty Goal (%)	51%
ODOT Noise Reduction Design Goal (dBA)	7
ODOT Noise Reduction Design Goal (%)	1%

	Due le et le fe						No Barrier A	Analysis			9' Wall					11' Wall				
	Project into	rmatio	on					No Barrier				Wall 10)				Wall 10)		
											Average Wtd I	.L. (benefited)			dB I.L. Avg	Average Wtd I	.L.		5.	0 dB I.L. Avg
	K40796	C14/				1	Total Unite Experi	ed to Impost			Maximum I.L.			4	dB I.L. Max	Maximum I.L.	ated > 450			5 dB I.L. Ma
	30918	0					# Impacts - NAC or	nly		12	Benefited/Imp	Impact ≥ AFG		0	# Units	Benefited/Non	Impact ≥ AFG		(+ + Fiot Onit
	I205CW Build	d Wall1	0				# Impacts - SI only	, in y		(Total Benefited	d		0	# Ben Units	Total Benefited	impaor = Ar o			Ben Units
	Wall 1	0					# Impacts - Both N	AC & SI		C	Impacted Units	s ≥ NRDG		0	# Units	Impacted Units	s ≥ NRDG			0 # Units
	HMMH	4									Benefited Unit	s ≥ NRDG		0	# Units	Benefited Units	s ≥ NRDG			0 # Units
	Scott No	oel									Percent of imp	acts ≥ AFG		0%	% Ben Units	Percent of imp	acts ≥ AFG		339	% Ben Un
	8/27/20	18									Percent of ber	nefits ≥ NRDG			% NRDG Units	Percent of ben	efits ≥ NRDG		00	% NRDG
											Surface Area	able ?		28255	Sa Feet	Surface Area	able ?		3477	3 Sa Feet
	S U.S. Departm	ent of In	ansportatio	00							Surface Area/	Ben Rec		20200	Sq Feet	Surface Area/E	Ben Rec		869	3 Sq Feet
	P Federa	I Hic	hwa	V							Barrier Length			3,257	Feet	Barrier Length			3,25	7 Feet
	Admin	istra	tion								Min Height			8.7	Feet	Min Height			10.	7 Feet
	Authin	isii u	IIOII								Max Height			8.7	Feet	Max Height			10.	7 Feet
											Avg Height Total Barrier C	oet		\$.7	Feet	Avg Height Total Barrier Co	net		10.	/ Feet
								Enter SI Info			Cost/Ben Rec	031		ψ505,100		Cost/Ben Rec	531		\$173.86	5 i5
							Type of I	mpact				With Barrie	r Sound Levels.	Impact and Benef	it		With Barrie	Sound Levels.	Impact and Benef	it
							TNM Predicted +						,					,		
				No. of			Structure-Borne					Mitigated					Mitigated			
	Receiver ID	Row	Act Cat	Dwelling	TNM Dradiated Bld	Sructure	Noise		Impact?			TNM +					TNM +			
			/ of our	Units	L ed	Noise	Adjustment			No. of		Structure					Structure			
							Factor Bid Leq >	Sub Inc 2		Impacted	INM Abated		II. (db)		No. Popofitod	INM Abated	Noise	II. (db)		No Bon
OT 10)	1	Р	1	50	60	NAC :	Sub. IIIC. ?		Units	Ley	Eeq(uBA)		Impacted?	No. Benenteu	Leq	Eeq(uBA)		Impacted?	NO. Bell
ST-12	2	- ¦	Б С	1	59	64	69		Impact	1	64	67	2	ImpactI w/ Bar		64	67	2	ImpactI w/ Bar	
R537		— i	В	1	63	54	63		impuot		60	61	2	- Inpuot. W/ Dui		59	60	3	impuot: W/ Dui	
R538		1	В	1	62	53	62				61	62	0			60	61	1		
R539		1	В	1	59	52	60				58	59	1			57	59	1		
R540		1	В	1	59	52	60				58	59	1			57	58	2		
R541		_ 1	В	1	59	53	60				57	58	2			56	58	2		
R542		- 1	B	1	59	53 53	60				57	58	2	•		56	57	3		
R544		- ¦	B	1	59	53	60				57	58	2	•		55	57	3		
R545		- i	В	1	59	53	60				58	59	1	•		56	58	2		
R546		1	В	1	61	53	62				60	60	2			58	59	3		
R547		1	В	1	60	53	61				58	60	1			57	59	2		
R548		1	В	1	61	54	62				59	60	2			58	59	3		
R549		_ 1	В	1	61	54	62				59	60	2			57	59	3		
R550		- 1	B	1	61	50 56	62					60	2	-		57	59	2		
R552		- i	В	1	64	56	65		Impact!	1	59	61	4	Impact! w/ Bar		58	60	5	Benefited/Impact	1
R553		1	В	1	65	57	66		Impact!	1	60	62	4	Impact! w/ Bar		59	61	5	Benefited/Impact	1
R554		1	В	1	61	58	63				58	61	2			57	60	3		_
R555		1	В	1	56	60	62				55	61	1			54	61	1		
R556		_ 1	В	1	61	59	63				59	62	1			58	61	2		
R557		- 1	В	1	64 50	57	65 62		impacti	1	60	62	3	impact! w/ Bar		59	60	4	impact! w/ Bar	
R559		- ¦	B	1	59	59	62				57	61	1			56	61	1		
R560		1	В	1	59	61	63				58	62	1	•		57	62	1		
R561		1	В	1	62	59	64				58	61	3			57	61	3		
R562		1	В	1	64	57	65		Impact!	1	59	61	4	Impact! w/ Bar		58	61	4	Impact! w/ Bar	
R563		1	В	1	64	56	65		Impact!	1	60	61	4	Impact! w/ Bar		58	60	5	Benefited/Impact	1
R564		_ 1	В	1	64	55	65		Impact!	1	60	61	4	Impact! w/ Bar		59	60	5	Benefited/Impact	1
R565		- 1	B	1	62	55	63				59	60	3	-		58	59	3		
R567		- 1	В	1	61	55	62				58	60	2			57	59	3		
R568		1	В	1	61	55	62				58	60	2			57	59	3		
R569		1	В	1	63	54	63				61	62	1			59	60	3		
R570		1	В	1	62	53	63				60	61	2			59	60	3		
R571		1	В	1	64	55	65		Impact!	1	61	62	3	Impact! w/ Bar		59	61	4	Impact! w/ Bar	
R572		_ 1	В	1	63	55	64				61	62	2			59	60	4	-	
R573		- 1	B	1	60	54	61				01 59	62 50	0	-		01 57	02 50	0		
R574		- 1	F	1	66	58	67					59 65	2	-		63	59 64	2	-	
R700		- 1	C	1	64	66	68		Impact!	1	64	68	0	Impact! w/ Bar		63	68	0	Impact! w/ Bar	
R701		1	C	1	68	64	69		Impact!	1	65	68	1	Impact! w/ Bar		65	67	2	Impact! w/ Bar	
R702		1	С	1	68	63	69		Impact!	1	65	67	2	Impact! w/ Bar		64	67	2	Impact! w/ Bar	
R703		1	С	1	68	62	69		Impact!	1	66	67	2	Impact! w/ Bar		64	66	3	Impact! w/ Bar	

. Avg
Max
Units
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Units
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DG Units
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Project Information	13' W	all	15' Wall		17' Wall			
Project information	Wall 10		Wall 10		Wall 10			
	Average Wtd I.L.	5.3 dB I.L. Avg	Average Wtd I.L.	5.4 dB I.L. Avg	Average Wtd I.L.	5.3 dB I.L. Av		
	Maximum I.L.	6 dB I.L. Max	Maximum I.L.	6 dB I.L. Max	Maximum I.L.	6 dB I.L. N		
K19786CW	Benefited/Impacted ≥ AFG	6 # Prot Units	Benefited/Impacted ≥ AFG	7 # Prot Units	Benefited/Impacted ≥ AFG	7 # Prot Un		
1205CW Build Wall10	Total Benefited	6 # Ben Units	Total Benefited	4 # Offits	Total Renefited	6 # UIIIS		
Wall 10	Impacted Units ≥ NRDG	0 # Units	Impacted Units ≥ NRDG	0 # Units	Impacted Units ≥ NRDG	0 # Units		
НММН	Benefited Units ≥ NRDG	0 # Units	Benefited Units ≥ NRDG	0 # Units	Benefited Units ≥ NRDG	0 # Units		
Scott Noel	Percent of impacts ≥ AFG	50% % Ben Units	Percent of impacts ≥ AFG	58% % Ben Units	Percent of impacts ≥ AFG	58% % Ben U		
8/27/2018	Percent of benefits ≥ NRDG	0% NRDG Units	Percent of benefits ≥ NRDG	0% % NRDG Units	Percent of benefits ≥ NRDG	0% % NRD0		
	"Cost-Reasonable" ?	No 44005 On Fast	"Cost-Reasonable" ?	No 47005 Dr. Frist	"Cost-Reasonable" ?	No		
	Surface Area/Ben Rec	41285 Sq Feet	Surface Area/Ben Rec	47805 5q Feet	Surface Area/Ben Rec	54323 Sq Feet		
Endoral Highway	Barrier Length	3.257 Feet	Barrier Length	3.257 Feet	Barrier Length	3.257 Feet		
rederdi highway	Min Height	12.7 Feet	Min Height	14.7 Feet	Min Height	16.7 Feet		
Administration	Max Height	12.7 Feet	Max Height	14.7 Feet	Max Height	16.7 Feet		
	Avg Height	12.7 Feet	Avg Height	14.7 Feet	Avg Height	16.7 Feet		
	Total Barrier Cost	\$825,700	Total Barrier Cost	\$956,100	lotal Barrier Cost	\$1,358,075		
	With Parrier Sound Lovel	s Impact and Repofit	With Parrier Sound Lovels	Junpact and Ronofit	With Parrier Sound Lovels	\$90,338		
	With Barner Sound Leven	s, impact and benefit	with Barner Sound Levels,	impact and Benefit	with Barrier Sound Levers,	impact and Benefit		
No. of	Mitigated		Mitigated		Mitigated			
Receiver ID Row FHWA	TNM +		TNM +		TNM +			
Act Cat Units	Structure		Structure		Structure			
	TNM Abated Noise		TNM Abated Noise		TNM Abated Noise			
	Leq Leq(dBA) IL (db)	Impacted? No. Benefited	Leq Leq(dBA) IL (db)	Impacted? No. Benefited	Leq Leq(dBA) IL (db)	Impacted? No. Be		
SI-12 1 B 1	54 61 2	Impact w/ Bor	53 61 2	Impost w/ Bor	53 61 2	Impostly/ Bor		
B537 1 B 1	57 59 4	Impacti w/ Bai	57 58 5	Benefited/Non-Imp 1	56 58 5	Benefited/Non-Imp		
R538 1 B 1	60 61 1	-	60 61 1	Bonontournon mip	60 61 1	Denonicalitori imp		
R539 1 B 1	57 58 2		56 58 2		56 58 2			
R540 1 B 1	56 58 2		56 57 3		56 57 3			
R541 1 B 1	55 57 3		55 57 3	_	54 56 4	_		
R542 1 B 1	54 56 4	-	54 56 4	_	53 56 4	-		
R544 1 B 1	54 56 4	-	53 56 4	-	53 56 4	-		
R545 1 B 1	54 57 3	-	53 56 4	-	53 56 4	-		
R546 1 B 1	56 58 4		56 57 5	Benefited/Non-Imp 1	55 57 5	Benefited/Non-Imp		
R547 1 B 1	55 57 4		55 57 4		54 57 4			
R548 1 B 1	56 58 4		55 58 4	_	55 57 5	Benefited/Non-Imp		
R549 1 B 1	56 58 4	-	55 58 4	_	55 58 4	-		
R551 1 B 1	50 58 3 56 59 3	-	55 58 4	-	55 58 4	-		
R552 1 B 1	56 59 6	Benefited/Impact 1	56 59 6	Benefited/Impact 1	55 59 6	Benefited/Impact		
R553 1 B 1	58 60 6	Benefited/Impact 1	57 60 6	Benefited/Impact 1	57 60 6	Benefited/Impact		
R554 1 B 1	56 60 3		56 60 3		55 60 3			
R555 1 B 1	54 61 1		53 61 1	_	53 61 1	-		
R556 1 B 1	57 61 2 59 61 4	Impact w/ Par	56 61 2 57 60 5	Reported/Impact	56 61 2	Ropofited/Impact		
R558 1 B 1	55 60 2	inpact w bai	54 60 2	Denented/impact	53 59 3	Denemeu/impaci		
R559 1 B 1	55 60 2	-	54 60 2	-	53 60 2	-		
R560 1 B 1	56 62 1		56 62 1		56 62 1			
R561 1 B 1	57 61 3		56 61 3		56 61 3			
R562 1 B 1	58 60 5	Benefited/Impact 1	57 60 5	Benefited/Impact 1	57 60 5	Benefited/Impact		
R563 1 B 1	58 60 5	Benefited/Impact 1	57 60 5	Benefited/Impact 1	57 59 6	Benefited/Impact		
R304 1 B 1 P565 1 B 1	57 59 A	Benefited/impact	57 59 6	Benefited/impact	57 59 6	Benefited/Impact		
R566 1 B 1	57 59 4	-	56 59 4	-	56 58 5	Benefited/Non-Imp		
R567 1 B 1	57 59 3	-	56 58 4	-	56 58 4			
R568 1 B 1	56 58 4		55 58 4		55 58 4			
R569 1 B 1	58 59 4	_	57 59 4		57 58 5	Benefited/Non-Imp		
R570 1 B 1	57 59 4	Development	57 58 5	Benefited/Non-Imp	56 58 5	Benefited/Non-Imp		
R571 1 B 1 R572 1 D 1	58 60 4	Benefited/impact 1	57 59 6	Benefited/Impact 1	57 59 6	Benefited/Impact		
R573 1 B 1	61 62 0	-	61 62 0	Benefited/Non-Imp	61 62 0	Benefited/Non-Imp		
R574 1 B 1	56 58 3		55 57 4	-	54 57 4	-		
R575 1 E 1	62 63 4	-	61 63 4	-	61 63 4			
R700 1 C 1	63 68 0	Impact! w/ Bar	63 68 0	Impact! w/ Bar	63 68 0	Impact! w/ Bar		
R701 1 C 1	65 67 2	Impact! w/ Bar	65 67 2	Impact! w/ Bar	64 67 2	Impact! w/ Bar		
R/02 1 C 1	64 67 2	Impact! w/ Bar	64 66 3	Impact! w/ Bar	64 66 3	Impact! w/ Bar		
K/U3 1 C 1	04 00 3	Impact! w/ Bar	04 bb 3	impact! w/ Bar	04 00 3	Impact! w/ Bar		

