

SR 400 (I-4) Project Development and Environment (PD&E) Study FM No.: 201210-2-22-01



Noise Study Report

Segment 5: SR 400 (I-4) from West of SR 25/US 27 to West of CR 532 (Polk/Osceola County Line)

Polk County (16320)

April 2017

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1.0 Summary of Project

The Florida Department of Transportation (FDOT) is conducting an update/reevaluation for the Project Development and Environment (PD&E) studies for the extension of proposed express lanes for State Road 400 (SR 400)/Interstate 4 (I-4). The project limits in the original PD&E studies were:

- West of Memorial Boulevard (SR 546) to the Polk/Osceola County Line, (29.5 miles)
- CR 532 (Polk/Osceola County Line) to West of SR 528 Beachline Expressway (13.7 miles)
- West of SR 528 Beachline Expressway to SR 472 (43 miles).

The corresponding environmental documents associated with these PD&E studies include: Environmental Assessment/Finding of No Significant Impact (EA/FONSI) for SR 400 (I-4) from West of Memorial Boulevard (SR 546) to the Polk/Osceola County Line [Financial Project Number (FPN) 201210 (December 1998)] and from CR 532 (Polk/Osceola County Line) to West of SR 528 (Beachline Expressway) [FPN 242526 and 242483 (December 1999)] and Final Environmental Impact Statement (FEIS) for I-4 from SR 528 (Beachline Expressway) to SR 472 [FPN 242486, 242592 and 242703 (2002)].

The project limits of the current SR 400 (I-4) PD&E reevaluation, herein referred to as I-4 Beyond the Ultimate (BtU) PD&E Reevaluation Study, include a total of approximately 43 miles of roadway sections east and west of the 21-mile, I-4 Ultimate project. The I-4 Ultimate project consists of reconstruction, to include new express lanes, for the section of I-4 which extends from west of SR 435 (Kirkman Road) to east of SR 434, and began construction in early 2015. The current I-4 BtU project has been divided into the following five segments:

- Segment 1: SR 400 (I-4) from West of CR 532 (Polk/Osceola County Line) to West of SR 528 Beachline Expressway Osceola County (92130) and Orange County (75280)
- Segment 2: SR 400 (I-4) from West of SR 528 Beachline Expressway to West of SR 435 Kirkman Road -Orange County (75280)
- Segment 3: SR 400 (I-4) from 1 Mile East of SR 434 to East of SR 15-600/US 17-92 (Seminole/Volusia County Line) Seminole County (77160)
- Segment 4: SR 400 (I-4) from East of SR 15-600/US 17-92 (Seminole/Volusia County Line) to ½ Mile East of SR 472 Volusia County (79110)
- Segment 5: SR 400 (I-4) from West of SR 25/US 27 to West of CR 532 (Polk/Osceola County Line) Polk County (16320)

This Noise Study Report was prepared for Segment 5 of the SR 400 (I-4) BtU PD&E Reevaluation of the FONSI for SR 400 (I-4) from West of Memorial Boulevard (SR 546) to the Polk/Osceola County Line (FPN 201210, December 1998). The purpose of this report is to update the original PD&E study by documenting any changes that have occurred since the PD&E study. This reevaluation includes environmental and engineering analysis of the original design concept, that showed six general use lanes (GUL) and four special use lanes (SUL) for high occupancy vehicles (HOV)/single occupant through vehicles (SOV), to the current proposed design that includes six GULs and four express lanes (EL) operating under a variable price toll plan. Other changes being reanalyzed include stormwater management, access plan and interchange configurations. There were no commitments related to traffic noise impacts or abatement within this segment of the project in the original PD&E Study.

1.1 Description of Proposed Action

FDOT is proposing to reconstruct and widen I-4 as part of the I-4 BtU concept. This involves the build-out of I-4 to its ultimate condition through Central Florida, including segments in Polk, Osceola, Orange, Seminole and Volusia Counties. The concept design proposes the addition of two new express lanes in each direction, resulting in a total of ten dedicated lanes. The project limits for the segment analyzed in this report are within an approximate 4.5-mile segment of I-4 which extends from west of SR 25/US 27 to west of CR 532 (Polk/Osceola County Line), from Milepost (MP) 27.145 to MP 31.607 in Polk County (herein referred to as I-4 Segment 5) and as shown in **Figure 1.1**. Although, the interstate is a designated east-west corridor, the alignment follows a southwest to northeast orientation through the limits of Segment 5. The study area in this section from west of SR 25/US 27 to west of CR 532 includes only one interchange at US 27.

The proposed improvements to I-4 include widening the existing six lane divided urban interstate to a ten lane divided highway. Generally, the typical section will be consistent throughout Segment 5 and will have three 12-foot general use travel lanes with 12-foot inside and outside shoulders and two 12-foot express lanes with 10-foot inside and 12-foot outside shoulders in each direction. A 2-foot barrier wall between the adjacent shoulders will separate the express lanes from the general use lanes. The typical section includes a 44-foot rail envelope in the median within a minimum 300 foot right of way (ROW). **Figure 1.2** illustrates the proposed mainline typical section for I-4 Segment 5.

1.2 Purpose and Need

The proposed improvements to I-4 include widening the existing six lane divided urban interstate to a ten lane divided highway in order to improve traffic operations, enhance connectivity and improve mobility by providing travel choices to the motoring public. I-4 is an east-west limited access freeway which links the west and east coasts of Florida, from I-275 in Tampa to I-95 in Daytona Beach. I-4 spans across six counties in Central Florida, traversing many cities including Lakeland, Orlando, Altamonte Springs, Sanford and DeLand. I-4 is a critical component of Florida's Strategic Intermodal System (SIS) which links seaports, rail, airports and other intermodal facilities. This aspect of I-4's significance is evidenced through connectivity provided by major junctions with I-275 and I-75 in the Tampa Bay area, SR 429 (Daniel Webster Western Beltway), SR 417 (Southern Connector/Central Florida Greenway/Seminole Expressway), SR 528 (Martin Andersen Beachline Expressway), SR 91 (Florida's Turnpike), SR 408 (Spessard Lindsay Holland East-West Expressway) in Central Florida, and I-95 on the east coast.

I-4 serves as the primary corridor in the movement of people and freight between major population, employment and activity centers in the Central Florida region. When the entire Interstate was fully opened in the early 1960's, it was designed to serve intrastate and interstate travel by providing a critical link between the east and west coasts of Central Florida. Although this role continues to be a crucial transportation function of I-4, the highway also serves large volumes of local and commuter traffic with shorter trip distances.

Today, the highway serves as the primary link between hotel/resort complexes and tourist attractions such as Walt Disney World, Universal Studios, Sea World, the International Drive Resort Area and downtown Orlando. Since I-4 is the only north-south limited access facility that is centrally located between the predominant employment centers and the major suburbs to the north, it has become the primary commuting corridor in the Central Florida metropolitan area.

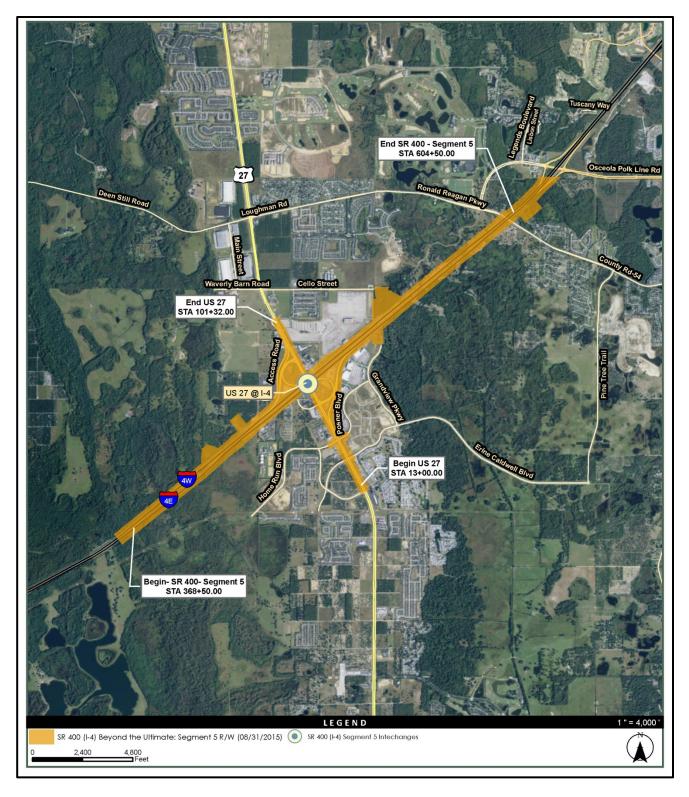


Figure 1.1 – Project Location Map

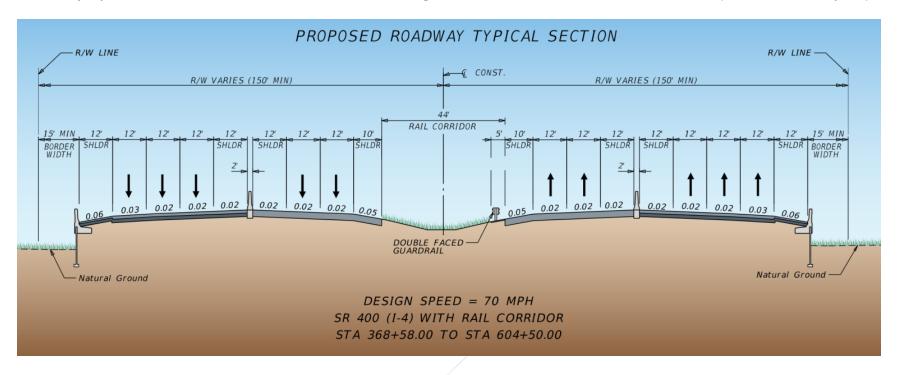


Figure 1.2 – SR 400 (I -4) Segment 5 Proposed Typical Section (6+4 with rail envelope)

Growth in Central Florida over the past decades has made it difficult for the transportation system to accommodate travel demand. Traffic congestion and crash incidents have resulted in major delays on the Interstate as well as other arterials surrounding the corridor. Increased congestion levels are experienced outside of the typical morning and afternoon rush-hour periods, affecting mobility levels for more hours of the day and impacting other non-commuter/non-weekday travel. The congestion on I-4 is further evidenced by the less than desirable levels of service on the Interstate as well as the crossroads.

Projections of future population and employment in the region indicate that travel demand will continue to increase well into the future. The ability to accommodate the new travel patterns resulting from growth must be provided to sustain the region's economy. Without the improvements, extremely congested conditions are expected to occur for extended periods of time in both the morning and evening peak periods. Due to these congested conditions, user travel times will continue to increase, the movement of goods through the urban area will be slower, and the deliveries of goods within the urban area will be forced to other times throughout the day. The need for improvements to I-4 is illustrated by the important transportation role I-4 serves to the Central Florida region and the State of Florida. If no improvements are made to the Interstate, a loss in mobility for the area's residents, visitors, and commuters can be expected, resulting in a severe threat to the continued viability of the economy and the quality of life.

This reevaluation involves revising the original design concept showing 6 GUL + 4 SUL from west of SR 25/US 27 to west of CR 532 (Polk/Osceola County Line, as recommended in the FONSI for SR 400 (I-4) from West of Memorial Boulevard (SR 546) to the Polk/Osceola County Line (FPN 201210, December 1998), to the current proposed design of six general use and four express lanes. The Express Lanes are tolled lanes and will extend the full length of the project. The access to/from the tolled lanes will be evaluated as part of this effort to determine if changes are needed from the previously approved concept for access to/from the SUL/HOV Lanes.

The original I-4 PD&E Studies involved physical separation between the general use lanes and the SUL/HOV lanes on I-4, with demand management in the HOV lanes. The original demand management strategy was to control the use of the HOV lanes by requiring a minimum number of occupants per vehicle to maintain an acceptable level of service (Level of Service D). This reevaluation also addresses revising the demand management tool to convert the HOV lanes to tolled express lanes. The express lanes will be separated from the general use travel lanes by two shoulders with a barrier wall between the shoulders. A variable pricing tolling plan is proposed for the express lanes. The tolls will vary by time of day and day of week to maintain acceptable levels of service in the express lanes. The tolls will be collected electronically through existing E-Pass, SunPass and other systems currently in place in the Orlando metropolitan area. The conversion to Express Lanes will maintain the same right of way limits as documented previously and will not change the impacts to the social, natural or physical environment. An update to the Systems Access Modification Report (SAMR) prepared in January, 2013 is being completed in conjunction with this effort.

If future design-year noise levels at noise-sensitive receptors approach, meet, or exceed the Noise Abatement Criteria established by FHWA in 23 CFR 772 or increase 15 dB(A) over existing noise levels as a direct result of the transportation improvement project, noise abatement must be considered. If noise levels reach or exceed 66 decibels (dB(A)), or increase 15 dB(A) over existing noise, noise abatement must be considered. The Federal Highway Administration's (FHWA) Traffic Noise Modeling (TNM) Version 2.5 computer program was used to determine if noise abatement was warranted, and, if so, considered reasonable and feasible for any noise-sensitive sites. The format and content of this report are based on the procedures and policy established in Part 2, Chapter 17 "Noise", of the FDOT PD&E Manual.

The noise analysis procedures used are based on the regulatory material found in 23 Code of Federal Regulations (CFR), Part 772, and entitled "Procedures for Abatement of Highway Traffic Noise and Construction Noise". This regulation is available from the FHWA and FDOT.

1.3 Existing Facility

The land use adjacent to I-4 within the proposed project limits consists primarily of commercial and services, retail, residential, and natural lands. The commercial, and retail development is concentrated around the interchange with US 27. Some undeveloped natural areas are located along both sides of I-4 south of the Ronald Reagan Parkway overpass and along the western limits of the project area. Some areas to the southeast of the US 27 interchange are classified as open land, and are not currently developed. The remaining land use within the corridor is primarily pine tree plantations and citrus groves with some areas of pasture (see Land Use and Habitat Coverage maps, **Figure A** in **Appendix II**).

Residential (1200-1300) – These land use codes consist of areas containing medium and high density residential housing. Low density housing was not observed in the project corridor. These areas are found along adjacent roads at the US 27 and I-4 interchange, as well as along Ronald Reagan Parkway.

<u>Commercial and Services (1400)</u> – This land use includes numerous types of businesses in malls, strip malls and as standalone establishments along the corridor. It was primarily observed at the US 27 and I-4 interchange and along the adjacent roadways.

Retail Sales and Services (1410) – This land use consists of office complexes, shopping centers, and other service/retail oriented businesses, which was observed at the US 27 and I-4 interchange and along the adjacent roadways.

<u>Professional Services (1430)</u> – Several medical offices, dental offices, veterinary offices, and other professional offices are located along US 27 in the project corridor.

Tourist Services (1450) – There are several hotels and resorts located in the vicinity of the US 27 and I-4 interchange.

<u>Institutional (1700)</u> – This land use consists of schools and institutions. The only example of this land use was the Oak Hill Baptist Church on Osceola Polk Line Road at the eastern end of the project corridor.

<u>Open Land (1900)</u> – This land use consists of undeveloped land within urban areas and inactive land with street patterns but without structures. Several examples of this land use were observed in the vicinity of the US 27 and I-4 interchange.

<u>Improved Pasture (2110)</u> – This category of land use consists of land which has been cleared, tilled, reseeded with specific grass types and periodically improved with brush control and fertilizer application. Several small areas of this land use were observed along the project corridor.

<u>Unimproved Pasture (2120)</u> – This category of land use consists of land which has been cleared, with major stands of trees and brush where native grasses have been allowed to develop. Several small areas of this land use were observed along the project corridor.

Citrus Groves (2210) – Some citrus groves are located along Home Run Boulevard and US 27.

<u>Other Open Lands <Rural> (2600)</u> – This category of land use consists of agricultural lands whose intended usage cannot be determined. Several areas of this land use were observed along the project corridor.

Shrub and Brushland (3200) – This land use consists of primarily shrubs and brush species. A few small areas of this land use were observed along the project corridor.

<u>Pine Flatwoods (4110)</u> – This land use consists of natural pine flatwoods, a small area is located at the southern end of the project corridor.

Coniferous Plantations (4410) – Some small areas of planted pine were observed along the right-of-way.

<u>Reservoirs (5300)</u> – This land use designates all retention ponds and other artificial impoundments used for irrigation and flood control along the project corridor and within residential developments.

<u>Mixed Wetland Hardwoods (6170)</u> – This land use is reserved for those wetland hardwood communities which are composed of a large variety of hardwood species tolerant of hydric conditions yet exhibit an ill-defined mixture of species. This habitat type was observed in a small area within the median at the western end of the project area.

Cypress (6210) – Dominant vegetation consisted of cypress is present at the southern end of the project corridor.

<u>Wetland Forested Mixed (6300)</u> – This land use is defined as mixed wetlands forest communities in which neither hardwoods or conifers achieve a 66 percent dominance of the crown canopy composition. This habitat type was observed adjacent to I-4 eastbound east of US 27.

<u>Freshwater Marsh (6410)</u> – This land use designates vegetated non-forested wetlands usually defined as low-lying areas or depressions in the landscape. Several of these marshes can be found adjacent to the roadway, as well as in isolated areas within the project corridor.

<u>Emergent Aquatic Vegetation (6440)</u> – This land use is defined as being wetland areas where floating vegetation and vegetation which is found either partially or completely above the surface. Small areas of this land use were observed in the western portion of the project corridor.

Roads and Highways (8140) – This land use designates all major and minor roads throughout the project corridor.

Sewage Treatment Facilities (8340) – There is a sewage treatment facility south of I-4 at Westview Road.

2.0 Methodology

2.1 Noise Metrics

The noise levels documented in this report are based upon the hourly equivalent sound level [Leq(h)]. The Leq(h) represents the steady-state sound level, which contains the same amount of acoustic energy as the actual time-varying sound level over a one hour period. Sound levels are measured and calculated in decibels (dB(A)), which is a unit of measure used to determine sound intensities. Leq(h) is measured on an A-weighted decibel scale (dB(A)), which is the scale that most closely approximates the response characteristics of the human ear to typical traffic noise levels.

2.2 Traffic Noise Modeling

The Federal Highway Administration's (FHWA) Traffic Noise Modeling (TNM) Version 2.5 computer program was used to determine if noise abatement was warranted, and, if so, considered reasonable and feasible for any noise-sensitive sites. This model is the latest version of TNM and was used as required by 23 CFR 772. The model estimates the acoustic intensity

at noise receptor sites based upon the roadway design and is influenced by vehicle speed and type. TNM 2.5 predicted noise levels are reported in dB(A) Leq(h). To validate TNM, potential noise receptor sites were identified throughout the project corridor. Information that was loaded into the noise model to predict existing and projected noise levels includes: roadway geometry; vehicle types, volumes, and speeds; existing barrier and buffer information, propagation path; and, climatic conditions. The results of the validation are shown in Section 4.1.

2.3 Noise Model Validation

The primary purpose of field measuring existing traffic noise levels is to ensure that traffic noise is the main source of noise, and to validate the TNM input values and verify that the model accurately predicts the existing traffic noise based upon the current conditions. In order to collect data required, field monitoring was conducted by four noise monitoring specialists in accordance with the FHWA's guidance document "Measurement of Highway-Related Noise" on June 3, 2014. QuestTM Model M-28 Noise Logging Dosimeters were used to collect sound levels at the location. Sound measurements were collected in decibels (dB), which is a unit of measure used to determine sound intensities. The decibel levels were measured on an A-weighted scale (dB(A)), which is the frequency of sound that is heard by a human ear. The average sound level over a one-hour period is considered the Level Equivalent Hourly (Leq(h)), and is used in the noise modeling process. The dosimeter was calibrated on site just prior to the onset of sampling to ensure accuracy and mounted on a tripod at a height of approximately 5 feet which is standard and equivalent to the average height of the human ear. Noise readings were taken 3 separate times at 15-minute intervals during both the morning (9:00 – 11:30 AM) and afternoon (1:00 – 4:00 PM), periods of non-peak traffic activity along the project corridor.

One location was used for the collection of noise levels for the purpose of model validation: adjacent to the westbound lanes of I-4 east of the US 27 interchange between the 1 ¼ mile exit signpost and the overhead cantilever sign, with the meter placed at the right-of-way fence line. The location provided clear sight lines to observe traffic in both directions of I-4. Vegetation was grass or low weedy vegetation, with no trees or any natural or man-made obstructions to affect the noise readings. Additional data collected included any unusual noises (aircraft, trains, barking dogs), and all input parameters necessary to run the computer model such as distance to the edge of the nearest travel lane, roadway width, paved shoulder widths, and local terrain.

Design files supplied by HNTB were used to establish the input parameters for modeling the roadway, including vertical and horizontal geometry and ground elevations.

2.4 Traffic Data

In order to gauge traffic volumes during the monitoring periods, traffic counts of the number and type of vehicles traveling in each direction at the monitoring station were recorded. Traffic counts were taken simultaneously during each of the 3 noise recording events. Vehicles were categorized as either 1) passenger cars or light trucks, 2) medium trucks (box or panel trucks with one double-axle) or 3) heavy trucks (two or more double-axles) and motorcycles. Field notes were collected to record general weather and environmental conditions, and all unusual or otherwise noteworthy sound events. Traffic speeds for passing vehicles were determined by the use of a radar gun and recording the resulting speeds during timed monitoring runs.

The speeds used in the TNM modeling program for the model validation were based on the average observed speeds of 65 mph for both cars and trucks during the data collection. Level of Service C volume at speeds of 65 mph was utilized to model the existing / no-build and build (worst case scenario) for future noise projections (See **Table 4**).

2.5 Noise Abatement Criteria

The FHWA has established seven land use categories that are used to assess the impact of noise on these activities, of which five of these have Noise Abatement Criteria (NAC) to consider. If predicted noise levels approach or exceed the NAC levels, or a substantial noise increase is predicted, noise abatement must be considered. A substantial noise increase occurs when the existing noise level is predicted to be exceeded by 15 dB(A) or more by the project. FDOT defines 'approach' as within 1.0 dB(A) of the FHWA criteria.

Noise sensitive receptor sites include areas where frequent exterior human use occurs. Included are lands which require quiet (Activity Category A), residential areas (Activity Category B), a variety of non-residential land uses such as parks, schools, places of worship, and medical facilities (Activity Category C), and commercial properties with areas of exterior use such as restaurants, hotels, and other places of business (Activity Category E) (see Table 1 - Noise Abatement Criteria [NAC]). Activity Category D includes noise sensitive sites that have interior uses but no exterior activities such as hospitals, libraries, recording studios, television studios, and public meeting rooms. Activity Categories F includes developed lands that are not sensitive to highway traffic noise such as agriculture, airports, and industrial and retail facilities. Retail facilities, warehouses, maintenance facilities, utilities and agriculture were noted within the project area as Activity Category F land uses, which do not require a noise analysis as stipulated in 23 CFR 772. Undeveloped vacant lands (Activity Category G) were noted in the project corridor. There is not an NAC level for this category, though FDOT must document highway traffic noise levels and provide it to local officials. A land use review will be performed during the Design phase of the project to ensure that all noise-sensitive land uses that have received a building permit prior to the project's Date of Public Knowledge are evaluated. The only site of construction noted during the noise study was at the Festival Resort Orlando along the westbound side of I-4 south of CR 54. The land uses occurring within the project study area were described previously in Section 1.3.

TABLE 1 – NOISE ABATÉMENT CRITERIA

	NOISE	ABATEME	NT CRITERIA	[Hourly A-Weighted Sound Level-decibels (dB(A))]
Activity Category	Activity Leq(h) ¹ FHWA FDOT		Evaluation location	Description of activity category
А	57	56	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	3 ² 67 66 Exterior		Exterior	Residential
C ²	67	66	Exterior	Active sports 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, recreational areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52	51	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	71	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D or F.

	NOISE	E ABATEMEI	NT CRITERIA	A [Hourly A-Weighted Sound Level-decibels (dB(A))]
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.

Part 2, Chapter 17 of PD&E Manual (5/24/2011) (Based on Table 1 of 23 CFR Part 772)

Note: FDOT defines that a substantial noise increase occurs when the existing noise level is predicted to be exceeded by 15 decibels or more as a result of the transportation improvement project. When this occurs, the requirement for abatement consideration will be followed.

For reference, the relationship between typical noise levels and common indoor/outdoor activities is provided in Table 2.

Table 2 – Typical Noise Levels

COMMON OUTDOOR ACTIVITIES	NOISE LEVEL dB(A)	COMMON INDOOR ACTIVITIES
	110	Rock Band
Jet Fly-over at 1000 ft		
Gas Lawn Mower at 3 ft	100	
Gas Lawii Mower at 3 It	90	
Diesel Truck at 50 ft, at 50 mph		Food Blender at 1 m (3 ft)
	80	Garbage Disposal at 1 m (3 ft)
Noise Urban Area (Daytime)		V 61 .40 fr
Gas Lawn Mower at 100 ft Commercial Area	70	Vacuum Cleaner at 10 ft Normal Speech at 3 ft
Heavy Traffic at 300 ft	60	Normal Speech at 3 it
,		Large Business Office
Quiet Urban Daytime	50	Dishwasher Next Room
Oviet Huben Nighttime	40	Theater Large Conference Boom (Background)
Quiet Urban Nighttime Quiet Suburban Nighttime	40	Theater, Large Conference Room (Background) Library
	30	Bedroom at Night, Concert Hall (Background)
Quiet Rural Nighttime		
	20	
	10	
Lowest Threshold of Human Hearing	0	Lowest Threshold of Human Hearing
Source: California Dept. of Transporta	tion Technical N	loise Supplement, Oct. 1998, Page 18.

3.0 Noise-Sensitive Sites

A noise-sensitive receptor is defined as "any property (owner occupied, rented, or leased) where frequent exterior human use occurs." The project was broken up into geographic noise sensitive areas to facilitate the analysis of traffic related noise impacts. Three (3) noise sensitive areas that have the potential to be impacted by the project were identified (see **Figure**

¹The Leq(h) Activity Criteria values are for impact determination only, and are not design standards for noise abatement measures.

² Includes undeveloped lands permitted for this activity category.

4.1, Noise Sensitive Area Map). The potentially impacted noise-sensitive sites identified for this segment consist of single family residences, multi-family vacation residences, hotels, and a campground. The Polk County Building Department was contacted for all approved building permits within the developments along the project corridor. The properties identified during this search were all modeled as existing receptors in the TNM runs. The noise sensitive areas within the study area present several different types of sites to model within TNM: multi-family buildings with external balconies were modeled using several points to represent similar receptors at different locations in the building, while single family residences were modeled using a point to represent each site. Hotels with no external balconies were represented only by areas of common outdoor usage (pools, outdoor recreation areas).

Following is a description of each Noise Sensitive Area:

Noise Sensitive Area A

This area is located south of I-4 and west of US 27 adjacent to the eastbound lanes of I-4 and includes the Themeworld RV Resort, Fort Summit KOA Campground, Ramada Inn Hotel, and Days Inn and Suites.

Noise Sensitive Area B

This area is located north of I-4 and east of US 27 adjacent to the westbound lanes of I-4 and includes the Comfort Inn & Suites Maingate South, Holiday Inn Express and Suites Orlando, Hampton Inn Orlando Maingate South, and Travelodge Hotel.

Noise Sensitive Area C

This area is located north of I-4 adjacent to the westbound lanes of I-4 south of Ronald Reagan Parkway and consists of the Festival Orlando Resort Vacation Residences.

4.0 Predicted Noise Levels

4.1 Model Validation and Background Noise Levels

The TNM model was validated at the field sampling location along I-4 in one location as described in Section 2.3. Field recorded noise levels varied slightly from TNM predictions. As seen in **Table 3**, TNM Version 2.5 predictions were within 3 decibels (dB(A)) of the field recorded noise levels. Therefore, the model was validated.

Table 3. TNM Validation Results (dB(A))

Field Recording Station	Field Recorded	TNM Predicted	Δ	Threshold	Validate
Location 1	69.2	72.0	2.8	3	YES

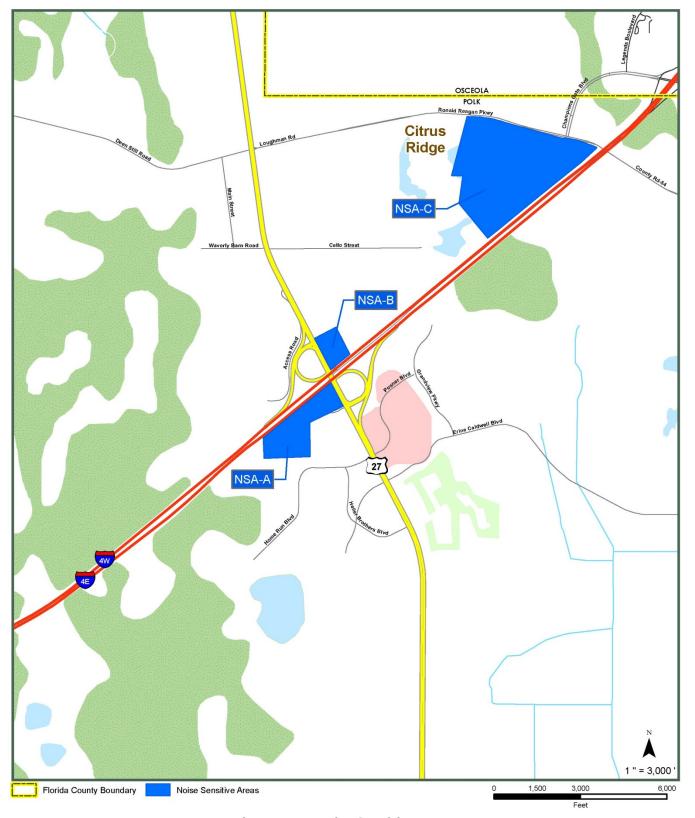


Figure 4.1 – Noise Sensitive Areas Map

4.2 Future Noise Impact Analysis

Future noise was modeled for the proposed project at potential noise receptor areas for the future build conditions in the design year 2040 (TNM results are included in **Appendix II**). Traffic data utilized was based upon Level of Service (LOS) C as obtained from the generalized tables of FDOT's Level of Service Handbook (December 2012) and shown in Table 4 below. Based upon the design traffic forecasted for the design year, I-4 is expected to operate at a low level of service (D or E), which precipitated the use of LOS C for the TNM model. LOS C was also used for the existing / No-Build model as shown in **Table 4**.

Scenario Roadway Segment Level of Service "C" Cars Medium Heavy Speed Volume Trucks **Trucks** Outside 4,580 1429 49 98 65 Existing / No-Middle 4,580 1429 49 97 65 **Build** Inside 4,580 1429 0 0 65 **General Use** 1429 49 98 65 Outside 4,580 **General Use Middle** 1429 49 97 65 Build **General Use Inside** 1429 0 0 65 **Express Inside** 1660 0 0 65 3,320 1660 0 **Express Outside** 65

Table 4. Traffic Data for TNM Modeling

Note: trucks will not be permitted in the Express Lanes, and for the purpose of the TNM model, trucks were only spread into the middle and outside General Use lanes.

Noise Sensitive Area A

This area represents Activity Categories B, C, and E and has 14 sites predicted to be impacted.

Noise Sensitive Area B

This area represents Activity Category E and has **1** site predicted to be impacted.

Noise Sensitive Area C

This area represents Activity Category B and has **90** sites predicted to be impacted.

Table 5 shows the results of the TNM analysis of noise sensitive sites in locations most likely to be impacted and those predicted to exceed the Noise Abatement Criteria threshold in the future build scenarios. Table 6 shows the TNM analysis of the existing / No-Build scenario versus the build scenario and demonstrates that there is no "Significant Increase" of 15 dB(A) over existing noise levels as a result of the project. The existing condition has impacts to 16 receptors representing 23 total sites, while the future scenario has impacts to 19 receptors representing 47 total sites. The complete set of results for all TNM runs for potential noise sensitive sites can be found in **Appendix III**.

Noise Sensitive Area Activity Category Number of Impacted Sites

A B, C, E 14

B E 1

C B 90

Table 5. Noise Sensitive Areas

Table 6. Predicted Noise Results

Table 6. Fredeted Noise Results								
Receptor	NSA Location	Existing/No-Build (Leq)	Build (Leq)	Change (Leq)				
Themeworld 1a	Α	65.0	65.0	0.0				
Themeworld 1b	Α	64.1	64.1	0.0				
Themeworld 1c	Α	64.1	64.1	0.0				
Themeworld 1d	Α	64.1	64.0	-0.1				
Themeworld 1e	Α	65.0	64.2	-0.8				
Themeworld 1f	Α	64.7	64.6	-0.1				
Themeworld 1g	Α	65.2	64.4	-0.8				
Themeworld 1h	Α	67.2	66.5	-0.7				
Themeworld 1i	Α	66.8	68.0	1.2				
Themeworld 1j	Α	66.4	67.9	1.5				
Themeworld 1k	Α	66.6	68.1	1.5				
Themeworld 1I	Α	66.8	68.1	1.3				
Themeworld 1m	Α	66.7	68.0	1.3				
Themeworld 1n	Α	66.4	67.7	1.3				
Themeworld 10	Α	66.3	67.7	1.4				
Themeworld 1p	Α	66.2	67.3	1.1				
Themeworld 1q	Α	68.0	67.9	-0.1				
Themeworld 2a	Α	64.4	64.9	0.5				
Themeworld 2b	Α	61.8	62.4	0.6				
Themeworld 2c	Α	62.0	62.5	0.5				
Themeworld 2d	Α	62.0	62.2	0.2				
Themeworld 2e	A	62.6	62.6	0.0				
Themeworld 2f	Α	62.7	62.7	0.0				
Themeworld 2g	/A	64.3	65.3	1.0				
Themeworld 2h	Α	62.8	64.0	1.2				
Themeworld 2i	A	62.4	63.5	1.1				
Themeworld 2j	Α	62.1	63.4	1.3				
Themeworld 2k	A	62.7	63.3	0.6				
Themeworld 2I	Α	63.1	63.2	0.1				
Themeworld 2m	Α	64.0	63.6	-0.4				
Themeworld 2n	Α	66.6	65.4	-1.2				
Themeworld 3a	Α	62.9	63.8	0.9				
Themeworld 3b	A	60.1	60.9	0.8				
Themeworld 3c	Α	59.8	60.4	0.6				
Themeworld 3d	Α .	59.8	60.1	0.3				
Themeworld 3e	A	59.7	60.0	0.3				

Receptor	NSA Location	Existing/No-Build (Leq)	Build (Leq)	Change (Leq)	
Themeworld 3f	Α	60.0	60.3	0.3	
Themeworld 3g	Α	64.3	64.8	0.5	
Themeworld 4a	Α	59.5	61.5	2.0	
Themeworld 4b	Α	57.8	59.4	1.6	
Themeworld 4c	Α	57.2	58.8	1.6	
Themeworld 4d	Α	57.1	58.6	1.5	
Themeworld 4e	Α	57.2	58.3	1.1	
Themeworld 4f	Α	57.6	58.3	0.7	
Themeworld 4g	Α	57.7	58.3	0.6	
Themeworld 4h	Α	58.1	58.4	0.3	
Themeworld 4i	Α	59.5	59.6	0.1	
Themeworld 5a	Α	67.5	67.9	0.4	
Themeworld 5b	Α	66.1	66.9	0.8	
Themeworld 5c	Α	65.1	66.3	1.2	
Themeworld 5d	Α	64.3	65.7	1.4	
Themeworld RV Pool	Α	64.2	65.0	0.8	
Themeworld Playground	Α	69.0	67.4		
Fort Summit KOA 1	Α	63.6	64.0	0.4	
Fort Summit KOA 2	Α	61.3	61.3	0.0	
Fort Summit KOA 3	Α	61.6	61.8	0.2	
Fort Summit KOA 4	Α	60.5	60.7	0.2	
Fort Summit KOA Pool	Α	63.1	63.7	0.6	
Festival 1	С	63.7	66.7	3.0	
Festival 2	C /	64.5	68.4	3.9	
Festival 3	С	67.1	66.5	-0.5	
Festival 4	C /	65.2	67.5	2.3	
Festival 5	С	63.3	63.9	0.6	
Festival 6	C	63.1	65.0	0.4	
Festival 2nd a	С	57.6	59.8	2.2	
Festival 2nd b	С	57.6	59.0	1.4	
Festival 2nd c	С	58.5	60.0	1.5	
Festival Phase II a	С	66.1	67.4	1.3	
Festival Phase II b	С	66.1	68.4	2.3	
Festival Phase II c	С	65.9	68.3	2.4	
Festival Phase II d	С	65.6	67.6	2.0	
Festival Phase II e	С	64.6	66.3	1.7	
Festival Phase II f	С	64.6	65.9	1.3	
Festival Phase II g	С	70.5	74.4	3.9	
Festival Phase II h	С	70.3	74.7	4.4	
Festival Phase II i	С	64.6	64.7	0.3	

Receptor	NSA Location	Existing/No-Build (Leq)	Build (Leq)	Change (Leq)
Festival Phase II j	С	64.6	65.3	0.7
Festival Phase II k	С	64.8	64.5	-0.3
Festival Phase II I	С	70.3	74.8	4.5
Festival Phase II m	С	70.0	74.9	4.9
Festival Phase II n	С	70.1	74.8	4.7
Festival Phase II o	С	69.9	75.1	5.2
Festival Phase II p	С	70.1	74.6	4.5
Festival Phase II q	С	70.2	75.0	4.8
Festival Phase II r	С	70.2	74.8	4.6
Festival Phase II s	С	70.0	74.9	4.9
Festival Phase II t	С	64.3	65.1	0.8
Festival Phase II u	С	61.9	62.4	0.5
Festival Phase II v	С	62.8	64.1	1.3
Festival Phase II w	С	61.5	61.7	0.2
Festival Phase II x	С	60.0	60.0	0.0
Ramada Pool	Α	61.0	62.9	1.8
Quality Pool	Α	57.0	58.4	1.4
Holiday Inn Express Pool	В	61.1	64.2	3.1
Home Suites	В	53.1	56.2	3.1
Comfort Inn Pool	В	67.5	71.5	4.0

5.0 Noise Abatement

The FHWA requires that noise abatement measures be considered for a proposed project when the predicted noise levels approach, equal, or exceed noise abatement criteria, or, will increase substantially over existing levels. If none of the potential receptors approach, equal, or exceed the abatement criteria or show a substantial increase over existing levels, noise abatement will not be required for the project. The most common and effective noise abatement measure is the construction of a noise barrier. As noted in 23 CFR 772.13(c)(1), the FHWA requires that, at a minimum, FDOT shall consider noise abatement in the form of a noise barrier. FHWA also considers the following activities as acceptable noise abatement measures.

5.1 Alignment Selection

Alignment selection involves the orientation of the project location in such a way as to minimize impacts and costs. For noise abatement, alignment selection is primarily a matter of (a) positioning the roadway at a sufficient distance from the noise-sensitive sites, and, (b) positioning the roadway at a location where other noise abatement techniques such as a noise abatement wall could be implemented. The project is constrained as a widening of an existing roadway and the existing alignment cannot be altered without substantial changes to the surrounding land uses.

5.2 Property Acquisition

Property acquisition for buffer zones alone is considered to be costly. Buffer zones can provide relief from noise impacts by creating added distance between the noise generator and the noise receptor. Methods of applying land use controls to maintain and establish buffered areas through zoning may be established by local jurisdiction. No acquisition for noise abatement is proposed for this project.

5.3 Land Use Controls

One of the most effective noise abatement measures is the proper implementation of land use controls to minimize future noise impacts. Local jurisdictions with zoning control can implement policies to limit the growth on noise-sensitive land uses adjacent to the roadway. Development planned for the study area includes additional residential and commercial areas in this heavily developed urban area. Noise contours for the Activity Categories within the study area were predicted using the TNM model, and both a 66dB(A) and 71 dB(A) line is shown on the Noise Analysis Maps (Figure B in Appendix II). No potential land use controls are available to assist in noise abatement in this corridor.

5.4 Traffic Management

Traffic management measures that limit vehicle type, speed, volume, and time of operations can be effective noise abatement measures. No traffic management measures will be utilized as I-4 is a heavily traveled interstate highway and the only direct north-south Interstate through the greater Orlando area.

5.5 Noise Barriers

Noise barriers reduce noise levels by blocking the sound path between a roadway and noise-sensitive sites. To be effective, barriers have to be continuous, sufficiently long and tall, shield a reasonably sized impacted area or a number of people, and provide appreciable noise level reduction. Noise barriers are to be modeled at locations where noise increases exceeded abatement criteria during the design year, and evaluated for feasibility and reasonableness. A wide range of factors are used to evaluate noise abatement measures as reasonable and feasible. Feasibility deals with engineering considerations such as the ability to construct a barrier using standard construction techniques and methods to provide a reduction of at least 5 dB(A) to an impacted receptor site. Additionally, in order for a noise barrier to be considered acoustically feasible, at least two impacted receptor sites must achieve a 5 dB(A) reduction or greater.

When a noise abatement measure such as a sound barrier is determined to be feasible, the reasonableness is then evaluated. Three reasonableness factors must be collectively achieved in order for the noise abatement measure to be deemed reasonable: the achievement of the noise reduction design goal (7 dB(A)) for at least one receptor per FDOT criteria), the cost effectiveness of the noise abatement measure, and the consideration of the viewpoints of the benefited property owners and residents. As specified by 23 CFR 772, when examining the cost reasonableness of a modeled noise barrier design for a residential area, the upper limit of \$42,000 per benefited receptor has been set by FDOT using the standard construction cost of \$30.00 per square foot. A benefited receptor is defined as a noise sensitive site that will obtain a minimum of 5 dB(A) of noise reduction as a result of a specific noise abatement measure whether or not they are predicted as having a noise impact. Only benefited receptor sites can be included in the calculation of a barrier being cost reasonable.

No Noise Barriers were deemed reasonable and feasible during the original PD&E study completed for this segment [Environmental Assessment/Finding of No Significant Impact (EA/FONSI) for SR 400 (I-4) from West of Memorial Boulevard (SR 546) to the Polk/Osceola County Line [Financial Project Number (FPN) 201210 (December 1998)]. Noise barriers were modeled for Noise Sensitive Areas with multiple impacted sites along the corridor during this analysis as described below. For each area, barriers were modeled as either ground-mounted at the edge of the right-of-way, and/or as a traffic railing

noise barrier that is ground-mounted along the edge of the shoulder. For the ground-mounted barriers, barrier heights were analyzed from 16 feet to 22 feet tall, while the heights of the barriers at the edge of shoulder were limited to 14 feet. The optimal barrier design for each analysis (See **Figure B**, Noise Analysis Maps in **Appendix II**) is described below and detailed in **Table 7**.

Noise Sensitive Area A

Noise barriers were modeled for the Themeworld RV Resort within Noise Sensitive Area A. Due to the topography in this area, there is an existing retaining wall adjacent to the I-4 eastbound shoulder from the approximately mid-point of the Themeworld RV Resort to US 27 (see photos in Appendix I). The wall gradually increases in height from ground level to approximately 25 feet at the US 27 overpass. This barrier wall and the overhead power lines that run adjacent to it along the ROW line provide potential problems with any barrier being constructed at this location. There were sites with predicted noise impacts at the Themeworld RV Resort, so barriers were modeled along the edge of shoulder and at the right-of-way adjacent to / on top of the retaining wall. A barrier design combining both a wall located at the edge of shoulder and one at the right-of-way was also modeled. The best case scenario for traffic railing barrier located at the edge of shoulder was for a 14-foot tall, 902-foot long barrier, which provided an insertion loss of at least 5dB(A) for three receptors at an average cost of \$126,270 per benefited receptor. This barrier design did not meet the design criteria of providing at least 7dB(A) for one receptor and exceeds the \$42,000 cost per benefited receptor threshold set forth in Chapter 17 of the PD&E Manual. The best case scenario for the ground-mounted barrier placed at the right-of-way was for a 22-foot-tall, 1,455-foot long ground mounted wall at a total cost of \$960,096 provided an insertion loss of at least 5dB(A) to 21 receptors at an average cost of \$45,719 per benefited receptor. The 22-foot tall barrier cost average also exceeds the \$42,000 per benefited receptor threshold and is therefore is not cost reasonable. Alternate barrier heights of 16, 18, and 20 feet tall were modeled as described in **Table 7**, though the 22-foot tall barrier provided the best abatement. Combination barrier designs were also modeled utilizing both 14-foot tall barriers located at the edge of shoulder and various heights of ground-mounted barriers located at the edge of right-of-way (see **Table 7** for all designs). The best case scenario was for a 992 foot-long, 14-foot tall barrier placed at the shoulder along with an 828-foot long, 22-foot tall barrier placed at the right-of-way. This design, at a total cost of \$963,078, provided an insertion loss of at least 5dB(A) for 25 receptors, at an average cost of \$38,523 per benefited receptor. This barrier design does meet the cost reasonable criteria of \$42,000 per benefited receptor.