Avg Max
Units
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Units
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			K19	786CW								
Wall 11												
	10'	12'	14'	16'	18'	20'	22'	24'	Units			
Average Wtd I.L. (benefited)	5	6	7.5	7	7.7	7.3	7.5	7.5	dBA			
Maximum I.L.	5	7	9	10	11	11	12	12	dBA			
Benefited/Impacted ≥ AFG	1	2	2	3	3	4	4	4	# of dwelling units			
Benefited/Non Impact ≥ AFG	0	0	0	0	0	0	0	0	# of dwelling units			
Total Benefited	1	2	2	3	3	4	4	4	# of dwelling units			
Impacted Units ≥ NRDG	0	1	1	1	2	2	2	2	# of dwelling units			
Benefited Units ≥ NRDG	0	1	1	1	2	2	2	2	# of dwelling units			
Percent of impacts ≥ AFG	20%	40%	40%	60%	60%	80%	80%	80%	%			
Percent of benefits ≥ NRDG	0%	50%	50%	33%	67%	50%	50%	50%	%			
"Cost-Reasonable" ?	No											
Surface Area	11,451	13,741	16,032	18,321	20,612	22,902	25,192	27,482	sq-feet			
Surface Area/Ben Rec	11,451	6,871	8,016	6,107	6,871	5,726	6,298	6,871	sq-ft / ben rec			
Barrier Length	1,145	1,145	1,145	1,145	1,145	1,145	1,145	1,145	ft			
Min Height	10	12	14	16	18	20	22	24	ft			
Max Height	10	12	14	16	18	20	22	24	ft			
Avg Height	10	12	14	16	18	20	22	24	ft			
Total Barrier Cost	229,020	274,820	320,640	458,025	515,300	572,550	629,800	687,050	\$			
Cost/Ben Rec	229,020	137,410	160,320	152,675	171,767	143,138	157,450	171,763	\$ / ben rec			
Effectiveness/Cost Metric (E/C)	-	5.8	5.0	6.5	11.6	14.0	12.7	11.6				

ODOT Acoustical Feasibilty Goal (dBA)	5
ODOT Acoustical Feasibilty Goal (%)	51%
ODOT Noise Reduction Design Goal (dBA)	7
ODOT Noise Reduction Design Goal (%)	1%

8/3/2018

Broject Information	No Barrier A	nalysis			1	0' Wall			1:	2' Wall		14' Wali			
Froject mornation	No Barrier			Wall 11				Wall 11			Wall 11				
				Average Wtd I.L	. (benefited)	5.0) dB I.L. Avg	Average Wtd I.L	•	6.0	0 dB I.L. Avg	Average Wtd I.I		7.5	dB I.L. Avg
				Maximum I.L.		5	dB I.L. Max	Maximum I.L.			7 dB I.L. Max	Maximum I.L.			9 dB I.L. Max
K19786CW	Total Units Exposed to Impact		5	Benefited/Impac	ted ≥ AFG	1	# Prot Units	Benefited/Impac	ted ≥ AFG		2 # Prot Units	Benefited/Impa	cted ≥ AFG		2 # Prot Units
309180	# Impacts - NAC only		5	Benefited/Non In	npact ≥ AFG	0	# Units	Benefited/Non Ir	npact ≥ AFG		0 # Units	Benefited/Non I	mpact ≥ AFG) # Units
I205CW_Build_Wall11	# Impacts - SI only		0	Total Benefited		1	# Ben Units	Total Benefited			2 # Ben Units	Total Benefited			2 # Ben Units
Wall 11	# Impacts - Both NAC & SI		0	Impacted Units ≥	NRDG	0	# Units	Impacted Units 2	≥ NRDG		1 # Units	Impacted Units	≥ NRDG		1 # Units
НММН				Benefited Units 2	≥ NRDG	0	# Units	Benefited Units	≥ NRDG		1 # Units	Benefited Units	≥ NRDG		1 # Units
Scott Noel				Percent of impac	sts ≥ AFG	20%	% Ben Units	Percent of impac	cts ≥ AFG	40%	6 % Ben Units	Percent of impa	icts ≥ AFG	40%	6 % Ben Units
8/3/2018				Percent of benef	its ≥ NRDG	0%	% NRDG Units	Percent of benef	fits ≥ NRDG	50%	% NRDG Units	Percent of bene	fits ≥ NRDG	50%	% NRDG Units
				"Cost-Reasonab	le" ?	No)	"Cost-Reasonab	le" ?	N	D	"Cost-Reasonal	ole" ?	No	•
				Surface Area		11451	Sq Feet	Surface Area		1374	1 Sq Feet	Surface Area		16032	Sq Feet
U.S. Department of Transportation				Surface Area/Be	n Rec	11451	Sq Feet	Surface Area/Be	en Rec	687	1 Sq Feet	Surface Area/B	en Rec	8016	Sq Feet
Federal Highway				Barrier Length		1,145	Feet	Barrier Length		1,14	5 Feet	Barrier Length		1,145	Feet
Administration				Min Height		10.0	Feet	Min Height		12.0	0 Feet	Min Height		14.0	Feet
Administration				Max Height		10.0	Feet	Max Height		12.0	0 Feet	Max Height		14.0	Feet
				Avg Height		10.0	Feet	Avg Height		12.0	0 Feet	Avg Height		14.0	Feet
				Total Barrier Cos	st	\$229,020		I otal Barrier Cos	st	\$274,820)	I otal Barrier Co	st	\$320,640	
	Enter SI Info		NO OI	Cost/Ben Rec		\$229,020)	Cost/Ben Rec		\$137,41	0	Cost/Ben Rec		\$160,320	J
FHWA No. of	Type of Impact		mnacted	With B	arrier Sound	Levels, Impact and	Benefit	With E	Barrier Sound L	evels, Impact and	Benefit	With	Barrier Sound	Levels, Impact and I	Benefit
Receiver ID Row Act Cat Units	Bid Leq > NAC? Sub. Inc.?	Impact?	Units	Leq(dBA)	IL (db)	Impacted?	No. Benefited	Leq(dBA)	IL (db)	Impacted?	No. Benefited	Leq(dBA)	IL (db)	Impacted?	No. Benefited
R699 1 B 1	74	Impact!	1	69	5	Benefited/Impact	1	67	7	Benefited/Impact	1	65	9	Benefited/Impact	1
R695 1 B 1	72	Impact!	1	68	4	Impact! w/ Bar		67	5	Benefited/Impact	1	66	6	Benefited/Impact	1
R696 1 B 1	68	Impact!	1	67	1	Impact! w/ Bar		66	2	Impact! w/ Bar		64	4	Impact! w/ Bar	
R697 1 B 1	67	Impact!	1	66	1	Impact! w/ Bar		65	2	Impact! w/ Bar		64	3	Impact! w/ Bar	
R698 1 B 1	66	Impact!	1	64	2	Impact! w/ Bar		64	2	Impact! w/ Bar		63	3	Impact! w/ Bar	

Brainet Information	16	' Wall	1	8' Wall	2	0' Wall	22' Wall		
Project Information	Wall 11		Wall 11		Wall 11		Wall 11		
	Average Wtd I.L.	7.0 dB I.L. Avg	Average Wtd I.L.	7.7 dB I.L. Avg	Average Wtd I.L.	7.3 dB l.L. Avg	Average Wtd I.L.	7.5 dB I.L. Avg	
	Maximum I.L.	10 dB I.L. Max	Maximum I.L.	11 dB I.L. Max	Maximum I.L.	11 dB I.L. Max	Maximum I.L.	12 dB I.L. Max	
K19786CW	Benefited/Impacted ≥ AFG	3 # Prot Units	Benefited/Impacted ≥ AFG	3 # Prot Units	Benefited/Impacted ≥ AFG	4 # Prot Units	Benefited/Impacted ≥ AFG	4 # Prot Units	
309180	Benefited/Non Impact ≥ AFG	0 # Units	Benefited/Non Impact ≥ AFG	0 # Units	Benefited/Non Impact ≥ AFG	0 # Units	Benefited/Non Impact ≥ AFG	0 # Units	
I205CW_Build_Wall11	Total Benefited	3 # Ben Units	Total Benefited	3 # Ben Units	Total Benefited	4 # Ben Units	Total Benefited	4 # Ben Units	
Wall 11	Impacted Units ≥ NRDG	1 # Units	Impacted Units ≥ NRDG	2 # Units	Impacted Units ≥ NRDG	2 # Units	Impacted Units ≥ NRDG	2 # Units	
НММН	Benefited Units ≥ NRDG	1 # Units	Benefited Units ≥ NRDG	2 # Units	Benefited Units ≥ NRDG	2 # Units	Benefited Units ≥ NRDG	2 # Units	
Scott Noel	Percent of impacts ≥ AFG	60% % Ben Units	Percent of impacts ≥ AFG	60% % Ben Units	Percent of impacts ≥ AFG	80% % Ben Units	Percent of impacts ≥ AFG	80% % Ben Units	
8/3/2018	Percent of benefits ≥ NRDG	33% % NRDG Units	Percent of benefits ≥ NRDG	67% % NRDG Units	Percent of benefits ≥ NRDG	50% % NRDG Units	Percent of benefits ≥ NRDG	50% % NRDG Units	
	"Cost-Reasonable" ?	No							
	Surface Area	18321 Sq Feet	Surface Area	20612 Sq Feet	Surface Area	22902 Sq Feet	Surface Area	25192 Sq Feet	
U.S. Department of Transportation	Surface Area/Ben Rec	6107 Sq Feet	Surface Area/Ben Rec	6871 Sq Feet	Surface Area/Ben Rec	5726 Sq Feet	Surface Area/Ben Rec	6298 Sq Feet	
Federal Highway	Barrier Length	1,145 Feet							
Administration	Min Height	16.0 Feet	Min Height	18.0 Feet	Min Height	20.0 Feet	Min Height	22.0 Feet	
Administration	Max Height	16.0 Feet	Max Height	18.0 Feet	Max Height	20.0 Feet	Max Height	22.0 Feet	
	Avg Height	16.0 Feet	Avg Height	18.0 Feet	Avg Height	20.0 Feet	Avg Height	22.0 Feet	
	Total Barrier Cost	\$458,025	Total Barrier Cost	\$515,300	Total Barrier Cost	\$572,550	Total Barrier Cost	\$629,800	
	Cost/Ben Rec	\$152,675.00	Cost/Ben Rec	\$171,767	Cost/Ben Rec	\$143,138	Cost/Ben Rec	\$157,450	
FHWA No. of	With Barrier Sound Le	evels, Impact and Benefit	With Barrier Sound L	evels, Impact and Benefit	With Barrier Sound L	evels, Impact and Benefit	With Barrier Sound Le	evels, Impact and Benefit	
Receiver ID Row Act Cat Dwelling	Leq(dBA) IL (db)	Impacted? No. Benefited							
R699 1 B 1	64 10	Benefited/Impact 1	63 11	Benefited/Impact 1	63 11	Benefited/Impact 1	62 12	Benefited/Impact 1	
R695 1 B 1	66 6	Benefited/Impact 1	65 7	Benefited/Impact 1	65 7	Benefited/Impact 1	65 7	Benefited/Impact 1	
R696 1 B 1	63 5	Benefited/Impact 1	63 5	Benefited/Impact 1	62 6	Benefited/Impact 1	62 6	Benefited/Impact 1	
R697 1 B 1	64 3	Impact! w/ Bar	63 4	Impact! w/ Bar	63 4	Impact! w/ Bar	63 4	Impact! w/ Bar	
R698 1 B 1	62 4	Impact! w/ Bar	62 4	Impact! w/ Bar	61 5	Benefited/Impact 1	61 5	Benefited/Impact 1	

	Broject Infor	motio	-			24	l' Wall	
	Project infor	matio	n		W	all 11		
					Average Wtd I.	L.	7.5	dB I.L. Avg
					Maximum I.L.		12	dB I.L. Max
	K19786C	W			Benefited/Impa	icted ≥ AFG	4	# Prot Units
	309180	1			Benefited/Non	Impact ≥ AFG	0	# Units
	I205CW_Build	_Wall1	1		Total Benefited		4	# Ben Units
	Wall 11				Impacted Units	≥ NRDG	2	# Units
	нммн				Benefited Units	s ≥ NRDG	2	# Units
	Scott No	el			Percent of imp	acts ≥ AFG	80%	% Ben Units
	8/3/201	3			Percent of ben	efits ≥ NRDG	50%	% NRDG Units
					"Cost-Reasona	ble" ?	No	
					Surface Area		27482	Sq Feet
-	U.S. Departme	nt of Tro	nsportati	on	Surface Area/E	en Rec	6871	Sq Feet
	Federal	Hic	hwa	V	Barrier Length		1,145	Feet
\sim	Admini	-	ion		Min Height		24.0	Feet
	Admini	sinui	1011		Max Height		24.0	Feet
					Avg Height		24.0	Feet
					Total Barrier C	ost	\$687,050	
					Cost/Ben Rec		\$171,763	
		_	FHWA	No. of	With E	Barrier Sound L	evels, Impact and	Benefit
Receiv	er ID	Row	Act Cat	Dwelling Units	Leq(dBA)	IL (db)	Impacted?	No. Benefited
R699	99 1 B 1					12	Benefited/Impact	1
R695		1	В	1	65	7	Benefited/Impact	1
R696		1	В	1	62	6	Benefited/Impact	1
R697		1	В	1	63	4	Impact! w/ Bar	-
R698		1	В	1	61	5	Benefited/Impact	1

12/3/2018 3:11 PM D-55



	K19786CW											
			W	all 12								
	10'	12'	14'	16'	18'	20'	22'	24'	Units			
Average Wtd I.L. (benefited)		5	6	5.5	5.3	5.7	6	6.3	dBA			
Maximum I.L.	3	5	7	8	9	9	10	10	dBA			
Benefited/Impacted ≥ AFG	0	0	0	4	23	31	35	38	# of dwelling units			
Benefited/Non Impact ≥ AFG	0	1	3	9	23	35	41	43	# of dwelling units			
Total Benefited	0	1	3	13	46	66	76	81	# of dwelling units			
Impacted Units ≥ NRDG	0	0	0	0	0	6	14	19	# of dwelling units			
Benefited Units ≥ NRDG	0	0	1	2	3	11	23	35	# of dwelling units			
Percent of impacts ≥ AFG	0%	0%	0%	9%	53%	72%	81%	88%	%			
Percent of benefits ≥ NRDG		0%	33%	15%	7%	17%	30%	43%	%			
"Cost-Reasonable" ?		No	No	No	Yes	Yes	Yes	Yes				
Surface Area	13,805	16,565	19,326	22,087	24,848	27,607	30,369	33,133	sq-feet			
Surface Area/Ben Rec		16,565	6,442	1,699	540	418	400	409	sq-ft / ben rec			
Barrier Length	1,381	1,381	1,381	1,381	1,381	1,381	1,381	1,381	ft			
Min Height	10	12	14	16	18	20	22	24	ft			
Max Height	10	12	14	16	18	20	22	24	ft			
Avg Height	10	12	14	16	18	20	22	24	ft			
Total Barrier Cost	276,100	331,300	386,520	441,740	621,200	690,175	759,225	828,325	\$			
Cost/Ben Rec		331,300	128,840	33,980	13,504	10,457	9,990	10,226	\$ / ben rec			
Effectiveness/Cost Metric (E/C)	-	-	-	-	-	7.8	18.9	25.1				

ODOT Acoustical Feasibilty Goal (dBA)	5
ODOT Acoustical Feasibilty Goal (%)	51%
ODOT Noise Reduction Design Goal (dBA)	7
ODOT Noise Reduction Design Goal (%)	1%

11/15/2018

Project Information			No Barrier Analysis			10' Wall			12' Wall				14' Wall					
Project in	Tormation			No Barrier			Wall	12 Rev 11/13/20	18		Wal	12 Rev 11/13/20)18		W	/all 12 Rev 11/13/2	2018	
							Average Wtd I.	(benefited)		dB I.L. Avg	Average Wtd I.	L.	Ę	5.0 dB I.L. Avg	Average Wtd	1 I.L.		6.0 dB I.L. Avg
K407	96CW		Total Unite Experi	and to Import			Maximum I.L.	atad > AFO		3 dB I.L. Max	Maximum I.L.	ated NAFO		5 dB I.L. Max	Maximum I.L.			7 dB I.L. Max
309	180		# Impacts - NAC o			4.	Benefited/Mon	$cleu \ge AFG$		0 # Linits	Benefited/Mon	$Cleu \ge AFG$		1 # Units	Benefited/Mo	$pacted \ge AFG$		3 # Units
1205CW Bu	uild Wall12		# Impacts - SI only	V		(Total Benefited			0 # Ben Units	Total Benefited			1 # Ben Units	Total Benefite	ed		3 # Ben Units
Wal	ll 12		# Impacts - Both N	, NAC & SI		(Impacted Units	≥ NRDG		0 # Units	Impacted Units	≥ NRDG		0 # Units	Impacted Uni	its ≥ NRDG		0 # Units
HM	MH						Benefited Units	≥ NRDG		0 # Units	Benefited Units	s ≥ NRDG		0 # Units	Benefited Un	iits ≥ NRDG		1 # Units
Scott	Noel						Percent of impa	acts ≥ AFG	0	% Ben Units	Percent of imp	acts ≥ AFG	(0% % Ben Units	Percent of im	pacts ≥ AFG		0% % Ben Units
11/15/	/2018						Percent of bene	hle" 2		% NRDG Units	Percent of ben	etits 2 NRDG ble" 2	(No NRDG Units	Percent of be	netits 2 NRDG		33% % NRDG Units
							Surface Area		138	05 Sa Feet	Surface Area		165	65 Sa Feet	Surface Area		19	326 Sa Feet
U.S. Depart	tment of Transportat	ion					Surface Area/B	en Rec		Sq Feet	Surface Area/E	en Rec	165	65 Sq Feet	Surface Area	/Ben Rec	6	442 Sq Feet
P Feder	al Highwa	V					Barrier Length		1,3	81 Feet	Barrier Length		1,3	81 Feet	Barrier Lengt	th	1,	381 Feet
Admi	nistration	·					Min Height		10	0.0 Feet	Min Height		12	2.0 Feet	Min Height		1	4.0 Feet
							Ava Height		10	0.0 Feet	Ava Height		12	2.0 Feet	Ava Height		1	4.0 Feet
							Total Barrier Co	ost	\$276,10	00	Total Barrier Co	ost	\$331,3	00	Total Barrier (Cost	\$386,	520
				Enter SI Info			Cost/Ben Rec				Cost/Ben Rec		\$331,3	300	Cost/Ben Ree	с	\$128	,840
	_ FHWA	No. of	Type of I	Impact		NO. OF	With	Barrier Sound L	evels, Impact an	d Benefit	With	Barrier Sound L	evels, Impact an	d Benefit	Wi	ith Barrier Sound	Levels, Impact an	d Benefit
Receiver ID	Row Act Cat	Units	Bld Leq > NAC?	Sub. Inc.?	Impact?	Units	Leg(dBA)	IL (db)	Impacted?	No. Benefited	Leg(dBA)	IL (db)	Impacted?	No. Benefited	Leg(dBA)	IL (db)	Impacted?	No. Benefited
R704	1 B	1	69		Impact!	1	67	2	Impact! w/ Bar		66	3	Impact! w/ Bar		65	4	Impact! w/ Bar	
R705	1 B	1	69		Impact!	1	67	2	Impact! w/ Bar		66	3	Impact! w/ Bar		65	4	Impact! w/ Bar	
R706	1 B	1	70		Impact!	1	68	2	Impact! w/ Bar		67	3	Impact! w/ Bar		67	3	Impact! w/ Bar	
R707	1 B	1	70		Impact!	1	68	2	Impact! w/ Bar		68	2	Impact! w/ Bar		67	3	Impact! w/ Bar	
R700	1 B	1	58 56				57	3			51	5	Benefited/Non-Imr	1	50	<u>∠</u> 6	Renefited/Non-Im	1
R710	1 B	1	68		Impact!	1	66	2	Impact! w/ Bar		66	2	Impact! w/ Bar		65	3	Impact! w/ Bar	
R711	1 B	1	67		Impact!	1	65	2	Impact! w/ Bar		65	2	Impact! w/ Bar		64	3	Impact! w/ Bar	
R712	1 B	1	49				49	0			49	0			49	0		
R713	1 B	1	53				51	2			50	3	-		49	4	_	
R/14 R715	1 B	1	56 57				56	0			56 56	0	-		55	1	-	
R716	1 B	1	45				45	0			44	1	-		44	1	-	
R717	1 B	1	45				45	0			45	0	-		44	1		
R718	1 B	1	46				46	0			46	0			45	1		
R719	1 B	1	46				46	0			46	0	-		46	0		
R720	1 B	1	63				60	3			60	3	-		59	4		
R721	<u> </u>	1	59				59 57	2			59 55	4	-		55	4	-	
R723	1 B	1	59				57	2			56	3	-		55	4	-	
R724	1 B	1	52				50	2			50	2			48	4		
R725	1 B	1	52				50	2			50	2			48	4		
R726	1 B	1	51				50	1			50	1	-		50	1	_	
R728	<u> </u>	1	48 47				48	0			48	1	-		48	1	-	
R729	1 B	1	46				46	0			46	0	-		46	0	-	
R730	1 B	1	53				53	0			53	0			53	0		
R731	1 B	1	54				54	0			53	1			53	1		
R732	1 B	1	53				53	0			53	0	-		53	0	_	
R734	<u> </u>	1	53 46				46	0			45	1	-		45	1	-	
R735	1 B	1	46				45	1			45	1	-		45	1	-	
R736	1 B	1	57				56	1			56	1			55	2		
R737	1 B	1	57				56	1			56	1			55	2		
R738	1 B	1	56				55	1			55	1	-		54	2	-	
R739 R740	<u> </u>	1	50 60				54 60	2			54 60	0	-		53 60	0	-	
R741	1 B	1	56				56	0			56	0	-		56	0	-	
R742	1 B	1	53				53	0			53	0			53	0		
R743	1 B	1	53				53	0			53	0			53	0		
R744	1 B	1	53				53	0			52	1	-		52	1	_	
R745		1	53				53	0			52	1	-		52	1	-	
R740	1 B	1	53				53	0			53	0	-		53	0	-	
R748	1 B	1	55				55	0			55	Ő	-		54	1	-	
R749	1 B	1	71		Impact!	1	68	3	Impact! w/ Bar		68	3	Impact! w/ Bar		67	4	Impact! w/ Bar	
R750	1 B	1	71		Impact!	1	69	2	Impact! w/ Bar		68	3	Impact! w/ Bar		67	4	Impact! w/ Bar	
R751	1 B	1	71		Impact!	1	70	1	Impact! w/ Bar		69	2	Impact! w/ Bar		68	3	Impact! w/ Bar	
R752	<u> </u>	1	71		Impact!	1	70	1	Impact! w/ Bar		69	2	Impact! w/ Bar		69	2	Impact! w/ Bar	
R754	1 B	1	56				53	2			52	2	-		28 29	7	Benefited/Non-Im	1
R755	1 B	1	69		Impact!	1	68	1	Impact! w/ Bar		67	2	Impact! w/ Bar		66	3	Impact! w/ Bar	
R756	1 B	1	68		Impact!	1	66	2	Impact! w/ Bar		66	2	Impact! w/ Bar		65	3	Impact! w/ Bar	
R757	1 B	1	49				49	0			49	0			49	0		
R757	1 B	1	49				49	0			49	0	-		49	0		
R750	1 B	1	53				50	3			50	3	-		49	4	-	
R760	1 B	1	58				57	1			56	2	-		56	2		
R761	1 B	1	46				46	0			46	0			46	0		
		-	-	-	- '		-								-			