However, it is not likely feasible to construct the right-of-way wall as it is modeled. The location at the edge of the right-of-way is within 2 feet of the existing retaining wall (or directly on top of it) and may either affect the structural integrity of the existing wall and any tiebacks that may be utilized. If the barrier were located on top of the existing retaining wall, it would exceed the height limits allowed. Additionally, there are existing overhead power lines that run along the edge of the right-of-way here that would conflict with the construction and placement of a wall at this location (see photos in **Appendix I**). Moving the barrier slightly away from the edge of the right-of-way would require the purchase of right-of-way for the wall, and require a right of entry or an easement for construction from the Themeworld RV resort for construction. Therefore, any barrier design located at the right-of-way is not reasonable and feasible for construction.

Noise Sensitive Area B

No noise barriers were modeled for this area as only a single receptor was predicted to be impacted by the project. Under FDOT policy, a noise barrier must benefit two or more impacted receptors at least a 5dB(A) or greater, therefore a noise barrier could not be feasible at this location.

Noise Sensitive Area C

Barriers were modeled at the Festival Orlando Resort within Noise Sensitive Area C. Two separate phases of the Festival Orlando were modeled: Phase I which is currently under construction and Phase II which is in the planning stages but does have an approved site plan. Various heights of ground-mounted barriers were modeled along the right-of-way adjacent to westbound I-4, and traffic railing noise barriers were modeled at the edge of the shoulder (see **Table 7** for barrier design details).

For Phase I, the best case scenario for the Ground Mounted Barrier was for an 898-foot long, 16-foot high wall at a total cost of \$430,862 that provided an insertion loss of 5 dB(A) or greater to 32 receptors for an average cost of \$13,464 per benefited receptor. A 954-foot long, 14-foot tall shoulder mounted barrier at a total cost of \$400,523 provided an insertion loss of 5 dB(A) or greater to 32 receptors for an average cost of \$12,516 per benefited receptor. Both barriers cost average is less than the \$42,000 per benefited receptor threshold set forth in Chapter 17 of the PD&E Manual and are therefore cost reasonable.

For Phase II, the best case scenario for the Ground Mounted Barrier was for a 1,157-foot long, 16-foot high wall at a total cost of \$555,597 that provided an insertion loss of 5 dB(A) or greater to 48 receptors for an average cost of \$11,575 per benefited receptor. A 1,552-foot long, 12-foot tall shoulder mounted barrier at a total cost of \$558,711 provided an insertion loss of 5 dB(A) or greater to 74 receptors for an average cost of \$7,550 per benefited receptor. Both barriers cost average is less than the \$42,000 per benefited receptor threshold and are therefore cost reasonable.

								Table 7 – Barrier	Analysis				
Noise Sensitive Locations	Barrier Type	Barrier Name	Barrier Location	Height (feet)	Length (feet)	# of Impacted Receptors	# of Impacted Benefited Receptors	# of Non-Impacted Benefited Receptors	Total # of Benefited Receptors	Avg. Noise Reduction (dB(A))	Cost (\$30.00 per square foot)	Average Cost per Benefited Receptor	Comment
	Traffic railing	BW A1	I-4 Eastbound Shoulder	14	902	14	3	0	3	5.2	\$378,812	\$126,270	Not cost reasonable, doesn't meet noise design goal
	ground	BW A2	I-4 Eastbound ROW	22	1455	14	13	8	21	6.4	\$960,096	\$45,719	not cost reasonable, not feasible for construction
,	ground	BW A2	I-4 Eastbound ROW	20	1455	14	13	5	18	6.1	\$872,814	\$48,490	Not cost reasonable, not feasible for construction
	ground	BW A2	I-4 Eastbound ROW	18	1455	14	12	4	16	5.6	\$785,533	\$49,096	Not cost reasonable, does not meet noise design goal, not feasible for construction
NSA A	ground	BW A2	I-4 Eastbound ROW	16	1455	14	4	2	6	5.6	\$698,252	\$116,375	Not cost reasonable, does not meet noise design goal, not feasible for construction
	Traffic railing / ground combination	BW A3	I-4 Eastbound Shoulder / ROW	14 / 22	992 / 828	14	14	11	25	6.3	\$963,078	\$38,523	Cost Reasonable / not feasible for Construction
	Traffic railing / ground combination	BW A3	I-4 Eastbound Shoulder / ROW	14 / 20	992 / 828	14	14	8	22	6.2	\$913,412	\$41,519	Cost Reasonable, not feasible for construction
	Traffic railing / ground combination	BW A3	I-4 Eastbound Shoulder / ROW	14 / 18	992 / 828	14	14	7	21	6.2	\$863,747	\$41,131	Cost reasonable, not feasible for construction
	Traffic railing / ground combination	BW A3	I-4 Eastbound Shoulder / ROW	14 / 16	992 / 828	14	13	6	19	5.6	\$814,082	\$42,846	Not cost reasonable, does not meet design goal, not feasible for construction
	Traffic railing	BW C1	I-4 Westbound Shoulder	14	954	32	32	0	32	6.6	\$400,523	\$12,516	Cost Reasonable
	Traffic railing	BW C1A	I-4 Westbound Shoulder	14	1287	32	32	0	32	6.9	\$540,330	\$16,885	Cost Reasonable
NSA C	ground	BW C2	I-4 Westbound ROW	22	898	32	32	0	32	9.9	\$592,435	\$18,514	Cost Reasonable
Phase I	ground	BW C2	I-4 Westbound ROW	20	898	32	32	0	32	9.2	\$538,577	\$16,830	Cost Reasonable
	ground	BW C2	I-4 Westbound ROW	18	898	32	32	0	32	8.2	\$484,719	\$15,147	Cost Reasonable
	ground	BW C2	I-4 Westbound ROW	16	898	32	32	0	32	7.1	\$430,862	\$13,464	Cost Reasonable
	Traffic railing	BW C3a	I-4 Westbound Shoulder	12	1,164	58	40	0	40	8.5	\$419,125	\$10,478	Cost Reasonable
	Traffic railing	BW C3a	I-4 Westbound Shoulder	14	1,164	58	40	0	40	9.4	\$488,980	\$12,225	Cost Reasonable
	Traffic railing	BW C3b	I-4 Westbound Shoulder	12	1,552	62	62	12	74	7.1	\$558,711	\$7,550	Cost Reasonable
	Traffic railing	BW C3b	I-4 Westbound Shoulder	14	1,552	62	62	12	74	8.0	\$651,829	\$8,809	Cost Reasonable
NSA C	Ground	BW C4	I-4 Westbound ROW	12	1,157	58	40	0	40	9.0	\$416,698	\$10,417	Cost Reasonable
Phase II	Ground	BW C4	I-4 Westbound ROW	14	1,157	58	40	0	40	9.9	\$486,147	\$12,154	Cost Reasonable
	Ground	BW C4	I-4 Westbound ROW	16	1,157	58	40	8	48	9.7	\$555,597	\$11,575	Cost Reasonable
	Ground	BW C4	I-4 Westbound ROW	18	1,157	58	40	8	48	10.4	\$625,046	\$13,022	Cost Reasonable
	Ground	BW C4	I-4 Westbound ROW	20	1,157	58	40	12	52	10.4	\$694,496	\$13,356	Cost Reasonable
	Ground	BW C4	I-4 Westbound ROW	22	1,157	58	40	12	52	10.8	\$763,946	\$14,691	Cost Reasonable

6.0 Conclusions

Based upon the analysis conducted, one noise barrier is recommended for further consideration during the design phase of this segment of the project: For Phase I of the Festival Orlando Resort within Noise Sensitive Area C, both a 16-foot tall, 898-foot long ground mounted barrier and a 14-foot tall, 954-foot long shoulder mounted barrier provide the required noise abatement and meet the requirements as reasonable and feasible. Both barriers provide an insertion loss of at least 5 dB(A) for 32 receptors. For Phase II of the Festival Orlando Resort, both a 16-foot tall, 1,157-foot long ground mounted barrier and a 12-foot tall, 1,552-foot long shoulder mounted barrier provide the required noise abatement and meet the requirements as reasonable and feasible. The ground mounted barrier provides an insertion loss of at least 5 dB(A) for 48 receptors, while the shoulder mounted barrier provides an insertion loss of at least 5 dB(A) for 74 receptors.

7.0 Commitments

FDOT is committed to the construction of feasible and reasonable noise abatement measures at the noise impacted location describe in the conclusion above and shown in Table 7 and on the Noise Study Maps Figure B contingent upon the following conditions:

- Cost analysis indicates that the cost of the noise barriers will not exceed the cost-reasonable criterion.
- Community input supporting types, heights, and locations of the noise barrier is provided to the District Office.
- Safety and engineering aspects as related to the roadway user and the adjacent property owner have been reviewed and any conflicts or issues resolved.

Based upon the noise analyses performed to date, there appears to be no apparent solutions available to mitigate the noise impacts at Noise Sensitive Areas A and B, as shown on the Noise Study Maps (Figure B in Appendix II).

8.0 Construction Noise and Vibration

Construction activities for any of the proposed improvements will have temporary noise impacts for those residents and visitors within the immediate vicinity of the project. Noise and vibration impacts will be caused by heavy equipment movement and construction activities such as pile driving and vibratory compaction. Noise control measures should be implemented according to the FDOT's <u>Standard Specifications for Road and Bridge Construction</u> to minimize or eliminate some potential construction noise and vibration impacts. Section 335, F.S., exempts FDOT from compliance with local ordinances. FDOT policy is to follow the requirement of local ordinances to the extent that is reasonable. However, should unanticipated noise or vibration issues arise during the construction process, the Project Engineer, in coordination with the District Noise Specialist will investigate additional methods of controlling these impacts.

9.0 Public Involvement

As this project will have significant public involvement, the Final NSR will be made available in multiple forms (Public Meetings, Website, circulated to the appropriate local planning/zoning officials) in order to eliminate or minimize noise impacts at future development sites that are incompatible with traffic noise. Noise contours for the relevant Activity Categories were developed for this study and are shown on the Noise Study Maps in Appendix I. The public will have opportunities for input during the public meetings and via the web site while the planning and design of the project are ongoing.

10.0 References

FDOT's PD&E Manual - Part 2, Chapter 17 "Noise" (dated 05/24/2011)) FHWA's guidance document "Measurement of Highway-Related Noise." FDOT's <u>Standard Specifications for Road and Bridge Construction</u>

APPENDIX I Photos



I-4 EB shoulder - NSA A





NSA A – Existing Wall

APPENDIX II PROJECT MAPS AND FIGURES

SR 400 (I-4) BEYOND THE ULTIMATE PROJECT DEVELOPMENT AND ENVIRONMENT (PD&E) STUDY

SEGMENT 5

FDOT FM NO. 201210-2-22-01

NOISE STUDY REPORT (NSR)

POLK COUNTY FLORIDA DEPARTMENT OF TRANSPORTATION DISTRICT 1

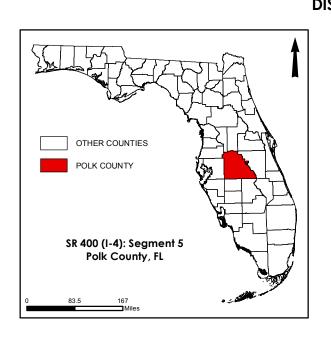
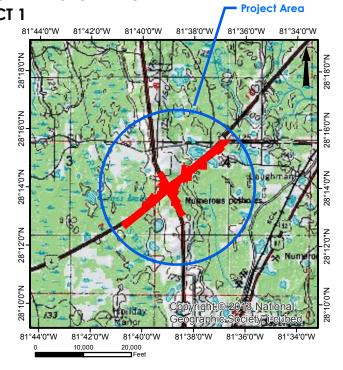


FIGURE NO.	SHEET NO.	TITLE
Figure A	Sheets 1-2	Land Use and Habitat Coverage Map
Figure B	Sheets 1-9	Noise Analysis Map

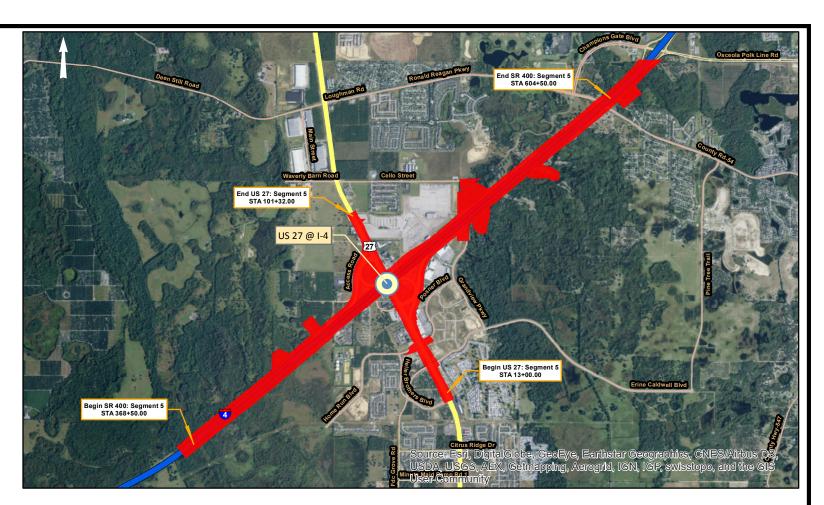


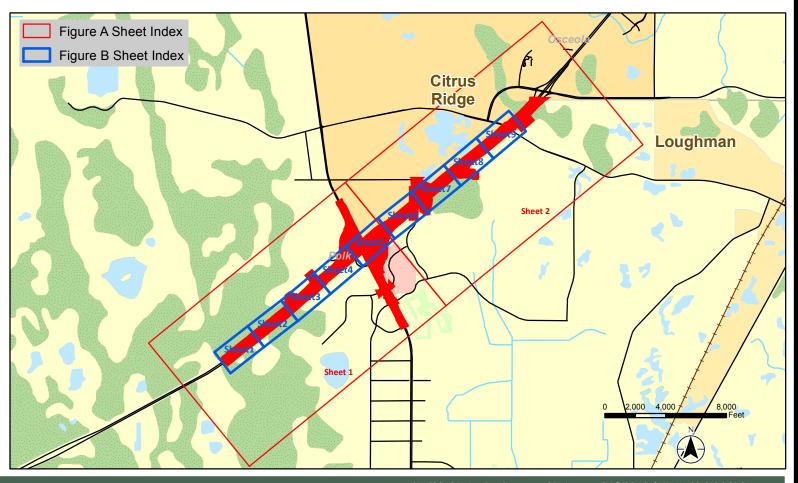
PROJECT DETAILS

NOISE STUDY REPORT: Segment 5 - Report Maps

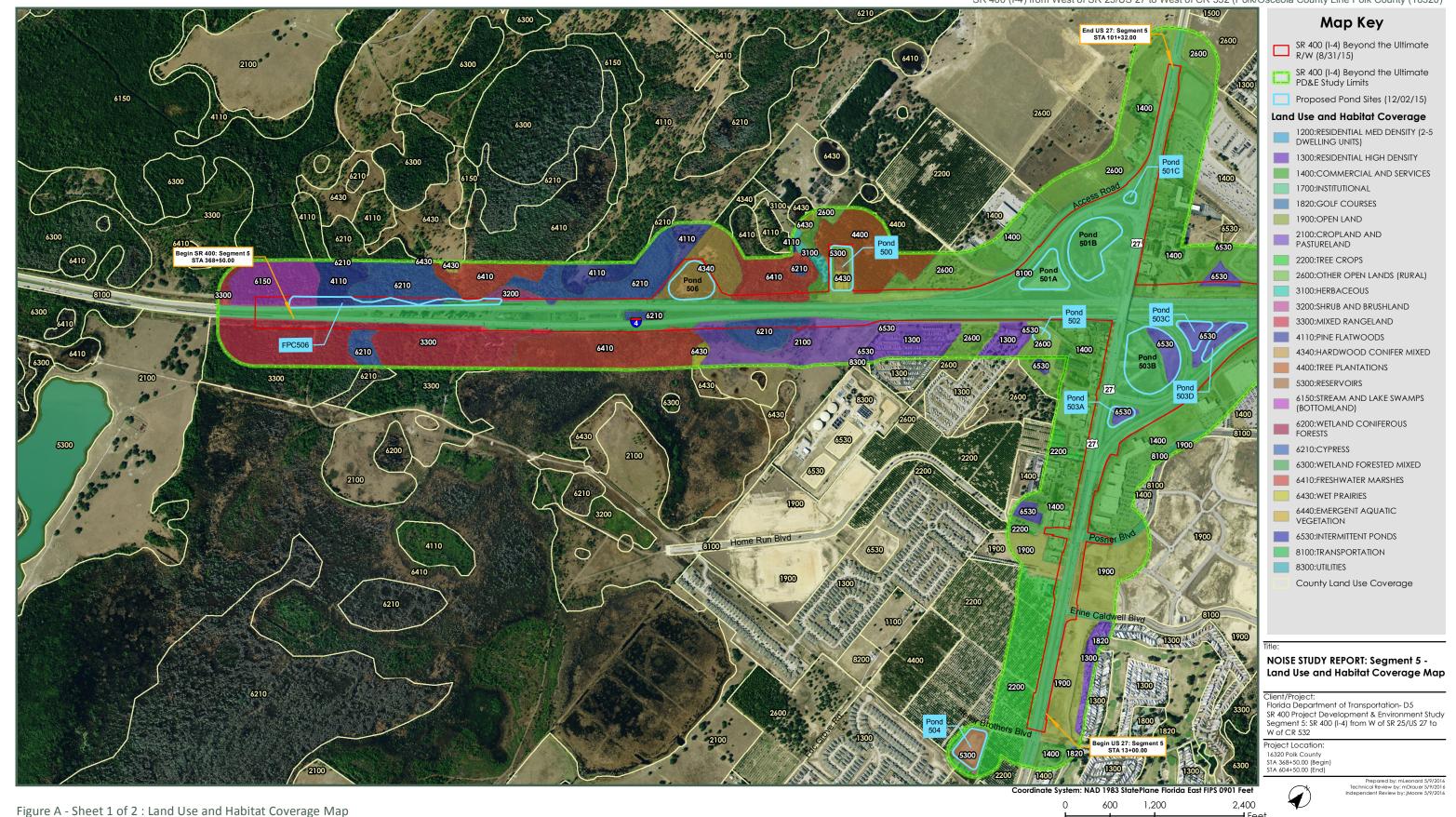
SR 400 (I-4) from West of SR 25/US 27 to West of CR 532 (Polk/Osceola County Line Polk County (16320)

16320 Polk County STA 368+50.00 (Begin) STA 604+50.00 (End)

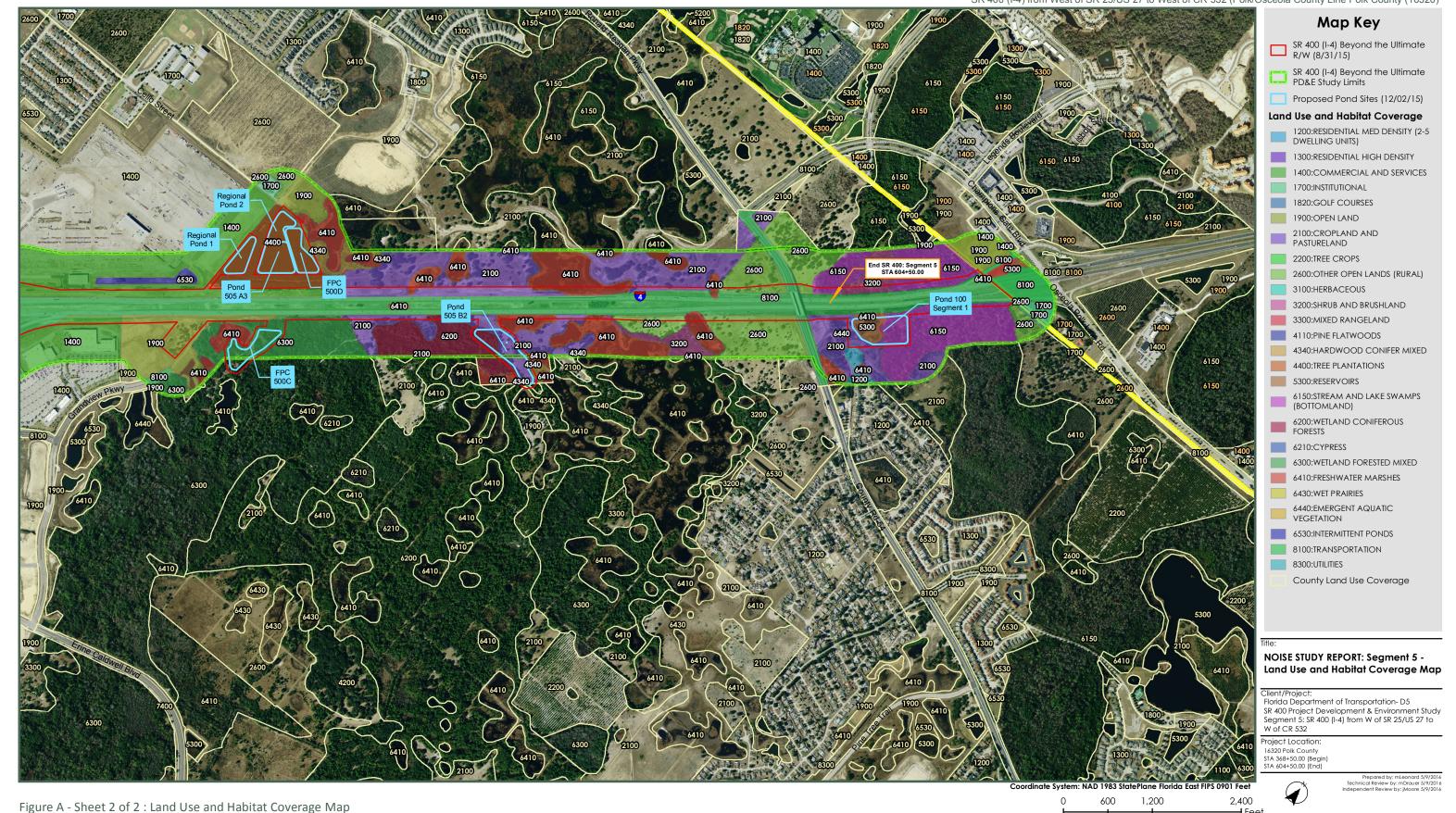








1 " = 1,200 ' SR 400 (I-4) Project Development and Environment (PD&E) Study | FM No. 201210-2-22-01