Project Information					No Barrier A	nalysis		10' Wall			12' Wall			14' Wall				
	Project Inform	ation			No Barrier			Wall 12 Rev 11/13	2018		Wall 12 R	ev 11/13/20	18		Wal	I 12 Rev 11/13/2	018	
								Average Wtd I.L. (benefited)		dB I.L. Avg	Average Wtd I.L.		5.	0 dB I.L. Avg	Average Wtd I.I	L.		6.0 dB I.L. Avg
	1/10-00.000							Maximum I.L.		3 dB I.L. Max	Maximum I.L.			5 dB I.L. Max	Maximum I.L.			7 dB I.L. Max
	K19786CW			Total Units Expos	sed to Impact		4:	Senefited/Impacted ≥ AFG		0 # Prot Units	Benefited/Impacted ≥ /	AFG		0 # Prot Units	Benefited/Impa			0 # Prot Units
	I205CW Build V	Vall12		# Impacts - NAC 0	, ,		4.	0 Total Benefited		0 # Ben Units	Total Benefited	2 AFG		1 # Ben Units	Total Benefited	Inpact 2 AFG		3 # Ben Units
	Wall 12			# Impacts - Both N	AC & SI		(0 Impacted Units ≥ NRDG		0 # Units	Impacted Units ≥ NRD0	G		0 # Units	Impacted Units	≥ NRDG		0 # Units
	НММН							Benefited Units ≥ NRDG		0 # Units	Benefited Units ≥ NRD	G		0 # Units	Benefited Units	≥ NRDG		1 # Units
	Scott Noel							Percent of impacts ≥ AFG		0% % Ben Units	Percent of impacts $\geq A$	AFG	0'	% Ben Units	Percent of impa	acts ≥ AFG		0% % Ben Units
	11/15/2018							Percent of benefits ≥ NRDG		% NRDG Units	Percent of benefits ≥ N	NRDG	0'	% % NRDG Units	Percent of bene	efits ≥ NRDG		33% % NRDG Units
								Surface Area	138	305 Sa Feet	Surface Area		1656	5 Sa Feet	Cost-Reasonar	DIE ?	10	326 Sa Feet
	S. Department	of Transportati	ion					Surface Area/Ben Rec		Sq Feet	Surface Area/Ben Rec		1656	5 Sq Feet	Surface Area/Be	en Rec	6	442 Sq Feet
	Federal	Highwa	V					Barrier Length	1,3	381 Feet	Barrier Length		1,38	1 Feet	Barrier Length		1,	381 Feet
	Administ	ration						Min Height	1	0.0 Feet	Min Height		12.	0 Feet	Min Height			14.0 Feet
	Administ	allott						Max Height	1	0.0 Feet	Max Height		12.	0 Feet	Max Height			14.0 Feet
								Total Barrier Cost	\$276,1	0.0 1 661	Total Barrier Cost		\$331,30		Total Barrier Co	st	\$386,	520
					Enter SI Info			Cost/Ben Rec			Cost/Ben Rec		\$331,30	0	Cost/Ben Rec		\$128	,840
		_ FHWA	No. of	Type of I	mpact		NO. OF	With Barrier Sound	l Levels, Impact a	nd Benefit	With Barrie	er Sound L	evels, Impact and	Benefit	With	Barrier Sound	Levels, Impact ar	nd Benefit
	Receiver ID	Row Act Cat	Dwelling	Bld Leq > NAC?	Sub. Inc.?	Impact?	Units	Leq(dBA) IL (db)	Impacted?	No. Benefited	Leq(dBA)	IL (db)	Impacted?	No. Benefited	Leq(dBA)	IL (db)	Impacted?	No. Benefited
R762		1 B	1	46				46 0	•		46	0	•		46	0		
R763		1 B	1	47				47 0			47	0			47	0		
R764		1 B	1	47				47 0			47	0			47	0		
R765		1 B 1 B	1	64 63				61 2	_		62	2			60 60	3		
R767		1 B	1	60				58 2	_		58	2			56	4		
R768		1 B	1	60				58 2	_		57	3			56	4		
R769		1 B	1	53				50 3			50	3			50	3		
R770		1 B	1	52				51 1	_		50	2			49	3		
R772		і в 1 в	1	52 49				49 0	_		52 48	1			51 48	1		
R773		1 B	1	48				48 0	_		48	0			48	0	•	
R774		1 B	1	48				48 0			47	1			47	1		
R775		1 B	1	57				57 0			57	0			57	0		
R776		1 B 1 P	1	56 55				56 0	_		56	0			56 55	0		
R778		1 B	1	55				55 0	_		55	0			55	0	•	
R779		1 B	1	47				47 0			47	0			47	0		
R780		1 B	1	47				47 0			47	0			47	0		
R781		1 B	1	59				58 1			57	2			57	2		
R782		1 B 1 B	1	59 58				57 2	_		57	2			57	2	-	
R784		1 B	1	57				56 1	_		55	2			55	2		
R785		1 B	1	62				62 0			62	0			62	0		
R786		1 B	1	61				61 0			61	0			61	0		
R787		1 B	1	56 56				56 0	_		56	0			56	0		
R788		і в 1 в	1	56				56 0	-		56	0			55	1		
R790		1 B	1	56				55 1	_		55	1			55	1	•	
R791		1 B	1	56				55 1			55	1			55	1		
R792		1 B	1	56				56 0			56	0			56	0		
R793		1 B 1 P	1	72		Impact!	1	70 2	Impact! w/ Bar		69 60	3	Impact! w/ Bar		69 60	3	Impact! w/ Bar	
R794		1 B	1	72		Impact	1	70 2	Impact! w/ Bar		70	2	Impact! w/ Bar		70	2	Impact! w/ Bar	
R796		1 B	1	72		Impact!	1	71 1	Impact! w/ Bar		71	1	Impact! w/ Bar		70	2	Impact! w/ Bar	
R797		1 B	1	61				60 1			59	2			59	2		
R798		1 B	1	57				54 3			53	4	han the / Day		52	5	Benefited/Non-Im	<mark>p</mark> 1
R799 R800		і В 1 В	1	70		Impact	1	68 1	Impact! w/ Bar		67	2	Impact! w/ Bar		66	3	Impact w/ Bar	
R801		1 B	1	53		inpaot:		53 0	inipact: w/ Dai		52	1	inpact: w/ bai		52	1	impact: w/ Dai	
R802		1 B	1	55				53 2			52	3			52	3		
R803		1 B	1	58				58 0	_		57	1			57	1		
R804		1 B	1	59				58 1			58	1			57	2	-	
R805		1 B 1 B	1	49 50				<u>49</u> 50 0	_		49	0			49	0		
R807		1 B	1	51				51 0	_		51	0			51	0		
R808		1 B	1	51				51 0	_		51	0			51	0		
R809		1 B	1	65		Impact!	1	63 2	Impact! w/ Bar		63	2	Impact! w/ Bar		62	3	Impact! w/ Bar	
R810		1 B	1	64				62 2	_		62	2			62	2		
R811		і в 1 в	1	61				59 2	_		58	2			58 58	3	-	
R813		1 B	1	55				53 2			53	2			52	3		
R814		1 B	1	54				53 1			53	1			53	1		
R815		1 B	1	54				54 0			54	0			54	0		
R816		1 B	1	52				52 0			52	0			52	0		
R81/			1	52				52 0	_		52	0			52	0		
R819		1 B	1	59				59 0			59	0			59	0		
R820		1 B	1	58				58 0			58	0			58	0		