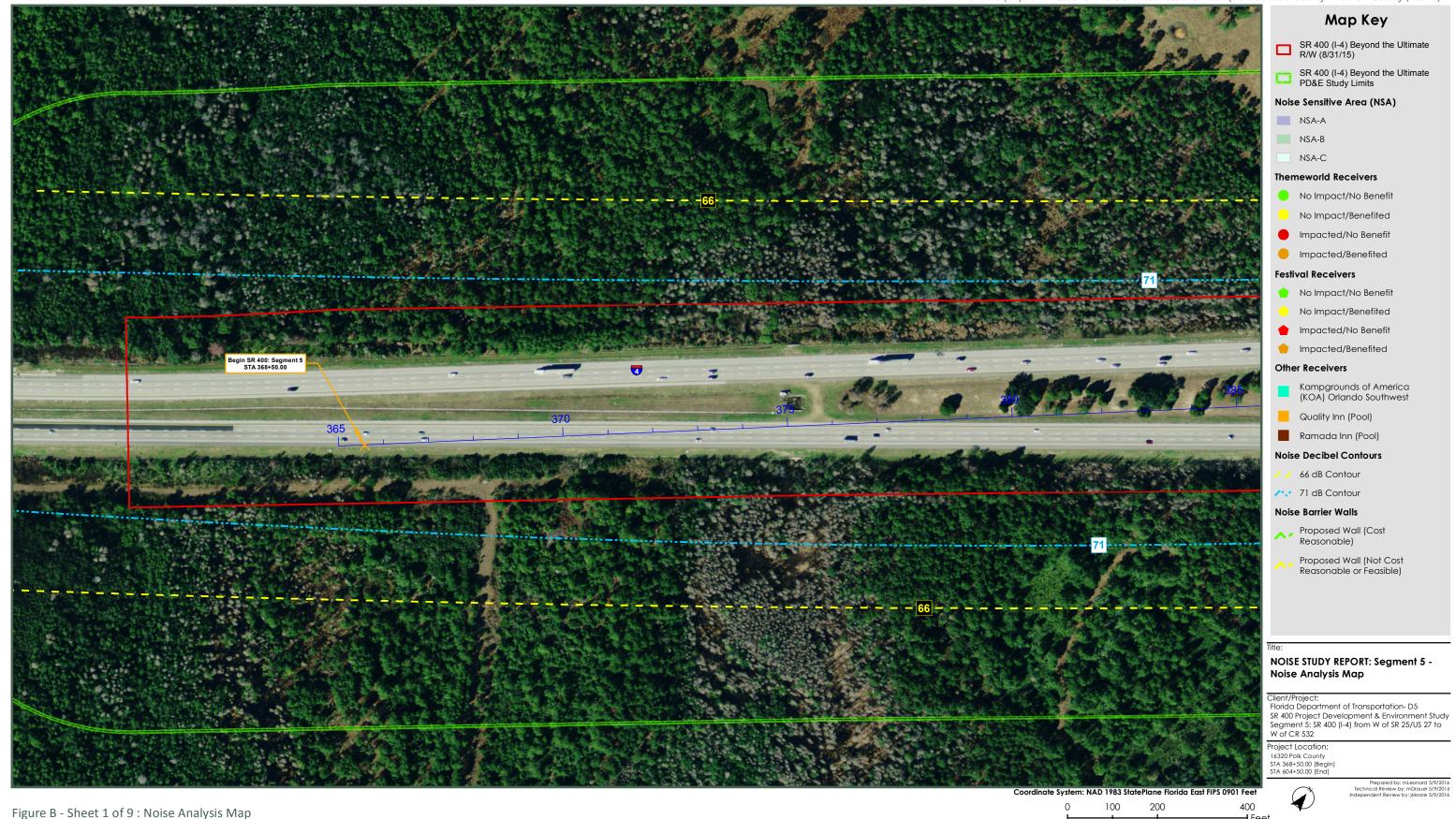


1 " = 1,200 '

SR 400 (I-4) Project Development and Environment (PD&E) Study | FM No. 201210-2-22-01

2024230168





SR 400 (I-4) Project Development and Environment (PD&E) Study | FM No. 201210-2-22-01



Figure B - Sheet 2 of 9 : Noise Analysis Map

1 " = 200 '

SR 400 (I-4) Project Development and Environment (PD&E) Study | FM No. 201210-2-22-01

100

200

202423016

400



Figure B - Sheet 3 of 9: Noise Analysis Map

1 " = 200 '

100 200 400

Prepared by: mLeonard 5/9/2016 Technical Review by: mDrauer 5/9/2016



Figure B - Sheet 4 of 9 : Noise Analysis Map

1 " = 200 '

100 200 400



Figure B - Sheet 5 of 9 : Noise Analysis Map

1 " = 200 '

Coordinate System: NAD 1983 StatePlane Florida East FIPS 0901 Feet 200 100 400 Prepared by: mLeonard 5/9/2016 Technical Review by: mDrauer 5/9/2016

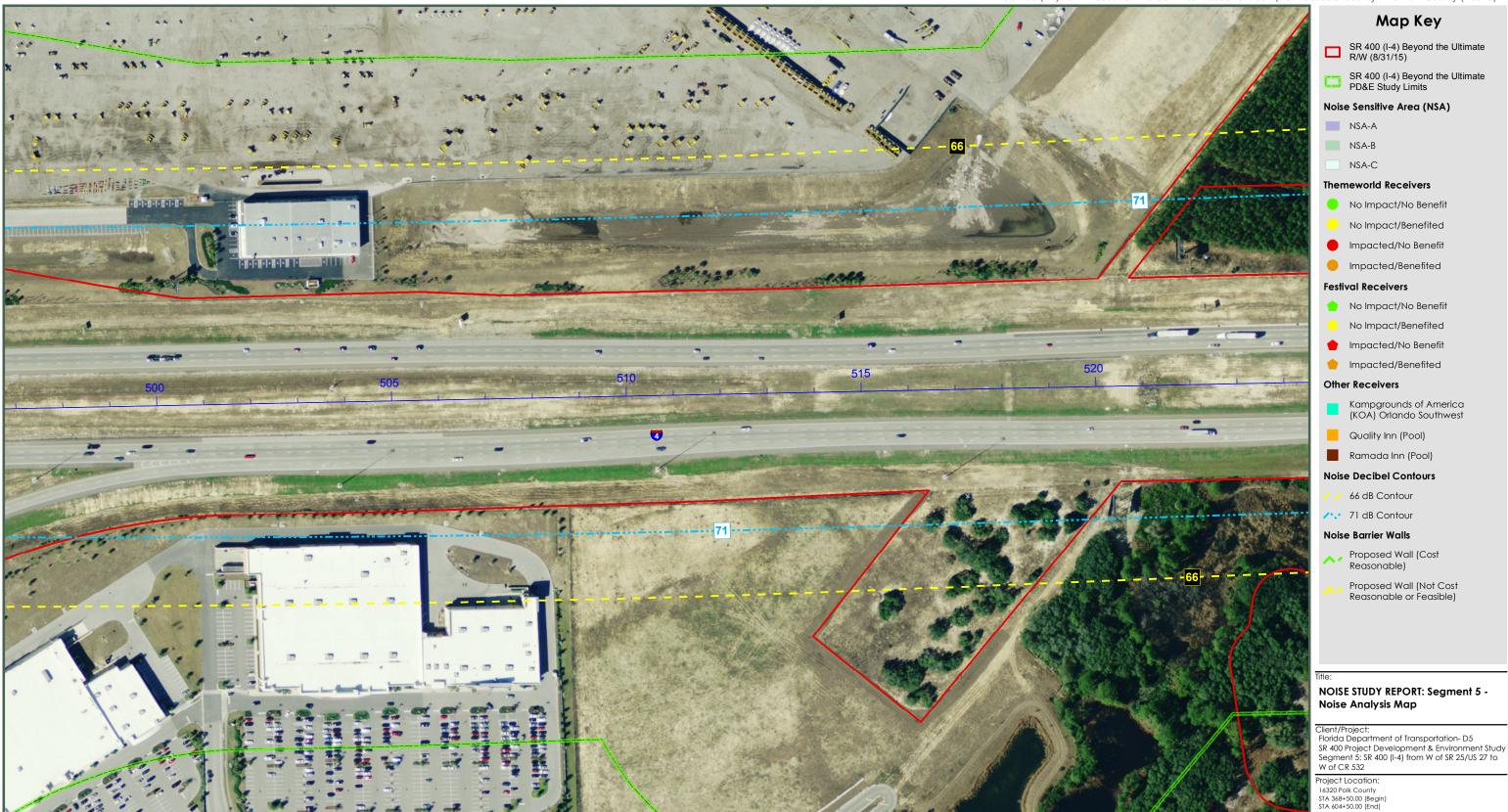


Figure B - Sheet 6 of 9 : Noise Analysis Map

1 " = 200 '

 Coordinate System: NAD 1983 StatePlane Florida East FIPS 0901 Feet

 0
 100
 200
 400

 Image: Line of the control of the con

Prepared by: mLeonard 5/9/2016 Technical Review by: mDrauer 5/9/2016 Independent Review by: jMoore 5/9/2016

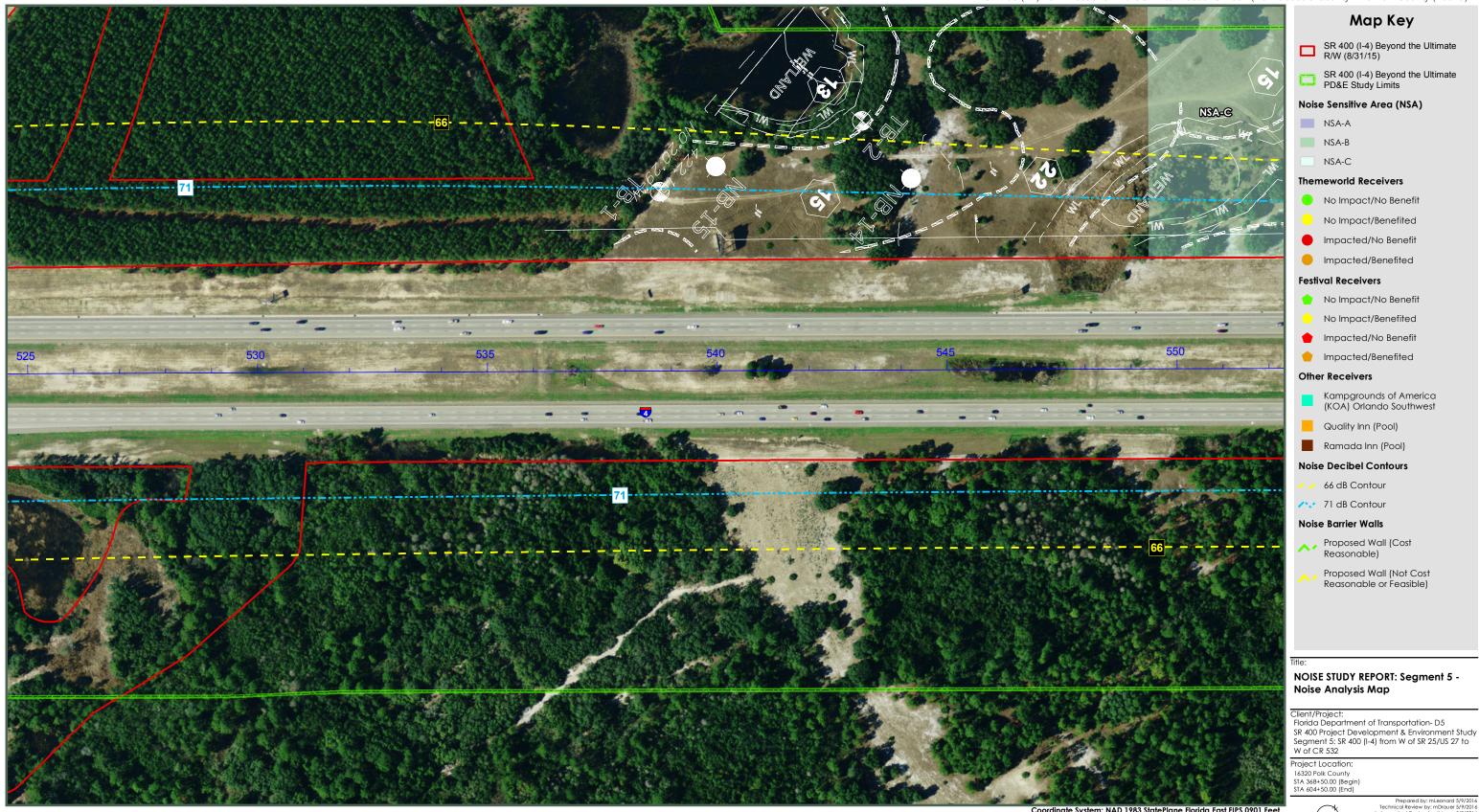


Figure B - Sheet 7 of 9: Noise Analysis Map

1 " = 200 '

SR 400 (I-4) Project Development and Environment (PD&E) Study | FM No. 201210-2-22-01

100

200

2024230168

400

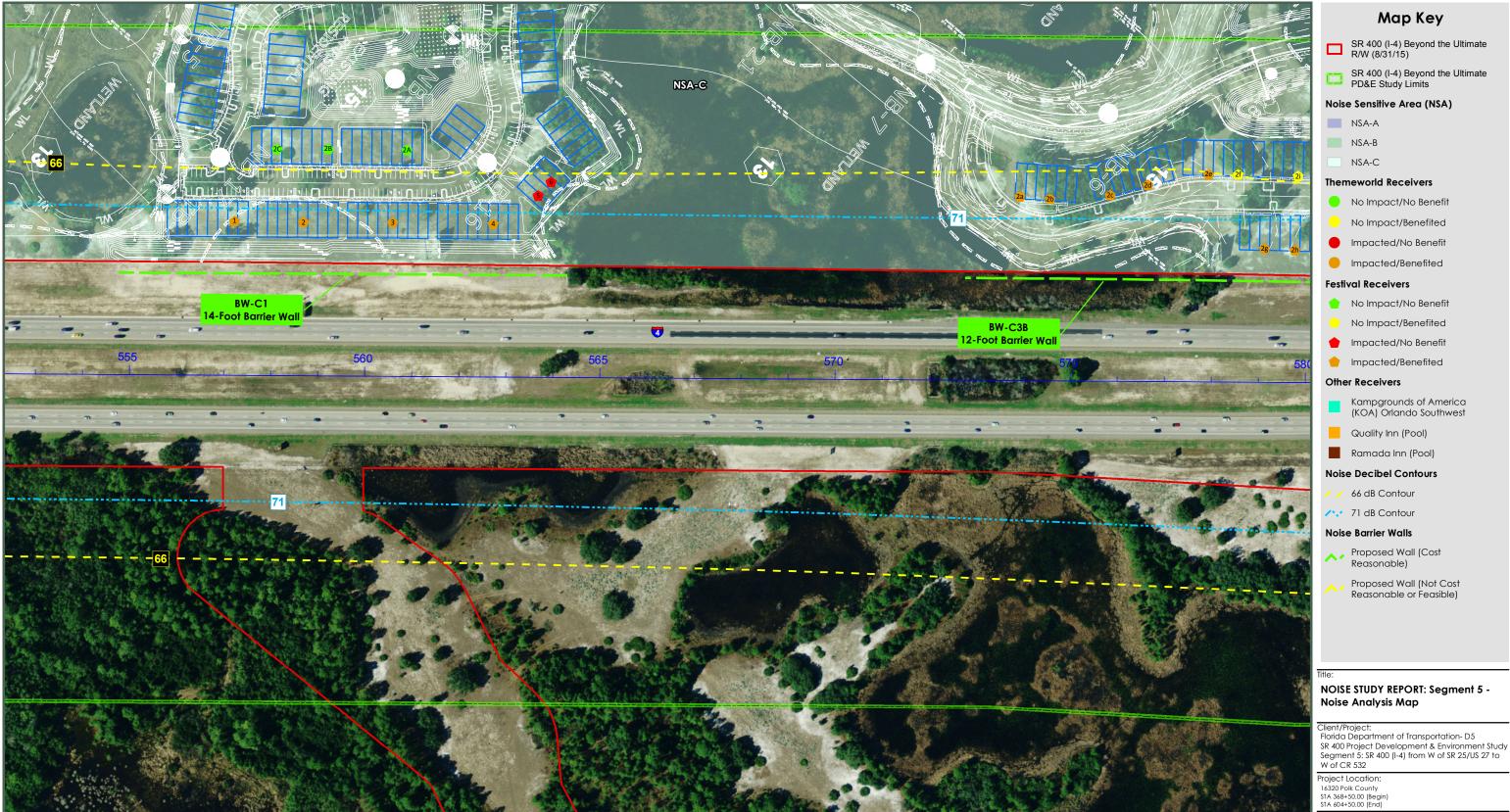


Figure B - Sheet 8 of 9 : Noise Analysis Map

1 " = 200 '

Prepared by: mLeonard 5/9/2016 Technical Review by: mDrauer 5/9/2016 Independent Review by: iMoore 5/9/2016

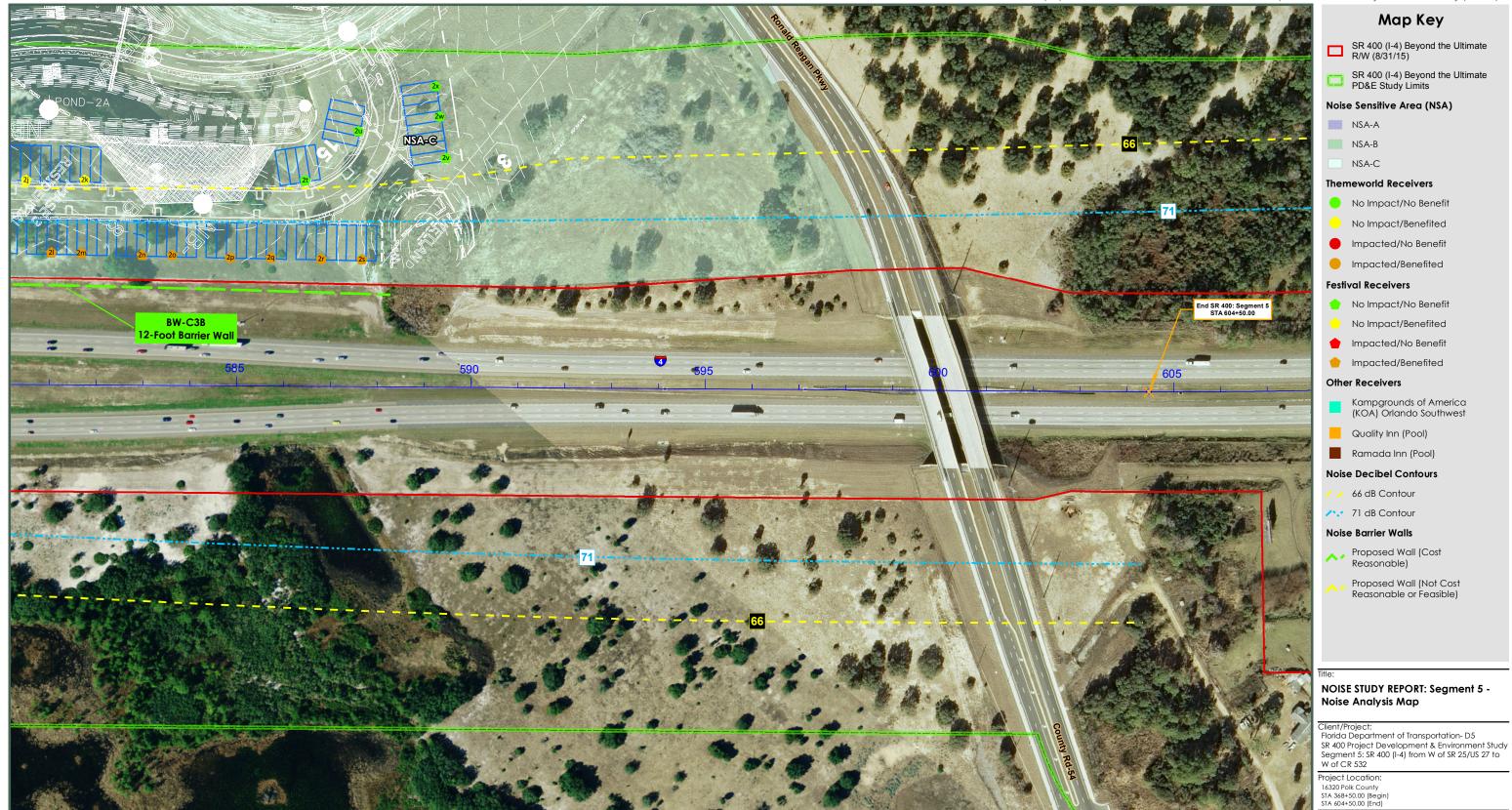


Figure B - Sheet 9 of 9 : Noise Analysis Map

Coordinate System: NAD 1983 StatePlane Florida East FIPS 0901 Feet 100 200 400 Prepared by: mLeonard 5/9/2016 Technical Review by: mDrauer 5/9/2016

SR 400 (I-4) Project Development and Environment (PD&E) Study | FM No. 201210-2-22-01

APPENDIX III

TNM RESULTS

RESULTS: SOUND LEVELS

						ć		1,000					
Stantec M Desired						3 1	ZS NOVEILIDEL ZU 13 TNM 2 E	610715					
						<u>8</u>	culated	Calculated with TNM 2.5	2.5		_	_	
RESULTS: SOUND LEVELS													
PROJECT/CONTRACT:	14 Btl	-4 Btu PD&E											
RUN:	I-4 Se	I-4 Segment 5 Existing	sting										
BARRIER DESIGN:	INPU	INPUT HEIGHTS					•	\verage pa	Average pavement type shall be used unless	shall be use	ed unless		
ATMOSPHERICS:	ep 89	68 deg F, 50% RH	_					ı ətate mg of a differe	a State Ingliway agency substantiates the of a different type with approval of FHWA	substantiat ipproval of I	ES LITE US FHWA.	b	
Receiver	V A												
Name	No. #DUs	Existing	No Barrier						With Barrier				
		LAeq1h	LAeq1h		Increase	Increase over existing		Type	Calculated	Noise Reduction	ction		
			Calculated	Crit'n	Calculated		2	Impact	LAeq1h	Calculated	Goal	Calculated minus Goal	ted
		dBA	dBA	dBA	æ	쁑			dBA	В	фВ	ф	
Val Pt 1	_	1 0.	0 72.	2.5	99	72.5	10	Snd LvI	72.5	0	0	œ	-8.0
themeworld 1f	က	1 0.0		64.7	99	64.7	10	I	64.7		0.0	œ	9.0
themeworld 1j	4	1 0.0		66.4	99	66.4	10	Snd Lvl	66.4		0.0	œ	8-0
themeworld 1k	တ	1 0.0		9.99	99	9.99	10	Snd Lvl	9.99		0.0	œ	-8.0
themeworld 11	9	1 0.0		8.99	99	8.99	10	Snd Lvl	8.99		0.0	œ	-8.0
themworld 1m	7	1 0.0		2.99	99	2.99	10	Snd Lvi	2.99		0.0	œ	-8.0
Theme RV Pool	œ	1 0.0		64.2	99	64.2	10	ŀ	64.2		0.0	æ	-8.0
themeworld 1n	6	1 0.0		66.4	99	66.4	9	Snd Lvl	66.4		0.0	0	-8.0
themeworld 10	10	1 0.		66.3	99	66.3	10	Snd Lvi	66.3		0.0	œ	-8.0
themeworld 1p	11	1 0.0		66.2	99	66.2	10	Snd Lvl	66.2		0.0	80	-8.0
themeworld 1q	12	1 0.0		68.0	99	68.0	10	Snd Lvl	68.0		0.0	8	-8.0
Themeworld Playground	13	1 0.		70.4	99	70.4	10	Snd Lvl	70.4		0.0	œ	-8.0
Fort Summit KOA Pool	14	1 0.0		63.1	99	63.1	10	i	63.1		0.0	æ	-8.0
Fort Summit KOA 1	15	1 0.0		63.6	99	63.6	10	i	63.6		0.0	æ	-8.0
Fort Summit KOA 2	16	1 0.0		61.3	99	61.3	10	1	61.3		0.0	æ	-8.0
Fort Summit KOA 3	17	1 0.		61.6	99	61.6	10	i	61.6		0.0	œ	-8.0
Fort Summit KOA 4	18	1 0.0		60.5	99	60.5	10	-	60.5		0.0	∞	-8.0
Ramada Pool	19	1 0.0		61.0	99	61.0	10	-	61.0		0.0	8	-8.0
Quality Pool	20	1 0.0		57.0	99	22.0	10	1	57.0		0.0	8	-8.0
Holiday Inn Express Pool	21	1 0.0		61.1	99	61.1	10	1	61.1		0.0	œ	-8.0
Home Suites	22	1 0.0		53.1	99	53.1	10	1	53,1		0.0	8	-8.0
Comfort Pool	23	1 0.0		67.5	99	67.5	10	Snd Lvl	67.5		0.0	80	-8.0
Festiva 1	24	6 0.0		63.7	99	63.7	10	•	63.7		0.0	8	-8.0
Festiva 3	25	8 0.0		67.1	99	67.1	10	Snd Lvl	67.1		0.0	œ	φ 0.0
Festiva 2	26	0.0		64.5	99	64.5	10	i	64.5		0.0	œ	-8.0
C:\TNM25\230168\Seq 5 exist				-					23 No	23 November 2015	S.		

Themeworld 3g

Themeworld 3f

Themeworld 4d Themeworld 4e

Themeworld 4c

Themeworld 4g Themeworld 4h

Themeworld 4f

Themeworld 5b Themeworld 5c Themeworld 5d Themeworld 2g Themeworld 2h

Themeworld 2i Themeworld 2j Themeworld 2k Themeworld 21 Festiva 2nd a Festiva 2nd b Festiva 2nd c

Themeworld 5a

Themeworld 4i

8.0 8.0

65.0 8.99 67.2

64.1 64.1 64.1

65.2

1-4 BtU PD&E

RESULTS: SOUND LEVELS

Themeworld 1g

Festiva 5 Festiva 4

Festiva 6

Themeworld 1e

Themeworld 1i Themeworld 1h Themeworld 1d Themeworld 1c Themeworld 1b Themeworld 1a Themeworld 2b Themeworld 2d Themeworld 2e

Themeworld 2c

Themeworld 3c

Themeworld 3d

Themeworld 3b

Themeworld 2f

Themeworld 3e

8.0 8.0 8.0 8.0

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8.0

0.0 0.0

65.0 61.8 62.0 62.0 62.6

0.0 0.0

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8 8 8 -8.0

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8 8.0

0.09

64.3 57.2 57.1 57.2

59.8 59.8 59.7

62.7 60.1

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8.0 8.0 8.0 8.0 9.0 9.0 8.0 8.0 8.0 8.0 ه

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57.6

57.7 58.1 59.5 67.5 -8.0

8

62.8

62.4 62.1 62.7 63.1

64.3 64.3

66.1 65.1 φ φ αį 8,0

57.6

8.0

23 November 2015

58.5

RESULTS: SOUND LEVELS							14 Btt	14 BtU PD&E				
themeworld 2m	70	-	0.0	9	64.0	99	64.0	10	ı	64.0	0.0	00
themeworld 2n	77	-	0.0	99	9.6	99	9.99	10	Snd Lvl	9.99	0.0	00
themeworld 2a	72	-	0.0	ý	64.4	99	64.4	10		64.4	0.0	œ
themeworld 3a	73	-	0.0	39	2.9	99	62.9	10		62.9	0.0	00
themeworld 4b	74	-	0.0	5.	57.8	99	57.8	10	ı	57.8	0.0	00
themeworld 4a	75	-	0.0	56	59.5	99	59.5	10		59.5	0.0	œ
Dwelling Units	#	# DUs	Noise Reduction	uction								
				Avg	Max							
			фВ	g B	용							
All Selected		116	0.0		0.0	0.0						
All Impacted		24	0.0		0.0	0.0						
All that meet NR Goal		0	0.0		0.0	0.0						

0. 8 8 8 8 8

RESULTS: SOUND LEVELS

M Drauer							3 May 2016 TNM 2.5	ر 5 5		1				
RESULTS: SOUND LEVELS PROJECT/CONTRACT: RUN: BARRIER DESIGN:	14 B 14 S 17 S 18 S	14 BtU PD&E 14 Segment 5 Existing INPUT HEIGHTS 68 den E.50% RH	Existing S RH				Calcul	nted wi	Calculated with TNM 2.5 Average pave a State highw of a different t	with TNM 2.5 Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.	shall be us substantia	sed unless rites the us		
Receiver			ii [
Name	No. #DUs	Existing LAeq1h	No Barrier LAeq1h	rrier h	=	ncrease ov	Increase over existing	Type		With Barrier Calculated	Noise Reduction	uction		
			Calculated	ated Crit'n		Calculated	Crit'n Sub'l Inc	ပ	t	LAeq1h	Calculated	Goal	Calculated minus Goal	ted
		dBA	dBA	dBA		ф	용			dBA	dB	g	В	
Val Pt 1	_	1 0.	0.	0.0	99		0.0	10 ir	inactive	0.0		0.0	80	0.0
themeworld 1f	က	0	0.0	0.0	99		0.0	0 =	inactive	0.0		0.0	80	0.0
themeworld 1j	4	1	0.0	0.0	99		0.0	. ≡	inactive	0.0		0.0	æ	0.0
themeworld 1k	ĸ	1 0	0.0	0.0	99		0.0	_	nactive	0.0		0.0	æ	0.0
themeworld 11	ဖ	1	0.0	0.0	99		0.0		inactive	0.0		0.0	8	0.0
themworld 1m	7	1 0	0.0	0.0	99		0.0		inactive	0.0		0.0	8	0.0
Theme RV Pool	8	1	0.0	0.0	99		0.0		inactive	0.0		0.0	œ	0.0
themeworld 1n	S	1	0.0	0.0	99		0.0		inactive	0.0		0.0	80	0.0
themeworld 10	10	1 0.	0.0	0.0	99		0.0	_	nactive	0.0		0.0	œ	0.0
themeworld 1p	1	1 0	0.0	0.0	99		0.0		inactive	0.0		0.0	80	0.0
themeworld 1q	12	1 0.	0.0	0.0	99		0.0		inactive	0.0		0.0	œ	0.0
Themeworld Playground	13	1	0.0	0.0	99		0.0		inactive	0.0		0.0	œ	0.0
Fort Summit KOA Pool	14	1	0.0	0.0	99		0.0		inactive	0.0		0.0	œ	0.0
Fort Summit KOA 1	15	1 0	0.0	0.0	99		0.0	_	nactive	0.0		0.0	∞	0.0
Fort Summit KOA 2	16	0	0.0	0.0	99		0.0		inactive	0.0		0.0	œ	0.0
Fort Summit KOA 3	17	1 0	0.0	0.0	99		0.0		inactive	0.0		0.0	œ	0.0
Fort Summit KOA 4	18	1	0.0	0.0	99		0.0		inactive	0.0		0.0	œ	0.0
Ramada Pool	19	1 0	0.0	0.0	99		0.0		inactive	0.0		0.0	œ	0.0
Quality Pool	20	-0	0.0	0.0	99		0.0		inactive	0.0		0.0	œ	0.0
Holiday Inn Express Pool	21	1	0.0	0.0	99		0.0	10 i=	inactive	0.0		0.0	œ	0.0
Home Suites	22	1	0.0	0.0	99		0.0		inactive	0.0		0.0	œ	0.0
Comfort Pool	23	1	0.0	0.0	99		0.0	10 ii	inactive	0.0		0.0	œ	0.0
Festiva 1	24	0 9	0.0	63.7	99	w	63.7		1	63.7		0.0	œ	-8.0
Festiva 3	25	8	0.0	67.1	99	J	67.1		Snd Lvl	67.1		0.0	œ	-8.0
Festiva 2	56		0.0	64.5	99	Ð	64.5	10	i	64.5		0.0	œ	-8.0

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Festiva 4	27	o	0.0	65.2	99	65.2	10	1	65.2	0.0	80	-8.0
Festiva 5	28	2	0.0	63.3	99	63.3	10	ı	63,3	0.0	00	-8.0
Festiva 6	29	2	0.0	63.1	99	63.1	10	ı	63.1	0.0	00	-8.0
Themeworld 1g	30	-	0.0	0.0	99	0.0	9	inactive	0.0	0.0	œ	0.0
Themeworld 1e	31	*-	0.0	0.0	99	0.0	10	inactive	0.0	0.0	80	0.0
Themeworld 1i	32	-	0.0	0.0	99	0.0	10	inactive	0.0	0.0	œ	0.0
Themeworld 1h	33	-	0.0	0.0	99	0.0	10	inactive	0.0	0.0	œ	0.0
Themeworld 1d	34	-	0.0	0.0	99	0.0	10	inactive	0.0	0.0	œ	0.0
Themeworld 1c	35	-	0.0	0.0	99	0.0	10	inactive	0.0	0.0	œ	0.0
Themeworld 1b	38	-	0.0	0.0	99	0.0	10	inactive	0.0	0.0	œ	0.0
Themeworld 1a	37	-	0.0	0.0	99	0.0	10	inactive	0.0	0.0	œ	0.0
Themeworld 2b	38	-	0.0	0.0	99	0.0	10	inactive	0.0	0.0	80	0.0
Themeworld 2c	39	-	0.0	0.0	99	0.0	10	inactive	0.0	0.0	œ	0.0
Themeworld 2d	40	-	0.0	0.0	99	0.0	10	inactive	0.0	0.0	œ	0.0
Themeworld 2e	41	-	0.0	0.0	99	0.0	10	inactive	0.0	0.0	80	0.0
Themeworld 2f	42	-	0.0	0.0	99	0.0	10	inactive	0.0	0.0	œ	0.0
Themeworld 3b	43	-	0.0	0.0	99	0.0	10	inactive	0.0	0.0	œ	0.0
Themeworld 3c	4	-	0.0	0.0	99	0.0	10	inactive	0.0	0.0	œ	0.0
Themeworld 3d	45	-	0.0	0.0	99	0.0	10	inactive	0.0	0.0	œ	0.0
Themeworld 3e	46	-	0.0	0.0	99	0.0	10	inactive	0.0	0.0	ω	0.0
Themeworld 3f	47	-	0.0	0.0	99	0.0	10	inactive	0.0	0.0	80	0.0
Themeworld 3g	48	-	0.0	0.0	99	0.0	10	inactive	0.0	0.0	æ	0.0
Themeworld 4c	49	-	0.0	0.0	99	0.0	10	inactive	0.0	0.0	æ	0.0
Themeworld 4d	20	-	0.0	0.0	99	0.0	10	inactive	0.0	0.0	80	0.0
Themeworld 4e	51	-	0.0	0.0	99	0.0	10	inactive	0.0	0.0	œ	0.0
Themeworld 4f	52	-	0.0	0.0	99	0.0	10	inactive	0.0	0.0	80	0.0
Themeworld 4g	53	-	0.0	0.0	99	0.0	10	inactive	0.0	0.0	æ	0.0
Themeworld 4h	24	-	0.0	0.0	99	0.0	10	inactive	0.0	0.0	œ	0.0
Themeworld 4i	25	-	0.0	0.0	99	0.0	10	inactive	0.0	0.0	80	0.0
Themeworld 5a	99	-	0.0	0.0	99	0.0	10	inactive	0.0	0.0	80	0.0
Themeworld 5b	25	-	0.0	0.0	99	0.0	10	inactive	0.0	0.0	60	0.0
Themeworld 5c	28	-	0.0	0.0	99	0.0	10	inactive	0.0	0.0	80	0.0
Themeworld 5d	29	-	0.0	0.0	99	0.0	10	inactive	0.0	0.0	œ	0.0
Themeworld 2g	09	-	0.0	0.0	99	0.0	10	inactive	0.0	0.0	œ	0.0
Themeworld 2h	61	-	0.0	0.0	99	0.0	10	inactive	0.0	0.0	80	0.0
Themeworld 2i	62	-	0.0		99	0.0	10	inactive	0.0	0.0	œ	0.0
Themeworld 2j	63	-	0.0	0.0	99	0.0	10	inactive	0.0	0.0	80	0.0
Themeworld 2k	64	-		0.0	99	0.0	10	inactive	0.0	0.0	œ	0.0
Themeworld 2I	92	-		0.0	99	0.0	10	inactive	0.0	0.0	œ	0.0
Festiva 2nd a	29	9		97.2	99	57.6	10	i	97.6		œ	-8.0
Festiva 2nd b	89	4	0.0		99	57.6	10		57.6	0.0	œ	-8.0
Factive 2nd c	08	ď	C	404	99	400	7		t, Ci		•	0

3 May 2016

RESULIS: SOUND LEVELS											
themeworld 2m	20	0.0	0.0	99	0.0	10	inactive	0.0	0.0	œ	0.0
themeworld 2n	7.1	0'0	0.0	99	0.0	10	inactive	0.0	0.0	œ	0.0
themeworld 2a	72	0'0	0.0	99	0.0	10	inactive	0.0	0.0	œ	0.0
themeworld 3a	73	0.0	0.0	99	0.0	10	inactive	0.0	0.0	œ	0.0
themeworld 4b	74	0.0	0.0	99	0.0	10	inactive	0.0	0.0	œ	0.0
themeworld 4a	75	0.0	0.0	99	0.0	10	inactive	0.0	0.0	œ	0.0
F Phase 2 a	9/	0.0	66.1	99	1.99	10	Snd Lvl	66.1	0.0	œ	-8.0
F Phase 2 b	77	0.0	66.1	99	1.99	10	Snd Lvl	66.1	0.0	œ	-8.0
F Phase 2 c	78	0.0	629	99	62.9	10	1	62.9	0.0	ထ	-8.0
F Phase 2 d	79	1 0.0	65.6	99	65.6	10	I	65.6	0.0	∞	-8.0
F Phase 2 e	80	1 0.0	64.6	99	64.6	10	1	64.6	0.0	œ	-8.0
F Phase 2 f	81	1 0.0	64.6	99	64.6	10	ı	64.6	0.0	œ	9.0
F Phase 2 g	82	0.0	70.5	99	70.5	10	Snd LvI	70.5	0.0	œ	-8.0
F Phase 2 h	83	1 0.0	70.3	99	70,3	10	Snd Lvl	70.3	0.0	œ	-8.0
F Phase 2 i	84	1 0.0	64.6	99	64.6	10	1	64.6	0.0	œ	-8.0
F Phase 2 j	85	1 0.0	64.6	99	64.6	10	•	64.6	0.0	80	-8.0
F Phase 2 k	98	1 0.0	64.8	99	64.8	10	1	64.8	0.0	00	-8.0
F Phase 2 i	87	1 0.0	70.3	99	70.3	10	Snd Lvl	70.3	0.0	œ	-8.0
F Phase 2 m	88	1 0.0	70.0	99	70.0	10	Snd Lvi	20.07	0.0	∞	-8.0
F Phase 2 n	89	1 0.0	70.1	99	70.1	10	Snd Lvl	70.1	0.0	œ	-8.0
F Phase 2 o	06	1 0.0		99	6.69	10	Snd LvI	6.69	0.0	œ	-8.0
F Phase 2 p	91	1 0.0	70.1	99	70.1	10	Snd Lvl	70.1	0.0	œ	-8.0
F Phase 2 q	95	1 0.0	70,2	99	70.2	10	Snd Lvl	70.2	0.0	œ	-8.0
F Phase 2 r	93	1 0.0	70.2	99	70.2	10	Snd Lvl	70.2	0.0	00	-8.0
F Phase 2 s	94	1 0.0	70.0	99	70.0	10	Snd Lvl	70.0	0.0	ထ	-8.0
F Phase 2 t	95	1 0.0	64.3	99	64.3	10		64.3	0.0	ထ	-8.0
F Phase 2 u	96	1 0.0	61.9	99	61.9	10	ì	6,19	0.0	œ	-8.0
F Phase 2 v	26	1 0.0	62.8	99	62.8	10	ĺ	62.8	0.0	8	-8.0
F Phase 2 w	98	1 0.0	61.5	99	61.5	10	(3.75.5)	61.5	0.0	8	-8.0
F Phase 2 x	66	1 0.0	0.09	99	0.09	9		0.09	0.0	∞	-8.0
Dwelling Units	# DNs	Noise	Reduction								
		Min	Avg	Max							
		畏	ф	鲁							
All Selected	140	0.0		0.0							
All Impacted	20		0.0	0.0							
All that meet NR Goal		0.0	0.0	0.0							

RESULTS: SOUND LEVELS

VELS I-4 BtU PD&E I-4 Segment 5 A INPUT HEIGHT 68 deg F, 50% 68 deg F, 50% 4 DBA 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	TS TS TR TB TB TB TB TB TB TB TB TB	Crit'n dBA	Increase c	wer existing 1		ghway agency ent type with a with Barrier Calculated LAeq1h dBA 64.6	s shall be used y substantiate approval of Fl Noise Reduc Calculated dB		Calculate minus Goal dB
SPHERICS: 68 deg F, 50% fer No. #DUS Existin eworld 1f 1 1 eworld 1j 2 1 eworld 1l 3 1 eworld 1l 4 1 eworld 1n 5 1 eworld 1o 6 1 eworld 1o 8 1 eworld 1q 9 1 eworld 1q 10 1 eworld playground 11 1	g No Barri Calculate 0.0	Crit'n 6.9 1.1 1.1				With Barrier Calculated LAeq1h dBA 64.6	Approval of FH Noise Reduct Calculated dB 0.0		Calculate minus Goal dB
eer No. #DUs Existin World 1f World 1f World 1	No Barri LAeq1h Calculate dBA	Crit'n dBA				With Bar Calculate LAeq1h dBA	Noise Reduc Calculated dB 0.0		Calculate minus Goal dB
eworld 1f eworld 1f eworld 1n eworld 1n eworld 1n eworld 1n eworld 10 eworld 11 11 11	Calculate Calculate O O O O O O O O O O O O O O O O O O O	Crit'n dBA				Calculate LAeq1h dBA	Noise Reduc Calculated dB 0.0		Calculate minus Goal dB
48A 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Calculate dBA dBA0	Crit'n dBA dBA6	Calculated	Sub'l Inc		LAeq1h dBA	Calculated dB 0.0	Goal	Calculate minus Goal dB
4BA 3 1 1 1 6 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	dBA	dBA	B G	89	1	dBA	dB 0.0	В	8
1 0 0 4 0 0 b 8 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			S42						
2 8 4 3 5 7 8 6 0 1 1					,				
6 6 6 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1					10 Snd Lvl				
6 6 7 7 8 6 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1					10 Snd Lvl	68.1			
0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1						68.1			
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0					10 Snd Lvl	68.0			
7 8 6 0 1 1						64.9			
1 1 0 0 8						67.7			
0 0 1 1									
1 1 1									
11						6.79			
	2				10 Snd Lvl	70.4			8 -8.0
00 12 1					10	63.7			
13					10	64.0			8-8.0
14					10	61.3			
15					9	61.8			-8.0
(OA 4 16 1					10	60.7			
18 1					10	62.9			
~					10	58.4			-8.0
-					10	64.2			
Home Suites 1 0.0		56.2 6	99	56.2	10	56.2	2 0.0		3 -8.0
Comfort Pool 26 1 0.0	0.0	71.5 6	.2 99		10 Snd Lvl	71.5			œ
Festiva 1 28 6 0.0	0.0	9 2.99	99	66.7					9 -8.0
ØĎ									8
Festiva 2 31 9 0.0	0.0	67.0 6		0					œ
	0.0	67.5 6	. 66 67	2	10 Snd Lvl	67.5	5 0.0		8 -8.0