	Desired by farmenties.		1	No Barrier A	nalysis			1()' Wall			12	' Wall		14' Wall			
	Project Information			No Barrier			Wall 1	2 Rev 11/13/20	18		Wall 12	Rev 11/13/20	18		Wall	12 Rev 11/13/2	018	
							Average Wtd I.L.	(benefited)		dB I.L. Avg	Average Wtd I.L.		5	0 dB I.L. Avg	Average Wtd I.L.		6	0 dB I.L. Avg
	K4070COW		Total Unite Funce			12	Maximum I.L.			3 dB I.L. Max	Maximum I.L.			5 dB I.L. Max	Maximum I.L.			7 dB I.L. Max
	309180		# Impacts - NAC or	nly		43	Benefited/Mon In	P_{AFG}		0 # Units	Benefited/Mon Imp	act≥AFG		1 # Units	Benefited/Mon Im	$red \ge AFG$		3 # Units
	I205CW_Build_Wall12		# Impacts - SI only	,		0	Total Benefited	ipaot = / ii o		0 # Ben Units	Total Benefited			1 # Ben Units	Total Benefited	inputer = / ii O		3 # Ben Units
	Wall 12		# Impacts - Both N	AC & SI		C	Impacted Units ≥	NRDG		0 # Units	Impacted Units ≥ N	IRDG		0 # Units	Impacted Units ≥	≥ NRDG		0 # Units
	HMMH						Benefited Units 2		00	0 # Units	Benefited Units ≥ N		0	0 # Units	Benefited Units ≥	≥ NRDG		1 # Units
	11/15/2018						Percent of benef	its ≥ NRDG	07	% NRDG Units	Percent of Impacts	≥ AFG ≥ NRDG	0	% % NRDG Units	Percent of benefit	its ≥ NRDG	33	% NRDG Units
							"Cost-Reasonab	le" ?			"Cost-Reasonable"	'?	N	lo	"Cost-Reasonabl	le" ?	1	lo
							Surface Area	B	1380	5 Sq Feet	Surface Area		1656	5 Sq Feet	Surface Area	- D	1932	6 Sq Feet
	Endoral High	ortation					Surface Area/Be Barrier Length	n Rec	1.38	1 Feet	Barrier Length	Rec	1.38	1 Feet	Surface Area/Bei Barrier Length	n Rec	1.38	1 Feet
	Administratio	wuy					Min Height		10.0	0 Feet	Min Height		12	0 Feet	Min Height		14	0 Feet
	Administratio	11					Max Height		10.0	0 Feet	Max Height	-	12	0 Feet	Max Height		14	0 Feet
							Total Barrier Cos	st	\$276.100		Total Barrier Cost		\$331.30	0 Feel	Avg Height Total Barrier Cost	t	\$386.52	0 Feel
				Enter SI Info			Cost/Ben Rec				Cost/Ben Rec		\$331,30	00	Cost/Ben Rec		\$128,8	40
	Ft Ft	WA No. of	Type of Ir	npact		NO. OT	With B	arrier Sound L	evels, Impact and	d Benefit	With Ba	rrier Sound Le	evels, Impact and	Benefit	With	Barrier Sound	Levels, Impact and	Benefit
	Receiver ID Row Ac	t Cat Unite	Bld Leg > NAC?	Sub. Inc.?	Impact?	Units	Leg(dBA)	IL (db)	Impacted?	No. Benefited	Leg(dBA)	IL (db)	Impacted?	No. Benefited	Leg(dBA)	IL (db)	Impacted?	No. Benefited
R821	1	B 1	58				57	1	mpaotoa		57	1	pacica i		57	1	mpaorou	
R822	1	B 1	58				58	0			58	0			57	1		
R823	1	B 1	50				50	0			50	0			50	0		
R824 R825	1	B 1	50 61				50 60	1			50 60	0			50	2		
R826	1	B 1	61				61	0			60	1			60	1		
R827	1	B 1	59				58	1			57	2			57	2		
R828	1	B 1	58				57	1			56	2			56	2		
R830	1	B 1	62				62	0			62	0			62	0		
R831	1	B 1	61				61	0			61	0			61	0		
R832	1	B 1	60 60				60 60	0			60 60	0			60	0		
R834	1	B 1	60				59	1			59	1			59	1		
R835	1	B 1	60				60	0			60	0			60	0		
R836	1	B 1	60				60	0			60	0			60	0		
R837 R838	1	B 1 B 1	63 69		Impact	1	62	2	ImpactI w/ Bar		62	2	ImpactI w/ Bar		62 66	2	ImpactI w/ Bar	
R839	1	B 1	66		Impact!	1	64	2	Impact! w/ Bar		63	3	Impact! w/ Bar		62	4	Impact! w/ Bar	
R840	1	B 1	65		Impact!	1	63	2	Impact! w/ Bar		62	3	Impact! w/ Bar		62	4	Impact! w/ Bar	
R841	1	B 1	64 62				62	2			61	3			60	3		
R843	1	B 1	67		Impact!	1	65	2	Impact! w/ Bar		65	3	Impact! w/ Bar		64	3	Impact! w/ Bar	
R844	1	B 1	67		Impact!	1	65	2	Impact! w/ Bar		64	3	Impact! w/ Bar		63	4	Impact! w/ Bar	
R845	1	B 1	65		Impact!	1	63	2	Impact! w/ Bar		62	3	Impact! w/ Bar		62	3	Impact! w/ Bar	
R847	1	B 1	67		Impact!	1	64	2	Impact! w/ Bar		64	3	Impact! w/ Bar		63	4	Impact! w/ Bar	
R848	1	B 1	66		Impact!	1	64	2	Impact! w/ Bar		63	3	Impact! w/ Bar		62	4	Impact! w/ Bar	
R849	1	B 1	64				62	2			62	3			61	3		
R850 R851	<u>1</u>	B 1	62				62 60	2			60	2			59	3		
R852	1	B 1	61				60	2			59	2			59	3		
R853	1	B 1	59				58	1			58	2			57	2		
R854	1	B 1	59 63				58 62	1			57 61	2			57 60	3		
R856	1	B 1	63				61	1			61	2			60	3		
R857	1	B 1	61				60	1			59	2			59	2		
R858	1	В 1 В 1	61 63				60	1			59 60	2			59 60	2		
R860	1	B 1	62				61	2			60	2			59	3		
R861	1	B 1	60				59	1			58	2			58	3		
R862	1	B 1	60		Impost	1	59	1	Impostluu/ Por		58	2	Impostlus/ Par		58	2	Impostluu/ Por	
R864	1	B 1	68		Impact	1	67	1	Impact w/ Bar		66	2	Impact: w/ Bar		66	2	Impact: w/ Bar	
R865	1	B 1	67		Impact!	1	66	1	Impact! w/ Bar		66	1	Impact! w/ Bar		65	2	Impact! w/ Bar	
R866	1	B 1	67		Impact!	1	66	1	Impact! w/ Bar		65	1	Impact! w/ Bar		65	2	Impact! w/ Bar	
R867	1	В 1 В 1	67 67		Impact!	1 1	66 66	1	Impact! w/ Bar		65	2	Impact! w/ Bar		64	3	Impact! w/ Bar Impact! w/ Bar	
R869	1	B 1	66		Impact!	1	65	1	Impact! w/ Bar		65	2	Impact! w/ Bar		64	2	Impact! w/ Bar	
R870	1	B 1	66		Impact!	1	65	1	Impact! w/ Bar		65	1	Impact! w/ Bar		64	2	Impact! w/ Bar	
R871	1	B 1	71		Impact!	1	69	1	Impact! w/ Bar		68	2	Impact! w/ Bar		68	3	Impact! w/ Bar	
R873	1	B 1	70		Impact!	1 1	69	1	Impact! w/ Bar		68	2	Impact! w/ Bar		67	3	Impact! w/ Bar Impact! w/ Bar	
R874	1	B 1	69		Impact!	1	68	1	Impact! w/ Bar		67	2	Impact! w/ Bar		66	3	Impact! w/ Bar	
R875	1	B 1	70		Impact!	1	68	2	Impact! w/ Bar		67	3	Impact! w/ Bar		66	4	Impact! w/ Bar	
R876	1	B 1	70		Impact!	1	68	2	Impact! w/ Bar		67	3	Impact! w/ Bar		66	4	Impact! w/ Bar	
R878	1	B 1	69		Impact!	1	67	2	Impact: w/ Bar		66	3	Impact: w/ Bar		65	3	Impact: w/ Bar	
									•				•					I

Project Information	16	5' Wall	1	8' Wall	2	0' Wall	22' Wall		
Project information	Wall 12 Rev 11/13/20	18	Wall 12 Rev 11/13/2	018	Wall 12 Rev 11/13/20	18	Wall 12 Rev 11/13/20	18	
	Average Wtd I.L.	5.5 dB I.L. Avg	Average Wtd I.L.	5.3 dB I.L. Avg	Average Wtd I.L.	5.7 dB I.L. Avg	Average Wtd I.L.	6.0 dB I.L. Avg	
1/10700011/	Maximum I.L.	8 dB I.L. Max	Maximum I.L.	9 dB I.L. Max	Maximum I.L.	9 dB I.L. Max	Maximum I.L.	10 dB I.L. Max	
19786CW 300180	Benefited/Impacted 2 AFG	4 # Prot Units	Benefited/Impacted 2 AFG	23 # Prot Units	Benefited/Impacted 2 AFG	31 # Prot Units	Benefited/Mon Impact > AFC	35 # Prot Units	
I205CW Build Wall12	Total Benefited	13 # Ben Units	Total Benefited	46 # Ben Units	Total Benefited	66 # Ben Units	Total Benefited	76 # Ben Units	
Wall 12	Impacted Units ≥ NRDG	0 # Units	Impacted Units ≥ NRDG	0 # Units	Impacted Units ≥ NRDG	6 # Units	Impacted Units ≥ NRDG	14 # Units	
НММН	Benefited Units ≥ NRDG	2 # Units	Benefited Units ≥ NRDG	3 # Units	Benefited Units ≥ NRDG	11 # Units	Benefited Units ≥ NRDG	23 # Units	
Scott Noel	Percent of impacts ≥ AFG	9% % Ben Units	Percent of impacts ≥ AFG	53% % Ben Units	Percent of impacts ≥ AFG	72% % Ben Units	Percent of impacts ≥ AFG	81% % Ben Units	
11/15/2018	Percent of benefits ≥ NRDG	15% % NRDG Units	Percent of benefits ≥ NRDG	7% % NRDG Units	Percent of benefits ≥ NRDG	17% % NRDG Units	Percent of benefits ≥ NRDG	30% % NRDG Units	
	"Cost-Reasonable" ?	22087 Sg Eoot	"Cost-Reasonable" ?	Yes 24949 Sg Eoot	"Cost-Reasonable" ?	27607 Sg Eoot	"Cost-Reasonable" ?	Yes 20260 Ser Foot	
noitsbootant is transpool 211	Surface Area/Ben Rec	1699 Sg Feet	Surface Area/Ben Rec	540 Sq Feet	Surface Area/Ben Rec	418 Sg Feet	Surface Area/Ben Rec	400 Sq Feet	
Fodoral Highway	Barrier Length	1,381 Feet	Barrier Length	1,381 Feet	Barrier Length	1,381 Feet	Barrier Length	1,381 Feet	
rederar highway	Min Height	16.0 Feet	Min Height	18.0 Feet	Min Height	20.0 Feet	Min Height	22.0 Feet	
Administration	Max Height	16.0 Feet	Max Height	18.0 Feet	Max Height	20.0 Feet	Max Height	22.0 Feet	
	Avg Height	16.0 Feet	Avg Height	18.0 Feet	Avg Height	20.0 Feet	Avg Height	22.0 Feet	
	Total Barrier Cost	\$441,740	Total Barrier Cost	\$621,200 \$13,504	I otal Barrier Cost	\$690,175	lotal Barrier Cost	\$759,225	
No of	With Parrier Sound L	wols Impact and Bonofit	With Parrier Sound I	ovels Impact and Bonofit	With Parrier Sound L	avols Impact and Bonofit	With Parrier Sound Lo	vols Impact and Ronofit	
Receiver ID Row Dwelling	With Barrier Sound Lo	evers, impact and benefit	With Barner Sound L	Levels, impact and benefit	With Barrier Sound L	evers, impact and benefit	With Barrier Sound Le	veis, impact and benefit	
Act Cat Units	Leq(dBA) IL (db)	Impacted? No. Benefited	Leq(dBA) IL (db)	Impacted? No. Benefited	Leq(dBA) IL (db)	Impacted? No. Benefited	Leq(dBA) IL (db)	Impacted? No. Benefited	
R704 1 B 1	64 5	Benefited/Impact 1	64 5	Benefited/Impact 1	64 5	Benefited/Impact 1	63 6	Benefited/Impact 1	
R705 1 B 1	65 4	Impact! w/ Bar	64 5	Benefited/Impact 1	64 5	Benefited/Impact 1	64 5	Benefited/Impact 1	
R706 1 B 1	66 4	Impact! w/ Bar	65 5	Benefited/Impact 1	65 5	Benefited/Impact 1	65 5	Benefited/Impact 1	
R707 I B I R708 I B 1	<u> </u>	impact: w/ Bar	<u> </u>	Impacti w/ Bar	<u> </u>	Impacii w/ Bar	55 3	Benefited/impact	
R709 1 B 1	49 7	Benefited/Non-Imp 1	49 7	Benefited/Non-Imp 1	48 8	Benefited/Non-Imp	48 8	Benefited/Non-Imp	
R710 1 B 1	64 4	Impact! w/ Bar	63 5	Benefited/Impact 1	62 6	Benefited/Impact 1	62 6	Benefited/Impact 1	
R711 1 B 1	63 4	Impact! w/ Bar	62 5	Benefited/Impact 1	61 6	Benefited/Impact 1	60 7	Benefited/Impact 1	
R712 1 B 1	49 0		48 1		48 1		47 2		
R713 1 B 1	49 4		48 5	Benefited/Non-Imp 1	48 5	Benefited/Non-Imp 1	47 6	Benefited/Non-Imp 1	
R714 1 B 1	55 1	_	55 1	_	55 1		54 2		
R/15 1 B 1		_	54 3	-	54 3	-	53 4		
R710 1 B 1		-	43 2	-	43 2	-	43 2		
R718 1 B 1	45 1	-	45 1	-	45 1	-	44 2		
R719 1 B 1	45 1		45 1		45 1		45 1		
R720 1 B 1	58 5	Benefited/Non-Imp 1	57 6	Benefited/Non-Imp 1	57 6	Benefited/Non-Imp 1	57 6	Benefited/Non-Imp 1	
R721 1 B 1	57 4		57 4		56 5	Benefited/Non-Imp 1	56 5	Benefited/Non-Imp 1	
R722 1 B 1	55 4		54 5	Benefited/Non-Imp	54 5	Benefited/Non-Imp 1	54 5	Benefited/Non-Imp 1	
R723 1 B 1	54 5	Benefited/Non-Imp 1	54 5	Benefited/Non-Imp	54 5	Benefited/Non-Imp 1	54 5	Benefited/Non-Imp 1	
R724 I B I R725 I B I	47 5	Benefited/Non-Imp	47 5	Benefited/Non-Imp	40 6	Benefited/Non-Imp	40 0	Benefited/Non-Imp 1	
R726 1 B 1	50 1	-	50 1	Denented/Mon-Imp	49 2	Denented/NorFimp	49 2	Denemed/Non-Imp	
R727 1 B 1	47 1	-	47 1	-	47 1	-	46 2		
R728 1 B 1	46 1		46 1		45 2		45 2		
R729 1 B 1	46 0		45 1		45 1		45 1		
R730 1 B 1	53 0		53 0		53 0		52 1		
R731 1 B 1	53 1	_	53 1	_	53 1		53 1		
R732 1 B 1 R733 1 B 1	53 U	-	53 U	-	53 U		53 U		
R733 1 B 1	45 1	-	45 1	-	44 2	•	44 2		
R735 1 B 1	45 1	-	45 1	-	44 2	-	44 2		
R736 1 B 1	54 3		54 3		53 4		53 4		
R737 1 B 1	54 3		53 4		53 4		53 4		
R738 1 B 1	52 4		52 4		52 4		51 5	Benefited/Non-Imp 1	
R/39 1 B 1	52 4	-	51 5	Benetited/Non-Imp 1	51 5	Benefited/Non-Imp 1	51 5	Benefited/Non-Imp 1	
R741 1 B 1	56 0	-	56 0	-	56 0		56 0		
R741 I B I R742 I B 1	53 0	-	53 0	-	53 0	-	53 0		
R743 1 B 1	53 0	-	53 0		52 1		52 1		
R744 1 B 1	52 1	-	52 1	-	52 1		52 1		
R745 1 B 1	52 1		52 1		52 1		52 1		
R746 1 C 1	52 1		52 1		52 1		52 1		
R747 1 B 1	53 0		52 1		52 1		52 1		
R748 1 B 1	54 1	_	54 1		54 1		54 1		
R749 1 B 1	67 4	Impact! w/ Bar	66 5	Benefited/Impact 1	66 5	Benefited/Impact 1	65 6	Benefited/Impact 1	
R/50 1 B 1	67 4	Impact! w/ Bar	66 5	Benetited/Impact 1	66 5	Benefited/Impact 1	66 5	Benefited/Impact 1	
R752 1 B 1	68 3	Impact w/ Bar	68 3	Impacti w/ Bar		Impacti w/ Bar	67 5	Impact w/ Bar	
R753 1 B 1	58 2		57 3		57 3	impaot: w Dai	57 3	impaot: w Dai	
R754 1 B 1	48 8	Benefited/Non-Imp 1	47 9	Benefited/Non-Imp 1	47 9	Benefited/Non-Imp 1	46 10	Benefited/Non-Imp 1	
R755 1 B 1	65 4	Impact! w/ Bar	65 4	Impact! w/ Bar	64 5	Benefited/Impact 1	63 6	Benefited/Impact 1	
R756 1 B 1	64 4	Impact! w/ Bar	63 5	Benefited/Impact 1	62 6	Benefited/Impact 1	61 7	Benefited/Impact 1	
R757 1 B 1	48 1		48 1		47 2		47 2		
R757 1 B 1	48 1		48 1		47 2		47 2		
R758 1 B 1	47 6	Benefited/Non-Imp 1	47 6	Benefited/Non-Imp	46 7	Benefited/Non-Imp 1	46 7	Benefited/Non-Imp 1	
R/59 1 B 1	56 1	_	55 2	-	55 2	-	55 2		
R761 1 B 1		-	24 4 45 1	-	24 4 45 1		34 4 44 3		
	40 0		40 1		40		44 Z		