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•	23	

Festiva 5	33	7	0.0	65.5	99	65.5	10	i	65.5	0.0	œ	-8.0
Festiva 6	34	2	0.0	65.0	99	65.0	10	ı	65.0	0.0	00	-8.0
Themeworld 1g	36	-	0.0	64.9	99	64.9	10	ı	64.9	0.0	ω	-8.0
Themeworld 1e	37	-	0.0	64.7	99	64.7	10	1	64.7	0.0	∞	-8.0
themeworld 1i	39	-	0.0	68.0	99	68.0	10	Snd Lvl	0.89	0.0	œ	-8.0
themeworld 1h	41	-	0.0	66.5	99	66.5	10	Snd Lvl	66.5	0.0	∞	-8.0
themeworld 1d	43	-	0.0	64.0	99	64.0	10	Ĕ	64.0	0.0	œ	-8.0
themeworld 1c	44	-	0.0	64.1	99	64.1	10	1	64.1	0.0	œ	-8.0
themeworld 1b	45	-	0.0	64.1	99	64.1	10	-	64.1	0.0	œ	-8.0
themeworld 1a	46	1	0.0	65.0	99	65.0	10	1	65.0	0.0	80	-8.0
themeworld 2b	48	1	0.0	62.4	99	62.4	10	1	62.4	0.0	∞	-8.0
themeworld 2c	49	1	0.0	62.5	99	62.5	10	1	62.5	0.0	ω	-8.0
themeworld 2d	20	-	0.0	62.2	99	62.2	9	1	62.2	0.0	œ	-8.0
themeworld 2e	51	-	0.0	62.6	99	62.6	10	ı	62.6	0.0	∞	-8.0
themeworld 2f	52	-	0.0	62.7	99	62.7	10	1	62.7	0.0	ω	-8.0
themeworld 3b	53	-	0.0	6.09	99	6.09	10	1	6.09	0.0	∞	-8.0
themeworld 3c	54	-	0.0	60.4	99	60.4	10	1	60.4	0.0	ω	-8.0
themeworld 3d	22	-	0.0	60.1	99	60.1	10		60.1	0.0	ω	-8.0
themeworld 3e	99	-	0.0	0.09	99	0.09	10	1	0.09	0.0	ω	-8.0
themeworld 3f	25	-	0.0	60.3	99	60.3	10	1	60.3	0.0	œ	-8.0
themeworld 3g	28	-	0.0	64.8	99	64.8	10		64.8	0.0	œ	-8.0
themeworld 5a	29	-	0.0	6.79	99	6.79	10	Snd Lvl	6.79	0.0	œ	-8.0
themeworld 5b	09	-	0.0	6.99	99	6.99	10	Snd Lvl	6.99	0.0	æ	-8.0
themeworld 5c	61	-	0.0	66.3	99	66.3	10	Snd Lvl	66.3	0.0	æ	9.0
themeworld 5d	62	-	0'0	65.7	99	65.7	10		65.7	0.0	æ	-8.0
themeworld 4c	63	-	0.0	58.8	99	58.8	10	1	58.8	0.0	œ	-8,0
themeworld 4d	64	-	0.0	58.6	99	58.6	10		58.6	0.0	œ	-8.0
themeworld 4f	65	-	0.0	58.3	99	58.3	10		58.3	0.0	∞	-8.0
themeworld 4g	99	-	0.0	58.3	99	58.3	10		58.3	0.0	œ	-8.0
themeworld 4h	29	-	0.0	58.4	99	58.4	10	-	58.4	0.0	8	-8.0
themeworld 4i	89	-	0.0	59.6	99	59.6	10	*	59.6	0.0	∞	-8.0
themeworld 4e	69	-	0.0	58.3	99	58.3	10	I	58.3	0.0	œ	-8.0
themeworld 2g	7.1	-	0.0	65.3	99	65.3	10	*	65.3	0.0	œ	-8.0
themeworld 2h	72	-	0.0	64.0	99	64.0	10	ı	64.0	0.0	8	-8.0
themeworld 2i	73	-	0.0	63.5	99	63.5	10		63.5	0.0	œ	-8.0
themeworld 2j	74	-	0.0	63.4	99	63.4	10	1	63.4	0.0	00	-8.0
themeworld 2k	75	-	0.0	63.3	99	63.3	10	1	63.3	0.0	œ	-8.0
themeworld 2l	9/	-	0.0	63.2	99	63.2	10	1	63.2	0.0	œ	-8.0
Festiva 2nd a	7.7	9	0.0	59.9	99	59.9	10	•	59.9	0.0	œ	-8.0
Festiva 2nd b	78	4	0.0	29.0	99	29.0	10	į	29.0	0.0	œ	-8.0
Festiva 2nd c	62	9	0.0	59.9	99	6.69	10		59.9	0.0	œ	

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themeworld 2n 81 1 themeworld 2a 82 1 themeworld 3a 83 1 themeworld 4b 84 1 themeworld 4a 85 1 themeworld 4a 85 1 themeworld 50 themeworld 60				14 DIO PUGE	DØL				
83 1 84 1 85 1 85 1 85 1 85 1 85 1 85 1 85	0.0	65.4	99	65.4	10	1	65.4	0.0	œ
83 1 85 1 PUS	0.0	64.9	99	64.9	10	1	64.9	0.0	œ
85 # DUS	0.0	63.8	99	63.8	10	1	63.8	0.0	00
# DUS	0.0	59.4	99	59.4	10	ı	59.4	0.0	œ
# DNS		61.5	99	61.5	10	ı	61.5	0.0	00
Min	Noise Reduction								
5	Avg	Max							
90		쁑							
All Selected 115	0.0	0.0	0.0						
All Impacted 47	0.0	0.0	0.0						
All that meet NR Goal 0	0.0	0.0	0.0						

84 84 84 84 0.0 80 80 80 0.0 0.0

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Participa Part	RESULIS: SOUND LEVELS							150							
1-4 BLU PD&E 1-4 BLU PD&E 1-4	Stantec M Drauer			XI				2 May 2	016						
No. Fig. F	RESULTS: SOUND LEVELS PROJECT/CONTRACT:		14 BtL				_	Calcula	ted with	TNM 2.5			_		
Molecular Mathematical Mathematical Molecular	RUN: Barrier Design:		INPUT		tival Phase I	_	_		Avera	ige pavemer e highway a	nt type s	hall be used	d unless		
No. #DUS Existing Increase over existing Type Calculated ordinated o	ATMOSPHERICS:		68 de	J F, 50% RH					ofad	ifferent type	with ap	proval of Fl	s une use HWA.		
No. #PUNS Existing No. Existing No. Existing Calculated Crift Crif	Receiver			:											
Action A	Мате	S	#DNs	Existing	No Barrier				ı	With B	1				
1 1 1 1 1 1 1 1 1 1				LAeq1h	LAeq1h Calculated	Crit'n	Increase	over existing d Crit'n Sub'l In			b	loise Reduc	Goal	Calculat	ted
1 ORNA OR				Š	į	į	į]				Goal	
1 1 0.0 66 0.0 10 inactive 0.0 0.0 68 0.0 10 inactive 0.0 0.0 8 2 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 4 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 5 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 6 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 1 0.0 0.0 66 0.0 10 inactive 0.0 <				dBA	dBA	dBA	dB	gg GB		dBA	0	8	g	용	
2 1 0.0 6.6 0.0 10 inactive 0.0 0.0 8 3 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 5 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 6 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 7 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 9 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 10 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 11 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 0.0 0.0 0.0 10 10	Themeworld 1f						g	0.0		tive	0.0	0.0		8	0.0
3 1 0.0 66 0.0 10 inactive 0.0 0.0 6 0.0	Themeworld 1j	N					Q	0.0		tive	0.0	0.0		œ	0.0
4 1 0.0 66 0.0 10 inactive 0.0 0.0 6 0.0 0.0 0.0 6 0.0	Themeworld 1k	е)					g	0.0		tive	0.0	0.0		œ	0.0
5 1 0.0 66 0.0 10 inactive 0.0 0.0 8 6 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 7 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 10 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 10 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 11 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 12 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 13 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 0 0 0 0 0 0	Themeworld 11	4					9	0.0		tive	0.0	0.0		80	0.0
6 1 0.0 0.0 10 inactive 0.0 0.0 8 7 1 0.0 0.0 10 inactive 0.0 0.0 8 8 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 10 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 11 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 12 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 13 1 0.0 66 0.0 10 inactive 0.0 0.0 8 14 1 0.0 66 0.0 10 inactive 0.0 0.0 8 15 1 0.0 66 0.0 10 inactive 0.0 <t< td=""><td>Themeworld 1m</td><td>u)</td><td></td><td></td><td></td><td></td><td>ထ္</td><td>0.0</td><td></td><td>tive</td><td>0.0</td><td>0.0</td><td></td><td>80</td><td>0.0</td></t<>	Themeworld 1m	u)					ထ္	0.0		tive	0.0	0.0		80	0.0
7 1 0.0 0.0 10 inactive 0.0 0.0 8 8 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 9 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 10 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 11 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 14 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 15 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 16 1 0.0 66 0.0 10 inactive 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Themeworld RV Pool	w .					9	0.0		five	0.0	0.0		80	0.0
8 1 0.0 66 0.0 10 inactive 0.0 0.0 8 9 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 10 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 11 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 14 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 15 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 16 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 18 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 22 1 0.0 0.	Themeworld 1n	_					9	0.0		tive	0.0	0.0		8	0.0
9 1 0.0 66 0.0 10 inactive 0.0 0.0 8 10 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 11 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 12 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 14 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 15 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 0	Themeworld 10	Φ.					9	0.0		tive	0.0	0.0		8	0.0
10 1 0.0 66 0.0 10 inactive 0.0 0.0 8 11 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 12 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 13 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 14 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 15 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 20 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 <td>Themeworld 1p</td> <td>o</td> <td></td> <td></td> <td></td> <td></td> <td>9</td> <td>0.0</td> <td></td> <td>tive</td> <td>0.0</td> <td>0.0</td> <td></td> <td>80</td> <td>0.0</td>	Themeworld 1p	o					9	0.0		tive	0.0	0.0		80	0.0
11 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 12 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 13 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 14 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 15 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 16 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 20 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 22 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 24 1	Themeworld 1q	10					ဖွ	0.0		tive	0.0	0.0		œ	0.0
12 1 0.0 0.0 10 inactive 0.0 0.0 8 13 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 14 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 15 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 16 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 20 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 22 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 24 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 25 1 0.0 0.0 <td< td=""><td>Themeworld playground</td><td>11</td><td></td><td></td><td></td><td></td><td>ဖွ</td><td>0.0</td><td></td><td>tive</td><td>0.0</td><td>0.0</td><td></td><td>00</td><td>0.0</td></td<>	Themeworld playground	11					ဖွ	0.0		tive	0.0	0.0		00	0.0
13 1 0.0 0.0 10 inactive 0.0 0.0 8 14 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 15 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 16 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 20 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 22 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 24 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 25 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 0 0 26 1 0.0 6	Fort Summit KOA pool	12					ဖွ	0.0		tive	0.0	0.0		œ	0.0
14 1 0.0 0.0 10 inactive 0.0 0.0 8 15 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 16 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 20 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 24 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 24 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 25 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 26 1 0.0 66 0.0 10 inactive 0.0 0.0 8 28 6 0.0 72.5 10 <td< td=""><td>Fort Summit KOA 1</td><td>13</td><td></td><td>1 0.0</td><td></td><td></td><td>9</td><td>0.0</td><td></td><td>tive</td><td>0.0</td><td>0.0</td><td></td><td>8</td><td>0.0</td></td<>	Fort Summit KOA 1	13		1 0.0			9	0.0		tive	0.0	0.0		8	0.0
15 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 16 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 20 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 24 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 26 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 26 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 28 6 0.0 66 0.0 10 inactive 0.0 0.0 8 29 8 0.0 72.5 66 72.5 10 Snd Lvl 74.7 0.0 8 31 9 0.0 <t< td=""><td>Fort Summit KOA 2</td><td>41</td><td></td><td>0.0</td><td></td><td></td><td>9</td><td>0.0</td><td></td><td>tive</td><td>0.0</td><td>0.0</td><td></td><td>œ</td><td>0.0</td></t<>	Fort Summit KOA 2	41		0.0			9	0.0		tive	0.0	0.0		œ	0.0
16 1 0.0 66 0.0 10 inactive 0.0 0.0 8 20 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 20 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 24 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 26 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 28 6 0.0 66 0.0 10 inactive 0.0 0.0 8 29 8 0.0 72.5 66 72.5 10 8 0.0 8 0.0 31 9 0.0 74.7 66 74.7 10 8nd Lvl 74.7 0.0 8 0.0 32 9 0.0 73.	Fort Summit KOA 3	15		1 0.0			9	0.0		tive	0.0	0.0		œ	0.0
18 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 20 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 22 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 24 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 26 1 0.0 66 0.0 10 inactive 0.0 0.0 8 28 6 0.0 72.2 66 72.2 10 8 0.0 8 0.0 29 8 0.0 74.7 66 74.7 10 8 0.0 8 0.0 8 0.0 8 0.0 8 0.0 8 0.0 8 0.0 8 0.0 8 0.0 8 0.0 8 <t< td=""><td>Fort Summit KOA 4</td><td>16</td><td></td><td>0.0</td><td></td><td></td><td>9</td><td>0.0</td><td></td><td>tive</td><td>0.0</td><td>0.0</td><td></td><td>00</td><td>0.0</td></t<>	Fort Summit KOA 4	16		0.0			9	0.0		tive	0.0	0.0		00	0.0
20 1 0.0 66 0.0 10 inactive 0.0 0.0 8 22 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 24 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 26 1 0.0 66 72.2 10 inactive 0.0 0.0 8 29 6 0.0 72.5 66 72.5 10 8 0.0 8 0.0 31 9 0.0 74.7 66 72.5 10 Snd Lvl 74.7 0.0 8 0.0 32 9 0.0 73.6 66 73.6 10 Snd Lvl 74.7 0.0 8 0.0	Ramada Pool	18		0.0			9	0.0		tive	0.0	0.0		œ	0.0
22 1 0.0 66 0.0 10 inactive 0.0 0.0 8 24 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 26 1 0.0 0.0 66 72.2 10 inactive 0.0 0.0 8 29 8 0.0 72.5 66 72.5 10 Snd Lvl 72.5 0.0 8 31 9 0.0 74.7 66 74.7 10 Snd Lvl 72.5 0.0 8 32 9 0.0 73.6 66 73.6 10 Snd Lvl 73.6 0.0 8	Quality Pool	20		0.0		1500	9	0.0		tive	0.0	0.0		8	0.0
24 1 0.0 6 0.0 10 inactive 0.0 6 0.0 8 26 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 28 6 0.0 72.2 6 72.2 10 8nd Lvl 72.2 0.0 8 - 29 8 0.0 74.7 66 74.7 10 8nd Lvl 72.5 0.0 8 - 31 9 0.0 74.7 66 74.7 10 8nd Lvl 74.7 0.0 8 - 32 9 0.0 73.6 66 73.6 10 8nd Lvl 73.6 0.0 8 -	Holiday Inn Express Pool	22		0.0			9	0.0		tive	0.0	0.0		00	0.0
26 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 28 6 0.0 72.2 66 72.2 10 Snd Lvl 72.5 0.0 8 31 9 0.0 74.7 66 74.7 10 Snd Lvl 74.7 0.0 8 32 9 0.0 73.6 66 73.6 10 Snd Lvl 73.6 0.0 8	Home Suites	24		0.0			9	0.0		tive	0.0	0.0		80	0.0
28 6 0.0 72.2 66 72.2 10 Snd Lvl 72.5 0.0 8 29 8 0.0 74.7 66 74.7 10 Snd Lvl 72.5 0.0 8 31 9 0.0 74.7 66 74.7 10 Snd Lvl 74.7 0.0 8 32 9 0.0 73.6 66 73.6 10 Snd Lvl 73.6 0.0 8	Comfort Pool	26					9	0.0		tive	0.0	0.0		80	0.0
29 8 0.0 72.5 66 72.5 10 Snd Lvl 72.5 0.0 8 31 9 0.0 74.7 66 74.7 10 Snd Lvl 74.7 0.0 8 32 9 0.0 73.6 66 73.6 10 Snd Lvl 73.6 0.0 8	Festiva 1	28					9	72.2		2	72.2	0.0		80	-8.0
31 9 0.0 74.7 66 74.7 10 Snd Lvl 74.7 0.0 8 32 9 0.0 73.6 66 73.6 10 Snd Lvl 73.6 0.0 8	Festiva 3	29					9	72.5			72.5	0.0		8	-8.0
32 9 0.0 73.6 66 73.6 10 Snd Lvl 73.6 0.0 8	Festiva 2	31					9	74.7		[~	74.7	0.0		80	-8.0
	Festiva 4	32		0			9	73.6			73.6	0.0		œ	-8.0

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RESULTS: SOUND LEVELS						1-4 Bt(BTU PUSE					
Festiva 5	33	2	0.0	67.3	99	67.3	10	Snd Lvl	67.3	0.0	∞	-8.0
Festiva 6	34	2	0.0	0.99	99	0.99	0	Snd Lvl	0.99	0.0	∞	-8.0
Themeworld a	36	_	0.0	0.0	99	0.0	10	inactive	0.0	0.0	œ	0.0
Themeworld b	37	-	0.0	0.0	99	0.0	10	inactive	0.0	0.0	∞	0.0
Festiva 2nd a	39	9	0.0	62.1	99	62.1	10	ı	62.1	0.0	∞	-8.0
Festiva 2nd b	40	4	0.0	61.5	99	61.5	10	ı	61.5	0.0	∞	-8.0
Festiva 2nd c	41	9	0.0	61.5	99	61.5	10	-	61.5	0.0	œ	-8.0
F Phase 2 a	45	2	0.0	67.4	99	67.4	10	Snd Lvl	67.4	0.0	œ	-8.0
F Phase 2 b	43	4	0.0	68.4	99	68.4	10	Snd Lvl	68.4	0.0	œ	8,0
F Phase 2 c	44	4	0.0	68.3	99	68.3	10	Snd Lvl	68.3	0.0	œ	-8.0
F Phase 2 d	45	4	0.0	9.79	99	9.79	10	Snd Lvl	9.79	0.0	œ	-8.0
F Phase 2 e	46	4	0.0	66.3	99	66.3	10	Snd LvI	66.3	0.0	œ	-8.0
F Phase 2 f	47	4	0.0	62.9	99	62.9	10	ı	62.9	0.0	œ	-8.0
F Phase 2 g	48	4	0.0	74.4	99	74.4	10	Snd Lvl	74.4	0.0	∞	-8.0
F Phase 2 h	49	4	0.0	7.4.7	99	74.7	10	Snd LvI	74.7	0.0	œ	-8.0
F Phase 2 i	51	4	0.0	64.7	99	64.7	9	I	64.7	0.0	∞	-8.0
F Phase 2 j	52	4	0.0	65.3	99	65.3	0	ŀ	65.3	0.0	œ	-8.0
F Phase 2 k	53	4	0.0	64.5	99	64.5	10	***	64.5	0.0	œ	-8.0
F Phase 2 I	54	4	0.0	74.8	99	74.8	10	Snd LvI	74.8	0.0	œ	-8.0
F Phase 2 m	55	4	0.0	74.9	99	74.9	10	Snd Lvl	74.9	0.0	∞	-8.0
F Phase 2 n	26	4	0.0	74.8	99	74.8	10	Snd Lvi	74.8	0.0	œ	-8.0
F Phase 2 o	25	4	0.0	75.1	99	75.1	10	Snd Lvl	75,1	0.0	œ	-8.0
F Phase 2 p	29	4	0.0	74.6	99	74.6	10	Snd Lvl	74.6	0.0	œ	-8.0
F Phase 2 q	9	4	0.0	75.0	99	75.0	01	Snd Lvl	75.0	0.0	œ	-8.0
F Phase 2 r	61	4	0.0	74.8	99	74.8	10	Snd Lvl	74.8	0.0	œ	-8.0
F Phase 2 s	62	4	0.0	74.9	99	74.9	10	Snd Lvl	74.9	0.0	œ	-80
F Phase 2 t	63	4	0.0	65.1	99	65.1	10	1	65.1	0.0	∞	9.0
F Phase 2 u	64	4	0.0	62.4	99	62.4	10	ı	62.4	0.0	∞	-8.0
F Phase 2 v	65	2	0.0	64.1	99	64.1	10	1	64.1	0.0	œ	-8.0
F Phase 2 w	99	4	0.0	61.7	99	61.7	10		61.7	0.0	œ	-8.0
F Phase 2 x	29	7	0.0	0.09	99	0.09	10	E	0.09	0.0	œ	-8.0
Dwelling Units	#	# DUS Noise	se Reduction	uo								
		Min	Avg		×							
		쁑	쁑	₽ P								
All Selected		165	0.0	0.0	0.0							
All Impacted		94	0.0	0.0	0.0							
All that meet NR Goal		0	0.0	0.0	0.0							

BARRIER ANALYSIS

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Stantec M Drauer				24 Nover TNM 2.5	24 November 2015 TNM 2.5					
RESULTS: BARRIER DESCRIPTIONS PROJECT/CONTRACT: RUN: BARRIER DESIGN:	I-4 BtU PE I-4 Segme Theme_1	I.4 BtU PD&E I.4 Segment 5 Themeworld 14' Theme_14	emeworl	6 .4						
Barriers										
Name	Type	Type Heights along Barrier	ong Barr	ier	Length	If Wall	If Berm			Cost
		Min	Avg	Мах		Area	Volume	Top Width	Run:Rise	
		#	Ħ	∉	₩	sq ft	cu yd	#	ft:ft	69
Theme 14'	>	14.00	14.00	14.00	902	12627				378812
Retaining Wall	>	2.00	16.65	35 20.00	00 2768	8 46097	2			0
									Total Cost:	378812