2_Optimization_NewIDs.xlsx Summary

Project Information	16	' Wall	18	8' Wall	2	0' Wall	22' Wall			
Froject information	Wall 12 Rev 11/13/201	8	Wall 12 Rev 11/13/20	18	Wall 12 Rev 11/13/20)18	Wall 12 Rev 11/13/20	18		
	Average Wtd I.L.	5.5 dB I.L. Avg	Average Wtd I.L.	5.3 dB I.L. Avg	Average Wtd I.L.	5.7 dB I.L. Avg	Average Wtd I.L.	6.0 dB I.L. Avg		
1/4070COM	Maximum I.L.	8 dB I.L. Max	Maximum I.L.	9 dB I.L. Max	Maximum I.L.	9 dB I.L. Max	Maximum I.L.	10 dB I.L. Max		
K19780CW 300180	Benefited/Impacted < AFG	4 # Prot Units	Benefited/Impacted 2 AFG	23 # Prot Units	Benefited/Impacted 2 AFG	31 # Prot Units	Benefited/Impacted < AFG	35 # Prot Units		
I205CW Build Wall12	Total Benefited	13 # Ben Units	Total Benefited	46 # Ben Units	Total Benefited	66 # Ben Units	Total Benefited	76 # Ben Units		
Wall 12	Impacted Units ≥ NRDG	0 # Units	Impacted Units ≥ NRDG	0 # Units	Impacted Units ≥ NRDG	6 # Units	Impacted Units ≥ NRDG	14 # Units		
НММН	Benefited Units ≥ NRDG	2 # Units	Benefited Units ≥ NRDG	3 # Units	Benefited Units ≥ NRDG	11 # Units	Benefited Units ≥ NRDG	23 # Units		
Scott Noel	Percent of impacts ≥ AFG	9% % Ben Units	Percent of impacts ≥ AFG	53% % Ben Units	Percent of impacts ≥ AFG	72% % Ben Units	Percent of impacts ≥ AFG	81% % Ben Units		
11/15/2018	Percent of benefits ≥ NRDG	15% % NRDG Units	Percent of benefits ≥ NRDG	7% % NRDG Units	Percent of benefits ≥ NRDG	17% % NRDG Units	Percent of benefits ≥ NRDG	30% % NRDG Units		
	"Cost-Reasonable" ?	22087 Sg Eoot	"Cost-Reasonable" ?	Yes 24848 Sg Eoot	"Cost-Reasonable" ?	27607 Sg Eoot	"Cost-Reasonable" ?	Yes 20260 Ser Foot		
S Department of Iransportation	Surface Area/Ben Rec	1699 Sq Feet	Surface Area/Ben Rec	540 Sq Feet	Surface Area/Ben Rec	418 Sg Feet	Surface Area/Ben Rec	400 Sq Feet		
Federal Highway	Barrier Length	1,381 Feet	Barrier Length	1,381 Feet	Barrier Length	1,381 Feet	Barrier Length	1,381 Feet		
Adaption Highway	Min Height	16.0 Feet	Min Height	18.0 Feet	Min Height	20.0 Feet	Min Height	22.0 Feet		
Administration	Max Height	16.0 Feet	Max Height	18.0 Feet	Max Height	20.0 Feet	Max Height	22.0 Feet		
	Avg Height	16.0 Feet	Avg Height	18.0 Feet	Avg Height	20.0 Feet	Avg Height	22.0 Feet		
	Total Barrier Cost	\$441,740	Total Barrier Cost	\$621,200	Lotal Barrier Cost	\$690,175	Otal Barrier Cost	\$759,225		
No. of	With Barrior Sound Lo	wole Impact and Bonofit	With Parrier Sound L	avals Impact and Bonofit	With Parrier Sound L	avals Impact and Bonofit	With Parrier Sound Lo	vols Impact and Ronofit		
Receiver ID Row Dwelling	With Barner Sound Le	evers, impact and benefit	With Barner Sound L	evers, impact and benefit	With Barner Sound L	evers, impact and benefit	With Barrier Sound Le	veis, impact and benefit		
Act Cat Units	Leq(dBA) IL (db)	Impacted? No. Benefited	Leq(dBA) IL (db)	Impacted? No. Benefited	Leq(dBA) IL (db)	Impacted? No. Benefited	Leq(dBA) IL (db)	Impacted? No. Benefited		
R762 1 B 1	46 0		45 1		45 1		44 2			
R763 1 B 1	47 0		46 1		46 1		46 1			
R764 1 B 1	47 0	_	46 1		46 1		46 1			
R765 1 B 1	60 4	-	<u>59</u> 5	Benefited/Non-Imp 1	59 5	Benefited/Non-Imp 1	58 6	Benefited/Non-Imp 1		
R/00 1 B 1 B767 1 P 1	60 3 56 4	-	59 4	-	58 5	Benefited/Non-Imp	58 5	Benefited/Non-Imp		
R768 1 B 1	56 4	-	55 5	Benefited/Non-Imp 1	55 5	Benefited/Non-Imp	55 5	Benefited/Non-Imp 1		
R769 1 B 1	48 5	Benefited/Non-Imp 1	48 5	Benefited/Non-Imp	47 6	Benefited/Non-Imp	47 6	Benefited/Non-Imp 1		
R770 1 B 1	48 4		48 4		47 5	Benefited/Non-Imp	47 5	Benefited/Non-Imp 1		
R771 1 B 1	51 1		51 1		51 1		51 1			
R772 1 B 1	48 1		48 1		48 1		47 2			
R773 1 B 1	48 0		47 1		47 1		46 2			
R774 1 B 1	47 1		47 1		46 2		46 2			
R775 1 B 1	57 0	_	57 0	-	57 0		57 0			
R776 1 B 1	56 0	-	56 0		56 0	-	56 0			
R/// 1 B 1	55 0	-	55 0	-	55 0	-	54 1			
R770 1 B 1		-		-	<u> </u>	-	55 U 45 2			
R780 1 B 1	46 1	-	46 1	-	46 1	-	45 2			
R781 1 B 1	56 3	-	55 4	-	55 4	-	55 4			
R782 1 B 1	56 3	-	55 4	-	55 4	-	55 4			
R783 1 B 1	55 3		54 4		53 5	Benefited/Non-Imp 1	53 5	Benefited/Non-Imp 1		
R784 1 B 1	54 3		53 4		53 4		52 5	Benefited/Non-Imp 1		
R785 1 B 1	62 0		62 0		62 0		62 0			
R786 1 B 1	61 0	_	61 0		61 0		61 0			
R787 1 B 1	56 0	-	56 0		56 0	-	56 0			
R780 I B I R780 I B I	<u> </u>	-	55 1	-	55 I	-	55 I			
R790 1 B 1	55 1	-	55 1	-	55 1	-	55 1			
R791 1 B 1	55 1	-	55 1	-	55 1	-	55 1			
R792 1 B 1	56 0	-	55 1	-	55 1	-	55 1			
R793 1 B 1	68 4	Impact! w/ Bar	67 5	Benefited/Impact 1	67 5	Benefited/Impact 1	67 5	Benefited/Impact 1		
R794 1 B 1	68 4	Impact! w/ Bar	67 5	Benefited/Impact 1	67 5	Benefited/Impact 1	67 5	Benefited/Impact 1		
R795 1 B 1	69 3	Impact! w/ Bar	69 3	Impact! w/ Bar	68 4	Impact! w/ Bar	68 4	Impact! w/ Bar		
R/90 1 B 1	69 <u>3</u>	Impact! w/ Bar	69 3 50 0	Impact! w/ Bar	68 4	Impact! w/ Bar	68 4	Impact! w/ Bar		
	51 C	Benefited/Non-Imp	50 Z	Benefited/Non Imp		Benefited/Non Imp		Benefited/Non-Imp		
R799 1 B 1	67 3	Impact! w/ Bar		Impact! w/ Bar	65 5	Benefited/Impact 1	65 5	Benefited/Impact 1		
R800 1 B 1	65 4	Impact! w/ Bar	65 4	Impact! w/ Bar	64 5	Benefited/Impact 1	63 6	Benefited/Impact 1		
R801 1 B 1	52 1	-	52 1		51 2		51 2			
R802 1 B 1	51 4		50 5	Benefited/Non-Imp 1	49 6	Benefited/Non-Imp 1	49 6	Benefited/Non-Imp 1		
R803 1 B 1	57 1		57 1		56 2		56 2			
R804 1 B 1	57 2		56 3		55 4		55 4			
R805 1 B 1	49 0	_	49 0	-	48 1		48 1			
R806 1 B 1	49 1	-	49 1		49 1	-	48 2			
R807 1 B 1	51 0	-	51 0	-	51 0	-	50 1			
		Impactl w/ Bar	61 0	Impact w/ Bar	<u> </u>	Benefited/Impact 1	50 I	Benefited/Impact 1		
R810 1 B 1	61 3	impaot: w/ bai	61 3	impaot: w/ bai	60 4		60 4	Denented/impaor		
R811 1 B 1	57 4	-	57 4	-	57 4	-	56 5	Benefited/Non-Imp 1		
R812 1 B 1	57 4	-	57 4	-	56 5	Benefited/Non-Imp 1	56 5	Benefited/Non-Imp 1		
R813 1 B 1	52 3	-	51 4		51 4		50 5	Benefited/Non-Imp 1		
R814 1 B 1	53 1		52 2		51 3		50 4			
R815 1 B 1	54 0		54 0		53 1		53 1			
R816 1 B 1	52 0		52 0		51 1		51 1			
R817 1 B 1	52 0		51 1		51 1	_	51 1			
R818 1 B 1	51 0		51 0		51 0		50 1			
R819 1 B 1	59 0	-	58 1		58 1	-	58 1			
κozu 1 B 1	58 0		58 0		58 0		58 0			

2_Optimization_NewIDs.xlsx Summary

		16' Wall	1	8' Wall	2	0' Wall	22' Wall		
Project Information	Wall 12 Rev 11/	13/2018	Wall 12 Rev 11/13/20	018	Wall 12 Rev 11/13/20)18	Wall 12 Rev 11/13/20	18	
	Average Wtd I.L.	5.5IdB I.L. Avg	Average Wtd I.L.	5.3 dB I.L. Avg	Average Wtd I.L.	5.7 dB I.L. Avg	Average Wtd I.L.	6.0 dB I.L. Avg	
	Maximum I.L.	8 dB I.L. Max	Maximum I.L.	9 dB I.L. Max	Maximum I.L.	9 dB I.L. Max	Maximum I.L.	10 dB I.L. Max	
K19786CW	Benefited/Impacted ≥ AFG	4 # Prot Units	Benefited/Impacted ≥ AFG	23 # Prot Units	Benefited/Impacted ≥ AFG	31 # Prot Units	Benefited/Impacted ≥ AFG	35 # Prot Units	
309180	Benefited/Non Impact ≥ AFG	9 # Units	Benefited/Non Impact ≥ AFG	23 # Units	Benefited/Non Impact ≥ AFG	35 # Units	Benefited/Non Impact ≥ AFG	41 # Units	
I205CW_Build_Wall12	Total Benefited	13 # Ben Units	Total Benefited	46 # Ben Units	Total Benefited	66 # Ben Units	Total Benefited	76 # Ben Units	
Wall 12	Impacted Units ≥ NRDG	0 # Units	Impacted Units ≥ NRDG	0 # Units	Impacted Units ≥ NRDG	6 # Units	Impacted Units ≥ NRDG	14 # Units	
НММН	Benefited Units ≥ NRDG	2 # Units	Benefited Units ≥ NRDG	3 # Units	Benefited Units ≥ NRDG	11 # Units	Benefited Units ≥ NRDG	23 # Units	
Scott Noel	Percent of impacts ≥ AFG	9% % Ben Units	Percent of impacts ≥ AFG	53% % Ben Units	Percent of impacts ≥ AFG	72% % Ben Units	Percent of impacts ≥ AFG	81% % Ben Units	
11/15/2018	Percent of benefits ≥ NRDG	5 15% % NRDG Units	Percent of benefits ≥ NRDG	7% % NRDG Units	Percent of benefits ≥ NRDG	17% % NRDG Units	Percent of benefits ≥ NRDG	30% % NRDG Units	
	"Cost-Reasonable" ?		"Cost-Reasonable" ?	Yes	"Cost-Reasonable" ?		"Cost-Reasonable" ?	Yes	
	Surface Area	22087 Sq Feel	Surface Area	24848 Sq Feel	Surface Area	27607 Sq Feel	Surface Area	400 Sg Epot	
U.S. Department or iransportation	Surface Area/Deff Rec	1 381 Feet	Barrier Length	1 381 Feet	Barrier Length	1 381 Eeet	Surface Alea/Dell Rec Barrier Length	1 381 Feet	
rederal Highway	Min Height	16.0 Feet	Min Height	18.0 Feet	Min Height	20.0 Feet	Min Height	22.0 Feet	
Administration	Max Height	16.0 Feet	Max Height	18.0 Feet	Max Height	20.0 Feet	Max Height	22.0 Feet	
	Avg Height	16.0 Feet	Avg Height	18.0 Feet	Avg Height	20.0 Feet	Avg Height	22.0 Feet	
	Total Barrier Cost	\$441,740	Total Barrier Cost	\$621,200	Total Barrier Cost	\$690,175	Total Barrier Cost	\$759,225	
	Cost/Ben Rec	\$33,980.00	Cost/Ben Rec	\$13,504	Cost/Ben Rec	\$10,457	Cost/Ben Rec	\$9,990	
EHWA No. of	With Barrier Sou	Ind Levels, Impact and Benefit	With Barrier Sound L	evels, Impact and Benefit	With Barrier Sound L	evels, Impact and Benefit	With Barrier Sound Le	vels, Impact and Benefit	
Receiver ID Row Act Cat Units	Leg(dBA) IL (db	b) Impacted? No. Benefited	Leg(dBA) IL (db)	Impacted? No. Benefited	Leg(dBA) IL (db)	Impacted? No. Benefited	Leg(dBA) IL (db)	Impacted? No. Benefited	
R821 1 B 1	57 1	,	57 1		57 1		57 1		
R822 1 B 1	57 1		57 1		57 1		57 1		
R823 1 B 1	50 0		50 0		50 0		49 1		
R824 1 B 1	50 0		50 0		49 1		49 1		
R825 1 B 1	59 2		59 2		58 3		58 3	<u>I</u>	
R826 1 B 1	60 1		60 1		59 2		59 2		
R827 1 B 1	57 2		56 3		56 3		55 4		
R828 1 B 1	55 3		55 3		54 4		54 4		
R829 1 B 1	63 0		63 0		63 0		63 0	<u> </u>	
R830 1 B 1	62 0		62 0	_	62 0	-	62 0		
	61 0		60 I	-	60 0	-	60 I		
R032 I D I R833 I B I	59 1		59 1	-	59 1	-	59 1	4	
R834 1 B 1	59 1		59 1	-	59 1	-	59 1	,	
R835 1 B 1	60 0		60 0	-	60 0	-	60 0		
R836 1 B 1	60 0		60 0	-	60 0	-	60 0		
R837 1 B 1	61 2		61 3		61 3		60 3		
R838 1 B 1	65 4	Impact! w/ Bar	64 5	Benefited/Impact 1	64 6	Benefited/Impact 1	63 6	Benefited/Impact 1	
R839 1 B 1	61 5	Benefited/Impact 1	60 6	Benefited/Impact 1	59 7	Benefited/Impact 1	59 7	Benefited/Impact 1	
R840 1 B 1	60 5	Benefited/Impact 1	59 6	Benefited/Impact 1	58 7	Benefited/Impact 1	58 7	Benefited/Impact 1	
R841 1 B 1	59 5	Benefited/Non-Imp 1	58 6	Benefited/Non-Imp 1	57 7	Benefited/Non-Imp 1	57 7	Benefited/Non-Imp 1	
R842 1 B 1	59 4		57 6	Benefited/Non-Imp 1	57 6	Benefited/Non-Imp 1	56 7	Benefited/Non-Imp 1	
R843 1 B 1	63 4	Impact! w/ Bar	63 5	Benefited/Impact 1	62 6	Benefited/Impact 1	61 7	Benefited/Impact 1	
R844 1 B 1	63 4	Impact! w/ Bar	62 5	Benefited/Impact 1	60 6	Benefited/Impact 1	60 7	Benefited/Impact 1	
R845 1 B 1	61 4	Impact! w/ Bar	60 5	Benefited/Impact 1	59 6	Benefited/Impact 1	58 6	Benefited/Impact 1	
R846 1 B 1	61 4		60 4		59 5	Benefited/Non-Imp	58 6	Benefited/Non-Imp	
R847 1 B 1	62 4	Impact! w/ Bar	61 5	Benefited/Impact	60 7	Benefited/Impact	59 7	Benefited/Impact	
	60 3	Denented/impact	50 6	Benefited/Nep.Imp	59 7	Benefited/Impact	59 7	Repetited/Map Imp	
R850 1 B 1	60 4		59 5	Benefited/Non-Imp	58 6	Benefited/Non-Imp	57 7	Benefited/Non-Imp 1	
R851 1 B 1	58 4		57 5	Benefited/Non-Imp 1	56 6	Benefited/Non-Imp	56 6	Benefited/Non-Imp	
R852 1 B 1	58 4		56 5	Benefited/Non-Imp 1	55 6	Benefited/Non-Imp	55 7	Benefited/Non-Imp	
R853 1 B 1	56 3		55 4		54 5	Benefited/Non-Imp 1	54 6	Benefited/Non-Imp 1	
R854 1 B 1	56 3		55 4		54 5	Benefited/Non-Imp 1	54 5	Benefited/Non-Imp 1	
R855 1 B 1	60 3		59 4		59 5	Benefited/Non-Imp 1	58 5	Benefited/Non-Imp 1	
R856 1 B 1	59 3		59 4		58 5	Benefited/Non-Imp 1	57 6	Benefited/Non-Imp 1	
R857 1 B 1	58 3		57 4		57 4	_	56 5	Benefited/Non-Imp 1	
R858 1 B 1	58 2		58 3		57 4		56 4		
R859 1 B 1	59 4		58 5	Benefited/Non-Imp	57 5	Benefited/Non-Imp 1	57 6	Benefited/Non-Imp 1	
	59 4		58 5	Benefited/Non-Imp 1	56 6	Benefited/Non-Imp 1	56 6	Benefited/Non-Imp 1	
	5/ 3			-	50 5	Benetited/Non-Imp	55 5	Benefited/Non-Imp 1	
R00∠ 1 B 1	5/ 3	Impact w/ Par	50 3 65 0	Impact w/ Par		Impact w/ Par	55 5	Benefited/Impost	
	65 3	Impact w/ Bar	65 3	Impact w/ Bar	64 4	Impact w/ Par	64 3		
	65 3	Impact w/ Bar	64 3	Impact w/ Bar	64 3	Impact w/ Bar	63 <i>4</i>	Impact w/ Bar	
R866 1 B 1	64 2	Impact w/ Bar	64 3	Impact w/ Bar	64 3	Impact w/ Bar	63 4	Impact! w/ Bar	
R867 1 B 1	64 3	Impact! w/ Bar	63 4	Impact! w/ Bar	62 5	Benefited/Impact 1	62 6	Benefited/Impact 1	
R868 1 B 1	64 3	Impact! w/ Bar	64 3	Impact! w/ Bar	63 4	Impact! w/ Bar	62 5	Benefited/Impact 1	
R869 1 B 1	64 3	Impact! w/ Bar	63 3	Impact! w/ Bar	62 4	Impact! w/ Bar	62 4	Impact! w/ Bar	
R870 1 B 1	64 2	Impact! w/ Bar	63 3	Impact! w/ Bar	63 4	Impact! w/ Bar	62 4	Impact! w/ Bar	
R871 1 B 1	67 4	Impact! w/ Bar	66 5	Benefited/Impact 1	65 6	Benefited/Impact 1	63 8	Benefited/Impact 1	
R872 1 B 1	67 4	Impact! w/ Bar	66 4	Impact! w/ Bar	65 5	Benefited/Impact 1	63 7	Benefited/Impact 1	
R873 1 B 1	66 3	Impact! w/ Bar	66 4	Impact! w/ Bar	65 5	Benefited/Impact 1	63 6	Benefited/Impact 1	
R874 1 B 1	66 4	Impact! w/ Bar	65 4	Impact! w/ Bar	64 5	Benefited/Impact 1	63 6	Benefited/Impact 1	
R875 1 B 1	66 4	Impact! w/ Bar	64 6	Benefited/Impact 1	63 7	Benefited/Impact 1	62 8	Benefited/Impact 1	
R876 1 B 1	66 4	Impact! w/ Bar	64 6	Benefited/Impact 1	63 7	Benefited/Impact 1	62 8	Benefited/Impact 1	
R8// 1 B 1	65 4	Impact! w/ Bar	64 5	Benefited/Impact 1	63 6	Benefited/Impact 1	62 7	Benefited/Impact 1	
Kö/ö 1 B 1	65 4	impact! w/ Bar	64 5	Benefited/impact 1	62 6	Benefited/impact 1	62 7	Benefited/impact 1	
					24' Wall				
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	Project Inform	natio	n		Wall 12 Rev 11/13/2018				
l					Average Wtd I.I		6.3	dB I.L. Avg	
					Maximum I.L.		10	dB I.L. Max	
	K19786C	N			Benefited/Impac	oted ≥ AFG	38	# Prot Units	
	309180 1205CW Build	Wall1	2		Benefited/Non I	mpact ≥ AFG	43	# Units # Ben Linits	
	Wall 12	wann	2		Impacted Units	≥ NRDG	19	# Units	
	НММН				Benefited Units	≥ NRDG	35	# Units	
	Scott Noe	١			Percent of impa	icts ≥ AFG	88%	% Ben Units	
	11/15/201	8			Percent of bene	fits ≥ NRDG	43%	% NRDG Units	
					"Cost-Reasonal	ole" ?	Yes	0	
	C US Decedence	at all for	ante orterii		Surface Area/B	an Rec	33133	Sq Feet	
	5 Godoral	Llic	hsponum	on	Barrier Length	en rec	1.381	Sy reel Feet	
	rederdi	THE S	inwu	У	Min Height Max Height		24.0	Feet	
	Adminis	fra	ION				24.0	Feet	
					Avg Height		24.0	Feet	
					Total Barrier Co	ist	\$828,325		
				No of	With B	Cost/Ben Rec \$10,226			
	Receiver ID	Row	FHWA	Dwelling	With D	arrier Sound Le	vers, impact and	Benefit	
			Act Cat	Units	Leq(dBA)	IL (db)	Impacted?	No. Benefited	
R704		1	В	1	63	6	Benefited/Impact	1	
R705		1	В	1	63	6	Benefited/Impact	1	
R706		. 1	В	1	65	5	Benefited/Impact	1	
R707		1	B	1	00 55	3	Benefited/Impact	1 1	
R709		1	B	1	47	9	Benefited/Non-Imp	1	
R710		1	В	1	61	7	Benefited/Impact	1	
R711		1	В	1	60	7	Benefited/Impact	1	
R712		1	В	1	47	2			
R713		1	В	1	47	6	Benefited/Non-Imp	1	
R714		1	В	1	54	2			
R/15		- 1	В	1	53	4			
R717		1	B	1	42	3			
R718		1	В	1	44	2			
R719		1	В	1	44	2	1		
R720		1	В	1	56	7	Benefited/Non-Imp	1	
R721		1	В	1	56	5	Benefited/Non-Imp	1	
R722		1	В	1	54	5	Benefited/Non-Imp	1	
R723		1	В	1	54	5	Benefited/Non-Imp	1	
R/24		1	B	1	40 45	7	Benefited/Non-Imp	1	
R726		1	B	1	40	2	Benefited/Non-imp	1	
R727		1	В	1	45	3			
R728		1	В	1	45	2			
R729		1	В	1	45	1			
R730		1	В	1	52	1			
R731		1	В	1	53	1			
R/32		1	В	1	53	0			
R734		1	B	1	32	2	1		
R735		1	В	1	44	2			
R736		1	В	1	53	4	1		
R737		1	В	1	53	4			
R738		1	В	1	51	5	Benefited/Non-Imp	1	
R739		1	В	1	51	5	Benefited/Non-Imp	1	
R740		1	В	1	60	0			
R/41		1	B	1	50	0			
R742		1	В	1	52	1			
R744		1	В	1	52	1			
R745		1	В	1	52	1			
R746		1	С	1	52	1			
R747		1	В	1	52	1			
R748		1	В	1	54	1			
R749		1	В	1	65	6	Benefited/Impact	1	
R750		1	В	1	65	6	Benefited/Impact	1	
R/51 P752		1	B	1	67	Э И	Impact w/ Bar		
R753		1	В	1	56	4	impact: w, bai		
R754		1	В	1	46	10	Benefited/Non-Imp	1	
R755		1	В	1	63	6	Benefited/Impact	1	
R756		1	В	1	61	7	Benefited/Impact	1	
R757		1	В	1	47	2			
R757		1	В	1	47	2			
R758		1	В	1	45	8	Benefited/Non-Imp	1	
R759			В	1	55	2			
R760		1	В	1	54	4			
101			D		44	2			