14 BtU PD&E

RESULTS: BARRIER DESCRIPTIONS

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RESULTS: SOUND LEVELS

RESULTS: SOUND LEVELS PROJECT/CONTRACT: RUN: BARRIER DESIGN: ATMOSPHERICS: Receiver	4 :							Calculated	Calculated with TNM 2.5	6.2				
ATMOSPHERICS: Receiver	Ž Ž	I4 BtU PD&E I4 Segment 5 T Theme_14	SE nt 5 T	hemeworld 14'	. 4				Average a State hi	Average pavement type shall be used unless a State highway agency substantiates the use	e shall be u y substanti	ised unless	υ	
Kecelver	89	68 deg F, 50%	, 50% RH			_			of a diffe	of a different type with approval of FHWA	approval c	of FHWA.		
Name	No. #DUs		Existing	No Barrier						With Barrier				
				LAeq1h		n S	Increase over existing	existing	Type	Calculated	Noise Reduction	duction		
				Calculated	Crit'n	යී	Calculated	Crit'n Sub'l Inc	Impact	LAeq1h	Calculated	Goal	Calculated minus Goal	ated
		O	dBA	dBA	dBA	쁑		8 B		dBA	용	용	æ	
Themeworld 1f	_	-	0.0	9	64.5	99	64.5	10		62.1	_	2.4	8	-5.6
Themeworld 1j	2	-	0.0	9	0.89	99	0.89	10	Snd Lvl	67.4	₹	9.0	œ	-7.4
Themeworld 1k	က	-	0.0	9	68.2	99	68.2				7	0.5	æ	-7.5
Themeworld 11	4	-	0.0	ဖ	68.1	99	68.1	10	Snd Lvl	67.7	7	0.4	œ	-7.6
Themeworld 1m	2	-	0.0	9	0.89	99	98.0				9	0.4	œ	-7.6
Themeworld 1n	7	-	0.0	9	2.79	99	2.79				4	0.3	œ	7.7-
Themeworld 10	80	-	0.0	9	2.79	99	67.7				2	0.2	œ	-7.8
Themeworld 1p	6	-	0.0	ယ	67.3	99	67.3				0	0.3	œ	-7.7
Themeworld 1q	10	-	0.0		6.79	99	67.9		Snd Lví	67.7		0.2	œ	-7.8
Fort Summit KOA pool	12	-	0.0		63.7	99	63.7		1	63.6	9	0.1	œ	-7.9
Fort Summit KOA 1	13	-	0.0		64.0	99	64.0		1	63.9	o	0.1	œ	-7.9
Fort Summit KOA 2	14	-	0.0		61.3	99	61.3		1	61.3	က	0.0	œ	-8.0
Fort Summit KOA 3	15	-	0.0		61.8	99	61.8		1	61.8	80	0.0	œ	0.8 -
Fort Summit KOA 4	16	-	0.0		2.09	99	2.09		1	2.09	7	0.0	œ	-8.0
Ramada Pool	18	-	0.0		0.0	99	0.0) inactive	0.0	0	0.0	00	0.0
Quality Pool	20	_	0.0		0.0	99	0.0) inactive		0	0.0	œ	0.0
themeworld 1d	43	-	0.0		64.0	99	64.0		1	62.4	4	1.6	œ	-6.4
themeworld 1c	44	-	0.0		64.1	99	64.1		1	61.9	6	2.2	æ	-5.8
themeworld 1b	45	-	0.0		64.1	99	64.1	10	1	61.6	9	2.5	œ	-5.5
themeworld 1a	46	-	0.0		0.59	99	0.59		1	61.1	_	3.9	ထ	-4.1
themeworld 2b	48	-	0.0		62.3	99	62.3		(59.7	7	2.6	80	-5.4
themeworld 2c	49	-	0.0		62.4	99	62.4		1	60.4	4	2.0	œ	-6.0
themeworld 2d	20	-	0.0		62.2	99	62.2	10	1	59.0	0	3.2	œ	4.8
themeworld 2e	51	-	0.0		62.6	99	62.6			59.5	2	3.1	œ	6.4
themeworld 2f	52	_	0.0		62.7	99	62.7	7 10	1	60.5	2	2.2	8	-5.8

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themeworld 3b	53	_	0.0	61.1	99	61.1	10	ľ	58.9	2.2	ထ	ر ا 9.78
themeworld 3c	54	-	0.0	60.5	99	60.5	10	I	58.5	2.0	œ	9.0
themeworld 3d	55	-	0.0	60.2	99	60.2	10		58.7	1.5	æ	-6.5
themeworld 3e	26	-	0.0	60.1	99	60.1	10	I	9.75	2.5	æ	-5.5
themeworld 3f	57	-	0.0	60.4	99	60.4	10	1	57.8		æ	-5,4
themeworld 3g	28	-	0.0	8.49	99	64.8	10	ı	62.5	2.3	∞	-5.7
themeworld 5a	59	-	0.0	67.7	99	67.7	10	Snd Lvl	62.2	5.5	œ	-2.5
themeworld 5b	09	_	0.0	8.99	99	8.99	10	Snd Lvl	61.6	5.2	œ	-2.8
themeworld 5c	61	-	0.0	66.3	99	66.3	10	Snd Lvl	61.3	5.0	œ	-3.0
themeworld 5d	62	-	0.0	65.7	99	65.7	10	Ī	61.1	4.6	œ	-3.4
themeworld 4c	63	-	0.0	58.9	99	58.9	10	1	56.3	2.6	œ	-5.4
themeworld 4d	64	-	0.0	58.6	99	58.6	10	1	55.8	2.8	œ	-5.2
themeworld 4f	65	-	0.0	58.5	99	58.5	10	1	56.0	2.5	œ	-5.5
themeworld 4g	99	-	0.0	58.4	99	58.4	10	1	56.1	2,3	œ	-5.7
themeworld 4h	29	-	0.0	58.5	99	58.5	10	****	56.4	2.1	œ	-5.9
themeworld 4i	89	-	0.0	26.7	99	59.7	10		58.3	4.	œ	9.9
themeworld 4e	69	-	0.0	58.4	99	58.4	10	3000	55.5	2.9	œ	-5.1
themeworld 2a	71	-	0.0	65.3	99	65.3	10	1	63.7	1.6	œ	-6.4
themeworld 2h	72	-	0.0	64.0	99	64.0	10	1	63.3	0.7	œ	-7.3
themeworld 2i	73	-	0.0	63.5	99	63.5	10	Name of the last o	63.0	0.5	œ	-7.5
themeworld 2j	74	-	0.0	63.3	99	63.3	10	1	63.0	0.3	∞	7.7-
themeworld 2k	75	-	0.0	63.3	99	63.3	10	I	63.1	0.2	ω	-7.8
themeworld 21	92	-	0.0	63.2	99	63.2	10	ı	63.0	0.2	œ	-7.8
themeworld 2m	22	-	0.0	63.6	99	63.6	10	1	63.5	0.1	œ	-7.9
themeworld 2n	78	-	0.0	65.2	99	65.2	10	2000	65.1	0.1	œ	-7.9
themeworld 2a	62	-	0.0	65.0	99	65.0	10		60.2	4.8	œ	-3.2
themeworld 3a	80	-	0.0	63.6	99	63.6	10		59.9	3.7	œ	-4.3
themeworld 4b	8	-	0.0	29.7	99	2.69	10	l	57.2	2.5	œ	-5.5
themeworld 4a	82	-	0.0	63.2	99	63.2	10	ľ	59.3	3.9	œ	4 .1
Themeworld RV Pool	9	-	0.0	65.0	99	65.0	10		62.7	2.3	œ	-5.7
Themeworld playground	11	-	0.0	70.4	99	70.4	10	Snd Lvl	70.2	0.2	œ	-7.8
Themeworld 1g	36	-	0.0	64.9	99	64.9	10	-	63.0	1.9	80	-6.1
Themeworld 1e	37	-	0.0	64.8	99	64.8	10	1	62.1	2.7	œ	-5.3
themeworld 1i	39	-	0.0	68.0	99	68.0	10	Snd LvI	6.99	1:1	œ	6.9
themeworld 1h	41	-	0.0	99.9	99	66.5	10	Snd Lvl	65.4	1.1	œ	-6.9
Dwelling Units	# DUs	Js Noise	e Reduction	uo								
		.E		Max	×E							
		ВВ	ф									
All Selected		09	0.0	1.8	5.5							
All Impacted		14	0.2	1.5	5.5							
		¢	0	0	0							

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Stantec M Drauer				24 Novem TNM 2.5	24 November 2015 TNM 2.5					
RESULTS: BARRIER DESCRIPTIONS PROJECT/CONTRACT: RUN: BARRIER DESIGN:	14 BtU P 14 Segm ROW 16	I4 BtU PD&E I4 Segment 5 Themeworld ROW ROW 16	emeworlc	ROW						
Barriers										
Name	Type	Heights along Barrier	long Barri	ь	Length	if Wall	If Berm			Cost
		Zi.	Avg	Max		Area	Volume	Top Width	Run:Rise	P
		#	¥	Ħ	#	sq ft	cn yd	#	ft:ft	\$
Theme ROW	≥	16.00	16.00	0 16.00	0 1455	5 23275				698252
Retaining Wall	3	2.00	16.65	5 20.00	0 2768	3 46097	_			0
									Total Cost:	698252

14 BtU PD&E

RESULTS: BARRIER DESCRIPTIONS

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RESULTS: SOUND LEVELS

Auto-Courte	Stantec M Drauer						24 November 2015 TNM 2.5 Calculated with TN	ember 5 ted wi	24 November 2015 TNM 2.5 Calculated with TNM 2.5	ю	_			
Part	RESULTS: SOUND LEVELS PROJECT/CONTRACT: RUN: BARRIER DESIGN:	14 Bt 14 Se ROW	U PD&E igment 5 Th 16	emeworld RC	N.			a A	erage pav tate high	ement type	shall be used i	unless the use		
rept Month Barrier Apple Included In	ATMOSPHERICS:	68 de	eg F, 50% RI	I				ō	a differen	t type with a	pproval of FH	WA.		
Model of the problem of the	Receiver													
Appel Line of the increase over existing of the increase over existing a line in the increase of the increase over existing a line in the increase over existing a line in the increase over existing a line in the increase of the increase over existing a line in the in	Name			No Barrier					S	fith Barrier				
A pool Calculated Critical control Critical control Critical control Critical control Critical control Calculated critical control Critical control Control Calculated control Critical control Control Calculated control Critical control Calculated control Control Calculated control Control Calculated control Calcul			LAeq1h	LAeq1h		Increase	over existing			alculated	Noise Reducti	on		
Apol 684 682 66 643 10 613 68 643 10 613 30 8 8 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9			-	Calculated	Crit'n	Calculate	d Crit'n Sub'l Ir	U	t	Aeq1h		Goal	Calculate minus Goal	pa
Appoil 1			dBA	dBA	dBA	쁑	용	H	ō			98	ф	
Apol	Themeworld 1f	-	0.0	0	3	9	64.3	10	1	61.3	3.0	80		-5,0
Apoli	Themeworld 1i	2			200	9	68.1		and Lvl	64.0	1.4	00		-3.9
Appoil 6.8.2 66 68.2 10 Snd Lyl 63.9 4.3 8 4.3 8 4.3 8 4.4 8 6 6.8 6.8 6.1 1 0.0 Snd Lyl 63.7 4.4 8 6 6.7 8 10 Snd Lyl 63.5 4.4 8 8 6 6.7 8 10 Snd Lyl 63.5 4.4 8 8 6 6.7 8 10 Snd Lyl 63.5 4.4 8 8 6 6.7 8 10 Snd Lyl 63.5 4.4 8 8 6 6.7 8 10 Snd Lyl 63.5 4.4 8 8 6 6.7 8 10 Snd Lyl 63.5 4.4 8 8 6 6.7 8 10 Snd Lyl 63.5 4.4 8 8 6 6.7 8 10 Snd Lyl 63.5 4.4 8 8 6 6.7 8 10 Snd Lyl 63.5 4.4 8 8 6 6.7 8 10 Snd Lyl 63.5 4.4 8 8 6 6.7 8 10 Snd Lyl 63.5 6.8 6.7 9 Snd Lyl 63.5 9 Snd Lyl 63.5 6.8 6.7 9 Snd Lyl 63.5 9 Sn	Themeworld 1k	m				99	68.2		and Lvl	64.0	4.2	80		-3.8
Apol 10	Themeworld 11	4				99	68.2		and Lvl	63.9		00		-3,7
Appeal 7 1 0.0 67.3 66 67.3 10 Snd LvI 63.5 4.3 8 Appeal 10 1 0.0 67.7 66 67.3 10 50.4 4.4 8 Appeal 10 1 0.0 67.9 66 67.3 10 50.4 4.5 8 Appeal 12 1 0.0 67.9 66 67.3 10 50.2 4.4 8 Appeal 12 1 0.0 67.9 66 63.7 10 50.2 6.2 6.4	Themeworld 1m	S	1			99	68.1		and Lvl	63.7	4,4	00		-3,6
National	Themeworld 1n	7				99	87.8		and Lvl	63.5	4.3	∞		-3.7
AA pool 67.3 66 67.3 10 Snd LvI 63.2 4.1 8 AA pool 10 67.9 66 67.9 10 Snd LvI 63.4 4.5 8 AA 1 12 1 0.0 67.9 66 67.9 10 63.7 0.2 8 AA 2 14 1 0.0 64.0 66 61.2 10 60.9 0.2 8 AA 2 15 1 0.0 61.2 66 61.8 10 60.9 0.3 8 AA 3 16 1 0.0 61.8 60.7 10 60.9 0.3 8 AA 4 1 0.0 60.7 66 60.7 10 60.6 0.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Themeworld 10	∞				99	2.79		and Lvi	63.3	4.4	∞		-3.6
94 10 1 0.0 67.9 66 67.9 10 5nd Lw 63.4 4.5 8 OA pool 12 1 0.0 63.7 66 63.7 10 63.5 0.2 8 OA 2 13 1 0.0 64.0 66 64.0 10 63.7 0.3 8 OA 3 15 1 0.0 61.2 66 61.2 10 63.7 0.1 8 OA 4 16 1 0.0 61.2 66 61.7 10 60.6 0.1 8 OA 4 16 1 0.0 66 63.2 10 60.6 0.0	Themeworld 1p	თ				99	67.3		and LvI	63.2		∞		9.6
OA pool 12 1 0.0 63.7 66 63.7 10	Themeworld 1q	10				90	67.9		Snd Lvl	63.4		∞		-3.5
OA 1 13 1 0.0 64.0 66 64.0 10 63.7 0.3 8 OA 2 14 1 0.0 61.2 66 61.2 10 60.9 0.3 8 OA 3 15 1 0.0 61.8 66 61.2 10 60.9 0.0 1 8 8 8 8 8 9 8 8 9<	Fort Summit KOA pool	12				99	63.7	9	ı	63.5		00		-7.8
OA 2 14 1 0.0 61.2 66 61.2 10 60.9 0.3 8 OA 3 15 1 0.0 61.8 66 61.8 10 61.7 0.0 0.1 8 OA 4 16 1 0.0 60.7 66 60.7 10 60.6 0.0 0.0 0.0 0.0 8 60.6 0.0 <t< td=""><td>Fort Summit KOA 1</td><td>13</td><td></td><td></td><td></td><td>99</td><td>64.0</td><td>9</td><td>ı</td><td>63.7</td><td></td><td>∞</td><td></td><td>-7.7</td></t<>	Fort Summit KOA 1	13				99	64.0	9	ı	63.7		∞		-7.7
OA 3 15 1 0.0 61.8 66 61.8 10 61.7 0.1 8 OA 4 16 1 0.0 60.7 10 60.6 0.0 0.0 8 OA 4 18 1 0.0 60.7 10 inactive 0.0 0.0 0.0 8 1 20 1 0.0 66 6.0 6.0 10 0.0 0.0 8 1 4.0 0.0 63.2 66 63.2 10 61.5 1.7 8 1 0.0 63.2 66 63.2 10 61.5 1.7 8 1 0.0 63.2 66 63.2 10 61.5 1.4 8 1 0.0 64.3 66 64.3 10 61.6 1.4 8 1 48 1 0.0 61.8	Fort Summit KOA 2	14				99	61.2	9	ı	6.09		00		-7.7
OA4 16 1 0.0 60.7 10 — 60.6 0.0 10 inactive 0.0 0.0 60.7 10 inactive 0.0 0.0 8 1 1 0.0 0.0 66 0.0 10 inactive 0.0 0.0 8 1 43 1 0.0 63.2 66 63.2 10 — 61.2 2.0 8 1 44 1 0.0 63.2 66 63.2 10 — 61.5 1.7 8 1 45 1 0.0 63.2 66 63.2 10 — 61.5 1.7 8 1 46 1 0.0 64.3 66 64.3 10 — 60.7 3.6 8 1 48 1 0.0 61.8 66 61.8 10 — 62.0 20 20 8 1 49	Fort Summit KOA 3	15				92	61.8	9	1	61.7		∞		-7.9
18 1 0.0 0.0 10 inactive 0.0 <td>Fort Summit KOA 4</td> <td>16</td> <td></td> <td>w.</td> <td></td> <td>90</td> <td>2.09</td> <td></td> <td>1</td> <td>9.09</td> <td></td> <td>ω -</td> <td></td> <td>-7.9</td>	Fort Summit KOA 4	16		w.		90	2.09		1	9.09		ω -		-7.9
20 1 0.0 66 0.0 10 inactive 0.0 0.0 8 43 1 0.0 63.2 66 63.2 10 — 61.5 2.0 8 44 1 0.0 63.2 66 63.2 10 — 61.5 1.7 8 45 1 0.0 64.3 66 64.3 10 — 61.6 1.4 8 48 1 0.0 61.8 66 61.8 10 — 60.7 3.6 8 49 1 0.0 62.1 66 62.1 10 — 59.8 2.0 8 50 1 0.0 62.1 66 62.1 10 — 58.6 3.9 8 51 1 0.0 62.1 66 62.1 10 — 58.6 4.0 8 6 6 6 62.1 10	Ramada Pool	18				90	0.0	_	nactive	0.0		Φ.		0.0
43 1 0.0 63.2 66 63.2 10 — 61.2 2.0 8 44 4 1 0.0 63.2 66 63.2 10 — 61.5 1.7 8 1 45 1 0.0 64.3 66 64.3 10 — 61.6 1.4 8 1 46 1 0.0 64.3 66 64.3 10 — 60.7 3.6 8 2 48 1 0.0 61.8 66 61.8 10 — 60.7 3.6 8 3 49 1 0.0 61.8 66 61.8 10 — 59.8 2.0 8 4 1 0.0 62.1 66 62.1 10 — 58.6 4.0 8 5 1 0.0 62.3 66 62.3 10 — 58.7 3.6 8	Quality Pool	20				90	0.0		nactive	0.0		ω		0.0
44 1 0.0 63.2 66 63.2 10 — 61.5 1.7 8 1 45 1 0.0 64.3 66 64.3 10 — 61.6 1.4 8 1 46 1 0.0 64.3 66 64.3 10 — 60.7 3.6 8 1 48 1 0.0 61.8 66 61.8 10 — 60.7 3.6 8 1 0.0 61.8 66 61.8 10 — 62.0 -0.2 8 1 0.0 62.1 66 62.1 10 — 58.2 3.9 8 3 4 0.0 62.3 66 62.3 10 — 58.7 3.6 8	themeworld 1d	43				90	63.2	10	1	61.2		ω		0.9-
45 1 0.0 63.0 66 63.0 10 61.6 1.4 8 1 46 1 0.0 64.3 66 64.3 10 60.7 3.6 8 2 48 1 0.0 61.8 66 61.8 10 59.8 2.0 8 3 49 1 0.0 61.8 66 61.8 10 59.8 2.0 8 4 4 0.0 62.1 66 62.1 10 58.2 3.9 8 5 1 0.0 62.3 66 62.3 10 58.6 4.0 8 5 1 0.0 62.3 66 62.3 10 58.7 3.6 8	themeworld 1c	44				90	63.2	9	1	61.5		∞		-6.3
46 1 0.0 64.3 66 64.3 10 60.7 3.6 8 3 48 1 0.0 61.8 66 61.8 10 59.8 2.0 8 49 1 0.0 61.8 66 61.8 10 62.0 -0.2 8 5 1 0.0 62.1 66 62.1 10 58.2 3.9 8 5 1 0.0 62.3 66 62.3 10 58.6 4.0 8	themeworld 1b	45				90	63.0	9	1	61.6		ω		-6.6
48 1 0.0 61.8 66 61.8 10 59.8 2.0 8 1 49 1 0.0 61.8 66 61.8 10 62.0 -0.2 8 1 0.0 62.1 66 62.1 10 58.2 3.9 8 5 1 0.0 62.6 66 62.6 10 58.6 4.0 8 5 1 0.0 62.3 66 62.3 10 58.7 3.6 8	themeworld 1a	46				99	64.3	10	ı	60.7		۵		4.4
49 1 0.0 61.8 66 61.8 10 62.0 -0.2 8 1 50 1 0.0 62.1 66 62.1 10 58.2 3.9 8 5 51 1 0.0 62.6 66 62.6 10 58.6 4.0 8 5 1 0.0 62.3 66 62.3 10 58.7 3.6 8	themeworld 2b	48				99	61.8	10	ı	59.8		٣		-6.0
I 50 1 0.0 62.1 66 62.1 10 58.2 3.9 8 3 51 1 0.0 62.6 66 62.6 10 58.6 4.0 8 5 1 0.0 62.3 66 62.3 10 58.7 3.6 8	themeworld 2c	49				99	61.8	10		62.0		۵		-8.2
51 1 0.0 62.6 66 62.6 10 58.6 4.0 8 52 1 0.0 62.3 66 62.3 10 58.7 3.6 8	themeworld 2d	20				99	62.1	10	1	58.2		æ		4
52 1 0.0 62.3 66 62.3 10 58.7 3.6 8	themeworld 2e	51				99	62.6	9	1	58.6		ω		4 0
	themeworld 2f	52				96	62.3	10	ļ	58.7		۵		4.4