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					24' Wall				
	Project Infor	matio	n		Wall 12 Rev 11/13/2018				
					Average Wtd I.L	-	6.3	dB I.L. Avg	
					Maximum I.L.		10	dB I.L. Max	
	K19786C	W			Benefited/Impac	cted ≥ AFG	38	# Prot Units	
	309180 1205 CW Build	Wall	n		Benefited/Non In	mpact ≥ AFG	43	# Units # Bon Units	
	I205CW_BUIID_ Wall 12	wain	2		Impacted Units		81	# Ben Units	
	HMMH				Benefited Units	≥ NRDG	35	# Units	
	Scott No	el			Percent of impa	cts ≥ AFG	88%	% Ben Units	
	11/15/201	8			Percent of bene	fits ≥ NRDG	43%	% NRDG Units	
					"Cost-Reasonab	ole" ?	Yes		
					Surface Area	n Boo	33133	Sq Feet	
	Endoral	Lin	have	on	Barrier Length		1.381	Feet	
	rederdi	inwu	У	Min Height		24.0	Feet		
	Administration				Max Height Avg Height		24.0	Feet	
							24.0	Feet	
					Total Barrier Co	ost	\$828,325		
				No. of	With B	arrier Sound Le	vels Impact and	Benefit	
	Receiver ID	Row	FHWA	Dwelling	With B		weis, impact and	Denent	
			Act Cat	Units	Leq(dBA)	IL (db)	Impacted?	No. Benefited	
R762		1	В	1	44	2			
R763		- 1	В	1	45	2			
R764		- 1	В	1	45 59	2	Repetited/Non-Imp	4	
R766		1	B	1	58	5	Benefited/Non-Imp	1	
R767		1	B	1	55	5	Benefited/Non-Imp	1	
R768		1	В	1	55	5	Benefited/Non-Imp	1	
R769		1	В	1	46	7	Benefited/Non-Imp	1	
R770		1	В	1	47	5	Benefited/Non-Imp	1	
R771		1	В	1	50	2			
R773		- 1	B	1	47	2			
R774		• i	В	1	45	3			
R775		1	В	1	56	1			
R776		1	В	1	56	0			
R777		1	В	1	54	1			
R778		- 1	В	1	54	1			
R779 P780		• 1	B	1	45	2			
R781		• 1	В	1	55	4			
R782		1	В	1	54	5	Benefited/Non-Imp	1	
R783		1	В	1	53	5	Benefited/Non-Imp	1	
R784		1	В	1	52	5	Benefited/Non-Imp	1	
R785		- 1	В	1	62	0			
R787		• ¦	B	1	56	0			
R788		1	В	1	55	1			
R789		1	В	1	55	1			
R790		1	В	1	55	1			
R791		1	В	1	55	1			
R792		- 1	В	1	55	1	Panafitad/Impact	4	
R793		• 1	B	1	66	6	Benefited/Impact	1	
R795		1	В	1	67	5	Benefited/Impact	1	
R796		1	В	1	68	4	Impact! w/ Bar		
R797		1	В	1	58	3			
R798		1	В	1	47	10	Benefited/Non-Imp	1	
R/99		- 1	В	1	62	0 7	Benefited/Impact	1	
R801		1	B	1	50	3	Denenteu/impact		
R802		1	В	1	48	7	Benefited/Non-Imp	1	
R803		1	В	1	56	2			
R804		1	В	1	55	4			
R805		1	В	1	47	2	-		
R805		1	B	1	48 50	2			
R808		1	В	1	50	1			
R809		1	В	1	60	5	Benefited/Impact	1	
R810		1	В	1	60	4			
R811		1	В	1	56	5	Benefited/Non-Imp	1	
R812		1	В	1	56	5	Benefited/Non-Imp	1	
R814		1	B	1	50	5 4	Benefited/Ivon-Imp		
R815		1	В	1	53	1			
R816		1	В	1	50	2			
R817		1	В	1	50	2			
R818		1	В	1	50	1			
R819		- 1	В	1	58	1	-		
R820		1	в		56	0			

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					24' Wall				
	Project Inforr	natio	n		Wall 12 Rev 11/13/2018				
					Average Wtd I		63	dB11 Ava	
					Maximum I.L.		10	dB I.L. Max	
	K19786C\	N			Benefited/Impa	acted ≥ AFG	38	# Prot Units	
	309180				Benefited/Non	Impact ≥ AFG	43	# Units	
	I205CW_Build_	Wall1	2		Total Benefited	I	81	# Ben Units	
	Wall 12				Impacted Units ≥ NRDG		19	# Units	
	НММН				Benefited Units ≥ NRDG		35	# Units	
	Scott Noe				Percent of impa	acts ≥ AFG	88%	% Ben Units	
	11/15/201	8			Percent of ben	efits ≥ NRDG	43%	% NRDG Units	
					"Cost-Reasona	ible" ?	Yes	Cr. Faat	
		1 - 5 7 -			Surface Area	Ion Boo	33133	Sq Feel	
	U.S. Departmen		rispondi	on	Barrier Length	Den Rec	1 381	Sy reel Feet	
	rederdi	HIG	iuma	У	Min Height		24.0	Feet	
	Adminis	fra	ION		Max Height		24.0	Feet	
					Avg Height		24.0	Feet	
					Total Barrier C	ost	\$828,325		
					Cost/Ben Rec		\$10,226		
	FHWA				With Barrier Sound Levels, Impact and Benefit				
	Receiver ID	Row	Act Cat	Dwelling		II (db)	Impacted?	No Benefited	
D004		4		Units	Leq(dBA)		impacted?	No. Denemeu	
R821		1	В	1	5/	1			
R622		1	В	1	5/	1			
R023		1	B	1	49	1			
R825		1	B	1	49	3	-		
R826		1	B	1	59	2	•		
R827		1	B	1	55	4			
R828		1	B	1	54	4			
R829		1	B	1	63	0			
R830		1	В	1	62	0			
R831		1	В	1	60	1			
R832		1	В	1	60	0			
R833		1	В	1	59	1			
R834		1	В	1	59	1			
R835		1	В	1	60	0			
R836		1	В	1	60	0			
R837		1	В	1	60	3			
R838		1	В	1	63	6	Benefited/Impact	1	
R839		1	В	1	58	7	Benefited/Impact	1	
R840		1	В	1	58	7	Benefited/Impact	1	
R841		1	В	1	50	7	Benefited/Non-Imp	1	
R042		1	B	1	60	7	Benefited/Impact	1	
R844		1	B	1	59	7	Benefited/Impact	1	
R845		1	B	1	58	7	Benefited/Impact	1	
R846		1	В	1	58	7	Benefited/Non-Imp	1	
R847		1	В	1	59	7	Benefited/Impact	1	
R848		1	В	1	58	8	Benefited/Impact	1	
R849		1	В	1	57	7	Benefited/Non-Imp	1	
R850		1	В	1	57	7	Benefited/Non-Imp	1	
R851		1	В	1	55	6	Benefited/Non-Imp	1	
R852		1	В	1	55	7	Benefited/Non-Imp	1	
R853		1	В	1	53	6	Benefited/Non-Imp	1	
R854		1	В	1	53	5	Benefited/Non-Imp	1	
R855		1	В	1	57	6	Benefited/Non-Imp	1	
R856		1	В	1	57	6	Benefited/Non-Imp	1	
R00/		1	B	1	50	5	Benefited/Non-Imp	1	
R850		1	B	1	56	6	Benefited/Non-Imp	1	
R860		1	B	1	55	7	Benefited/Non-Imp	1	
R861		1	B	1	54	6	Benefited/Non-Imp	1	
R862		1	В	1	55	5	Benefited/Non-Imp	1	
R863		1	В	1	63	5	Benefited/Impact	1	
R864		1	В	1	63	5	Benefited/Impact	1	
R865		1	В	1	63	4	Impact! w/ Bar		
R866		1	В	1	63	4	Impact! w/ Bar		
R867		1	В	1	62	6	Benefited/Impact	1	
R868		1	В	1	62	5	Benefited/Impact	1	
R869		1	В	1	62	5	Benefited/Impact	1	
R870		1	В	1	62	4	Impact! w/ Bar		
R871		1	В	1	63	8	Benefited/Impact	1	
R872		1	В	1	63	8	Benefited/Impact	1	
R873		1	В	1	63	7	Benefited/Impact	1	
R874		1	В	1	63	7	Benefited/Impact	1	
R875		1	В	1	62	8	Benefited/Impact	1	
R8/6		1	В	1	62	8	Benefited/impact	1	
R0//		1	B	1	62	7	Benefited/Impact	1	
1.070			U		02		Denenteu/impact		

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