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themeworld 3b	53	_	0.0	61.1	99	61.1	10	I	58.4	2.7	ω	-5.3
themeworld 3c	25	-	0.0	9.09	99	9.09	10	I	58.1	2.5	œ	-5.5
themeworld 3d	55	-	0.0	60.2	99	60.2	10	114	59.4	8.0	ω	-7.2
themeworld 3e	26	-	0.0	60.2	99	60.2	10	I	57.8	2.4	œ	-5.6
themeworld 3f	25	-	0.0	60.4	99	60.4	10	ı	56.4	4.0	œ	4.0
themeworld 3g	28	-	0.0	64.8	99	64.8	10	Į.	58.7	6.1	œ	-1.9
themeworld 5a	29	-	0.0	9'.29	99	9'29	10	Snd Lvl	61.5	6.1	œ	-1.9
themeworld 5b	09	-	0.0	8.99	99	8.99	10	Snd Lvl	61.0	5.8	œ	-2.2
themeworld 5c	61	-	0.0	1.99	99	66.1	10	Snd Lvl	8.09	5.3	∞	-2.7
themeworld 5d	62	1	0.0	65.6	99	65.6	10		2.09	4.9	∞	-3.1
themeworld 4c	63	1	0.0	29.0	99	29.0	10	I	56.1	2.9	œ	-5.1
themeworld 4d	64	-	0.0	58.6	99	58.6	10	1	55.6	3.0	œ	-5.0
themeworld 4f	65	-	0.0	58.4	99	58.4	10	I	55.4	3.0	œ	-5.0
themeworld 4g	99	-	0.0	58.3	99	58.3	10	ı	55.5	2.8	ω	-5.2
themeworld 4h	29	-	0.0	58.4	99	58.4	10	1	55.5	2.9	۵	-5.1
themeworld 4i	89	-	0.0	59.5	99	59.5	10	1	56.2	3.3	∞	-4.7
themeworld 4e	69	1	0.0	58.4	99	58.4	10	1	55.9	2.5	∞	-5.5
themeworld 2g	71	-	0.0	65.4	99	65.4	9	I	61.5	3.9	œ	4.1
themeworld 2h	72	-	0.0	63.9	99	63.9	10	-	9.09	3.3	∞	-4.7
themeworld 2i	73	-	0.0	63.4	99	63.4	10	1	60.3	3.1	œ	4.9
themeworld 2j	74	-	0.0	63.2	99	63.2	10		60.2	3.0	∞	-5.0
themeworld 2k	75	-	0.0	63.2	99	63.2	10	1	60.1	3,1	∞	4.9
themeworld 2I	92	1	0.0	63.1	99	63.1	10	-	60.4	2.7	∞	-5.3
themeworld 2m	77	-	0.0	63.5	99	63.5	10		6.09	5.6	œ	-5.4
themeworld 2n	78	-	0.0	65.3	99	65.3	10	1	62.0	3.3	œ	4.7
themeworld 2a	79	-	0.0	64.8	99	64.8	10	1	59.9	4.9	œ	-3.1
themeworld 3a	80	-	0.0	65.0	99	65.0	10	1	59.6	5.4	œ	-2.6
themeworld 4b	81	-	0.0	59.3	99	59.3	10	17,200.7	57.1	2.2	80	-5.8
themeworld 4a	82	-	0.0	61.5	99	61.5	10	-	59.2	2.3	œ	-5.7
Themeworld RV Pool	9	-	0.0	64.9	99	64.9	10	•	59.5	5.4	œ	-2.6
Themeworld playground	11	-	0.0	70.4	99	70.4	10	Snd Lvl	0.89	2.4	œ	-5.6
Themeworld 1g	36	1	0.0	64.8	99	64.8	10		59.1	2.7	œ	-2.3
Themeworld 1e	37	-	0.0	64.4	99	64.4	10		59.1	5.3	œ	-2.7
themeworld 1i	39	-	0.0	68.1	99	68.1	10	Snd Lvl	63.5		80	-3.4
themeworld 1h	41	-	0.0	66.3	99	66.3	10	Snd Lvl	60.4	5.9	∞	-2.1
Dwelling Units	# DUs	Us Noise	e Reduction	tion						1.0		
		Σ		Avg Max	×							
		몆	æ	3 48								
All Selected		09	-0.2	3.2	6.1							
All Impacted		14	2.4	4.6	6.1							
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Stantec M Drauer				24 November 2015 TNM 2.5	ber 2015					
RESULTS: BARRIER DESCRIPTIONS PROJECT/CONTRACT: RUN: BARRIER DESIGN:	14 BtU P 14 Segm ROW 18	I4 BtU PD&E I4 Segment 5 Th ROW 18	I-4 BtU PD&E I-4 Segment 5 Themeworld ROW ROW 18	ROW						
Barriers										
Name	Type	Heights al	Type Heights along Barrier	_	Length	If Wall	If Berm			Cost
		Min	Avg	Мах		Area	Volume	Top Width	Run:Rise	
		#	#	#	Ħ	sq ft	cu yd	¥	ft:ft	\$
Theme ROW	>	18.00	18.00	18.00	1455	5 26184				785533
Retaining Wall	3	2.00	16.65	20.00	2768	46097				0
									Total Cost:	785533

RESULTS: BARRIER DESCRIPTIONS

neworld ROW No Barrier LAeq1h Calculated 68.1 68.2 68.2 68.1 68.2 68.2 68.1 68.2 68.1 67.3 67.3 67.3 67.3 67.3	Crit'n JBA	24 Novel TNM 2.5 Calculate	24 November 2015 TNM 2.5 Calculated with TNM 2.5	1 2.5	-		
LTS: SOUND LEVELS	Crit'n JBA	Increase over existin					
Fer Formal Spherics: 68 deg F, 50% RH Formal Fer	g No Barrier LAeq1h Calculated Crit'n dBA dBA 0.0 64.3	Increase over existin	Average page and a State hi	savement type	Average pavement type shall be used unless a State highway agency substantiates the use	- SS USe	
eworld 1f No. #DUS Existing Existing In Calculated LAeq1h LAeq1h LAeq1h eworld 1f 1 0.0 64.3 eworld 1f 4 1 0.0 68.1 eworld 1m 5 1 0.0 68.2 eworld 1m 5 1 0.0 68.1 eworld 1m 5 1 0.0 67.3 eworld 1m 5 1 0.0 67.3 eworld 1m 5 1 0.0 67.3 eworld 1m 8 1 0.0 67.3 eworld 1m 9 1 0.0 67.3 eworld 1p 9 1 0.0 67.3 eworld 1p 1 0.0 67.3 eworld 1c 1 0.0 67.3 eworld 1c 1 0	No Barrier LAeq1h Calculated Crit'n dBA dBA 0.0 64.3	Increase over existin	of a differ	ent type with	of a different type with approval of FHWA.		
eworld 1f eworld 1f eworld 1l eworld 1l eworld 1l eworld 1n eworld	LAeq1h Calculated Crit'n dBA dBA 0 64.3 0 68.1	Increase over existin		With Barrier			
dBA dBA 1 1 0.0 64.3 2 1 0.0 68.1 3 1 0.0 68.2 4 1 0.0 68.2 5 1 0.0 67.3 8 1 0.0 67.3 9 1 0.0 67.3 10 1 0.0 67.3 12 1 0.0 64.0 13 1 0.0 64.0 14 1 0.0 61.2 16 1 0.0 61.2 16 1 0.0 61.2 16 1 0.0 60.7 20 1 0.0 0.0 20 1 0.0 0.0 20 1 0.0 0.0 20 1 0.0 0.0 20 1 0.0 0.0 20 1 0.0 0.0 20 1 0.0 0.0 20 1 0.0 0.0 20 1 0.0 0.0 20 1 0.0 0.0 20 0 0.0 0.0 </th <th>Calculated Crit'n dBA dBA 0.0 64.3 0.0 68.1</th> <th></th> <th>g Type</th> <th>Calculated</th> <th>Noise Reduction</th> <th></th> <th></th>	Calculated Crit'n dBA dBA 0.0 64.3 0.0 68.1		g Type	Calculated	Noise Reduction		
1 1 0.0 64.3 2 1 0.0 68.1 3 1 0.0 68.2 4 1 0.0 68.2 5 1 0.0 68.2 7 1 0.0 67.8 9 1 0.0 67.3 10 1 0.0 67.3 12 1 0.0 64.0 13 1 0.0 64.0 14 1 0.0 61.2 16 1 0.0 61.8 16 1 0.0 61.8 18 1 0.0 60.7 20 1 0.0 60.7 20 1 0.0 0.0 20 1 0.0 0.0 20 1 0.0 0.0 20 2 0 0.0 20 63.2 43 1 0.0 63.2	dBA dBA 64.3 68.1	Calculated Crit'n Sub'l Inc	U	LAeq1h	Calculated Goal	Calculated minus Goal	ted
2 1 0.0 3 1 0.0 4 1 0.0 5 1 0.0 8 1 0.0 9 1 0.0 12 1 0.0 13 1 0.0 14 1 0.0 15 1 0.0 16 1 0.0 17 1 0.0 18 1 0.0 18 1 0.0 18 1 0.0 19 1 0.0 10	64.3	gp GB		dBA	dB dB	쁑	
2 1 0.0 4 1 0.0 5 1 0.0 7 1 0.0 8 1 0.0 9 1 0.0 10 1 0.0 13 1 0.0 14 1 0.0 15 1 0.0 16 1 0.0 18 1 0.0 20 1 0.0	68.1	66 64.3	10	909	3.5	80	4.5
3 1 0.0 5 1 0.0 7 1 0.0 8 1 0.0 9 1 0.0 10 1 0.0 12 1 0.0 13 1 0.0 15 1 0.0 16 1 0.0 18 1 0.0 20 1 0.0		89	10 Snd Lvl	62.9	5.	œ	-2.8
5 1 0.0 7 1 0.0 8 1 0.0 9 1 0.0 10 1 0.0 113 1 0.0 14 1 0.0 15 1 0.0 16 1 0.0 18 1 0.0 20 1 0.0 43 1 0.0	68.2	66 68.2	10 Snd Lvl	62.9	S	œ	-2.7
5 1 0.0 8 1 0.0 9 1 0.0 10 1 0.0 12 1 0.0 13 1 0.0 14 1 0.0 15 1 0.0 16 1 0.0 20 1 0.0 43 1 0.0	68.2	66 68.2	10 Snd Lvl		9 5.3	œ	-2.7
7 1 0.0 8 1 0.0 10 1 0.0 12 1 0.0 13 1 0.0 14 1 0.0 15 1 0.0 16 1 0.0 20 1 0.0 43 1 0.0	68.1	66 68.1	10 Snd LvI	62.7		œ	-2.6
8 1 0.0 10 1 0.0 12 1 0.0 13 1 0.0 14 1 0.0 15 1 0.0 16 1 0.0 18 1 0.0 20 1 0.0	67.8	66 67.8	10 Snd Lvl			œ	-2.8
10 1 0.0 12 1 0.0 13 1 0.0 14 1 0.0 15 1 0.0 16 1 0.0 20 1 0.0 43 1 0.0	2.79					ω	-2.7
10 1 0.0 12 1 0.0 14 1 0.0 15 1 0.0 16 1 0.0 20 1 0.0 43 1 0.0	67.3		10 Snd Lvl			œ	-3.2
12 1 0.0 13 1 0.0 14 1 0.0 15 1 0.0 16 1 0.0 20 1 0.0 43 1 0.0	67.9		10 Snd Lvl	62.7	7 5.2	œ	-2.8
13 1 0.0 14 1 0.0 15 1 0.0 18 1 0.0 20 1 0.0 43 1 0.0	63.7	66 63.7	10	63.5		ω	-7.8
14 1 0.0 15 1 0.0 16 1 0.0 20 1 0.0 43 1 0.0	64.0		10	63.6		œ	-7.6
15 1 0.0 16 1 0.0 20 1 0.0 43 1 0.0	61.2	66 61.2	10	6.09		œ	-7.7
16 1 0.0 6 20 20 43 1 0.0 6	61.8	66 61.8	10	61.7		∞	-7.9
18 1 0.0 20 1 0.0 43 1 0.0 6	2.09	66 60.7	10	9.09		ω	-7.9
20 1 0.0 43 1 0.0 6	0.0	0.0 99	10 inactive			œ	0.0
43 1 0.0	0.0		10 inactive			∞	0.0
	63.2		10	60.7		œ	-5.5
44 1 0.0	63.2		10	61.0		∞	-5.8
45	63.0	66 63.0	10	61.1	1.9	∞	6 .1
46 1 0.0	64.3		10	60.1		ω	-3.8
themeworld 2b 48 1 0.0 61.8	61.8	66 61.8	10	59.3		ω	-5.5
themeworld 2c 49 1 0.0 61.8	61.8	66 61.8	10	61.7		ω	-7.9
50 1 0.0	62.1		10	57.9		æ	-3.8
themeworld 2e 51 1 0.0 62.6	62.6	62.	10	58.3		æ	-3.7
themeworld 2f 52 1 0.0 62.3	62.3	66 62.3	10	58.3	.3 4.0	80	4.0

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themeworld 3b	53	_	0.0	61.1	99	61.1	9		28.0	3.1	œ	4.9
themeworld 3c	54	-	0.0	9.09	99	9.09	10	I	57.7	2.9	œ	-5.1
themeworld 3d	55	-	0.0	60.2	99	60.2	10	ı	59.2	1.0	œ	-7.0
themeworld 3e	26	-	0.0	60.2	99	60.2	10	·	57.5	2.7	œ	-5.3
themeworld 3f	57	-	0.0	60.4	99	60.4	10	1	56.2	4.2	œ	-3.8
themeworld 3g	28	-	0.0	8.48	99	64.8	10	ı	58.2	9.9	œ	4.1-
themeworld 5a	59	-	0.0	9.79	99	9.79	10	Snd Lvl	61.0	9.9	œ	4.1-
themeworld 5b	09	-	0.0	8.99	99	8.99	10	Snd Lvl	9.09	6.2	œ	-1.8
themeworld 5c	61	-	0.0	66.1	99	66.1	10	Snd Lvl	60.4	5.7	œ	-2.3
themeworld 5d	62	-	0.0	65.6	99	65.6	10	į	60.4	5,2	œ	-2.8
themeworld 4c	63	-	0.0	29.0	99	59.0	10	1	55.7	3.3	œ	-4.7
themeworld 4d	64	-	0.0	58.6	99	58.6	10	1	55.3	3.3	∞	7.4-
themeworld 4f	65	-	0.0	58.4	99	58.4	10	1	55.2	3.2	80	4.8
themeworld 4g	99	-	0.0	58.3	99	58.3	10	1	55.3	3.0	æ	-5.0
themeworld 4h	29	-	0.0	58.4	99	58.4	10	ı	55.3	3.1	æ	4.9
themeworld 4i	89	_	0.0	59.5	99	59.5	10	1	56.0	3.5	œ	-4.5
themeworld 4e	69	-	0.0	58.4	99	58.4	10	1	55.7	2,7	ω	-5.3
themeworld 2g	71	-	0.0	65.4	99	65.4	10	1	60.7	4.7	œ	-3.3
themeworld 2h	72	-	0.0	63.9	99	63.9	10	1	59.9	4.0	80	-4.0
themeworld 2i	73	-	0.0	63.4	99	63.4	10	1	59.6	3.8	œ	-4.2
themeworld 2j	74	-	0.0	63.2	99	63.2	10	77	9.69	3.6	80	4.4
themeworld 2k	75	-	0.0	63.2	99	63.2	10	1	59.6	3.6	80	4.4
themeworld 2I	92	-	0.0	63.1	99	63.1	10	1	59.9	3.2	œ	4.8
themeworld 2m	77	-	0.0	63.5	99	63.5	10	1	60.5	3.0	œ	-5.0
themeworld 2n	78	-	0.0	65.3	99	65.3	10		61.5	3.8	œ	-4.2
themeworld 2a	62	-	0.0	64.8	99	64.8	10	0.000	59.4	5.4	∞	-2.6
themeworld 3a	80	-	0.0	65.0	99	65.0	10		59.2	5.8	00	-2.2
themeworld 4b	81	-	0.0	59.3	99	59.3	10	15 CO	56.8	2.5	œ	-5.5
themeworld 4a	82	-	0.0	61.5	99	61.5	10	•	58.9	5.6	œ	-5.4
Themeworld RV Pool	9	-	0.0	64.9	99	64.9	10	ľ	59.1	5.8	œ	-2.2
Themeworld playground	11	-	0.0	70.4	99	70.4	10	Snd Lvl	2.79	2.7	œ	-5.3
Themeworld 1g	36	-	0.0	64.8	99	64.8	10	1	28.7	6.1	œ	1 . 9.
Themeworld 1e	37	-	0.0	64.4	99	64.4	10	-	28.7	5.7	∞	-2.3
themeworld 1i	39	1	0.0	68.1	99	68.1	10	Snd Lvl	62.5	5.6	œ	-2.4
themeworld 1h	41	=	0.0	66.3	99	66.3	10	Snd Lvl	59.9	6.4	∞	-1.6
Dwelling Units	#	# DUs Noise	e Reduction	uo								
,		Ξ	Avg		Max							
		쁑	쁑	쁑								
All Selected		09	0.0	3.6	9.9							
All impacted		14	2.7	5.3	9.9							
All 4th at many 1 MID Const		c	0	c	0							

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Stantec M Drauer				24 November 2015 TNM 2.5	ber 2015					
RESULTS: BARRIER DESCRIPTIONS PROJECT/CONTRACT: RUN: BARRIER DESIGN:	1-4 BtU P 1-4 Segm ROW 20	I-4 BtU PD&E I-4 Segment 5 Themeworld ROW ROW 20	emeworld	ROW						1
Barriers										
Name	Type	Type Heights along Barrier	ong Barrie	L	Length	If Wall	If Berm			Cost
		Z C	Avg	Max		Area	Volume	Top Width	Run:Rise	
		#	#	#	#	sq ft	cu yd	¥	ft:ft	ક
Theme ROW	>	20.00	20.00	20.00	1455	29094				872814
Retaining Wall	3	2.00	16.65	20.00	2768	46097				0
									Total Cost:	872814

14 BtU PD&E

RESULTS: BARRIER DESCRIPTIONS

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RESULTS: SOUND LEVELS PROJECT/CONTRACT: RUN: BARRIER DESIGN:							Fΰ	Calculated	TNM 2.5 Calculated with TNM 2.5	2.5		_	_	
	14 E ROV	I-4 BtU PD&E I-4 Segment 5 TI ROW 20	E	hemeworld ROW	>				Average page second	Average pavement type shall be used unless a State highway agency substantiates the use	shall be use	ed unless	o o	
ATMOSPHERICS:	189	68 deg F, 50%	0% RH						of a differ	of a different type with approval of FHWA	approval of I	FHWA.		
Receiver	No. #DUS		Existina	No Barrier						With Barrier				
				LAeq1h		Increase	Increase over existing		Type	Calculated	Noise Reduction	ction		
				Calculated	Crit'n	Calculated	D W	ن	Impact	LAeq1h	Calculated	Goal	Calculated minus Goal	ated
		dBA		dBA	dBA	8	ВВ	æ		dBA	æ	В	ВB	
Themeworld 1f	-	-	0.0	64.3		99	64.3	10	1	60.5	5 3.	œί	8	-4.2
Themeworld 1i	2	-	0.0			99	68.1	10	Snd Lvl	62.0	9	-	æ	-1.9
Themeworld 1k	ო	-	0.0	68.2		99	68.2	10				6.2	ω	1 .
Themeworld 11	4	-	0.0	68.2		99	68.2	10	Snd Lvl			6.2	œ	-1.8
Themeworld 1m	2	-	0.0			99	68.1	10				6.2	œ	-1.8
Themeworld 1n	7	-	0.0			99	8.79	10				o.	œ	-2.0
Themeworld 10	80	-	0.0			99	2.79	10				0.0	œ	-2.0
Themeworld 1p	6	-	0.0			99	67.3	10		61.8		ιυ	œ	-2.5
Themeworld 1q	10	-	0.0			99	6.79	9	Snd Lvl	62.1		5.8	ω ,	-2.2
Fort Summit KOA pool	12	-	0.0			99	63.7	9	1	63.5		0.2	ω	-7.8
Fort Summit KOA 1	13	-	0.0			99	64.0	10	l	63.6		0.4	ω (-7.6
Fort Summit KOA 2	14	-	0.0			99	61.2	9	ŧ	6.09		0.3	∞ (-7.7
Fort Summit KOA 3	15	-	0.0			99	61.8	10	i	61.6		0.2	∞	-7.8
Fort Summit KOA 4	16	-	0.0	e e		99	60.7	9		9.09		0.1	∞ (-7.9
Ramada Pool	18	-	0.0			99	0.0	9				0.0	∞	0.0
Quality Pool	20	-	0.0			99	0.0	9	inactive			0.0	∞ .	0.0
themeworld 1d	43	-	0.0			99	63.2	10	1	60.2		3.0	œ	-5.0
themeworld 1c	44	-	0.0			99	63.2	9	1	9.09		2.6	œ	-5.4
themeworld 1b	45	-	0.0			99	63.0	10	i	9.09		2.4	œ	-5.6
themeworld 1a	46	-	0.0	64.3		99	64.3	10	1	59.6		4.7	œ	-3.3
themeworld 2b	48	-	0.0	61.8		99	8.19	10	1	58.9		6	80	-5.1
themeworld 2c	49	-	0.0	61.8		99	61.8	10	1	61.2		9.0	œ	-7.4
themeworld 2d	20	-	0.0	62.1		99	62.1	10	i	57.6		5	œ	-3.5
themeworld 2e	51	-	0.0	62		99	97.9	10	1	57.9		4.7	œ	6.
themeworld 2f	52	-	0.0	62.	3	99	62.3	10	1	57.9		4.4	œ	-3.6

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themeworld 3b	53	1 0.		61.1	99	61.1	10	1	9.75		œ	4.5
themeworld 3c	54	1 0.0		9.6	99	9.09	10	1	57.5	3.1	œ	4.9
themeworld 3d	55	1 0.		60.2	99	60.2	10	ı	29.0	1.2	œ	9.9
themeworld 3e	26	1 0.		60.2	99	60.2	10	I	57.3	2.9	∞	-5.1
themeworld 3f	57	1.0		60.4	99	60.4	10	1	55.9	4.5	œ	-3.5
themeworld 3g	28	10.	0	64.8	99	64.8	10	1	57.8	7.0	ω	-1.0
themeworld 5a	29	1 0.		9.79	99	67.6	10	Snd Lvl	9.09	7.0	80	-1.0
themeworld 5b	09	1 0.	.0 66,	3.8	99	8.99	10	Snd Lvl	60.2	9.9	æ	4.1-
themeworld 5c	61	10.		1.99	99	66.1	10	Snd Lvl	0.09	6.1	æ	-1,9
themeworld 5d	62	1 0.0		65.6	99	65.6	10	74 94 84	60.1	5.5	œ	-2.5
themeworld 4c	63	1 0.		59.0	99	29.0	10	1	55,4	3.6	œ	4.4
themeworld 4d	99	1 0.0		58.6	99	58.6	10		55.0	3.6	80	4.4
themeworld 4f	92	1 0.		58.4	99	58.4	10	-	55.0	3.4	80	4.6
themeworld 4g	99	1 0.		58.3	99	58.3	10	-	55.1	3.2	œ	4.8
themeworld 4h	29	1 0.		58.4	99	58.4	10	-	55.0	3.4	œ	4.6
themeworld 4i	89	1		59.5	99	59.5	10	1	55.7	3.8	œ	4.2
themeworld 4e	69	1		58.4	99	58.4	10	1	55.5	2.9	œ	-5.1
themeworld 2g	71	1 0.0		65.4	99	65.4	10	1	60.1	5.3	∞	-2.7
themeworld 2h	72	1		63.9	99	63.9	10		59.3	4.6	∞	-3.4
themeworld 2i	73	1		63.4	99	63.4	10		59.1	4.3	œ	-3.7
themeworld 2j	74	1		3.2	99	63.2	10		59.1	4.1	ထ	-3.9
themeworld 2k	75	10.0		63.2	99	63.2	10		59.1	4.1	œ	-3.9
themeworld 2l	9/	1		63.1	99	63.1	10	i.	59.5	3.6	œ	4.4
themeworld 2m	22	1		63.5	99	63.5	10	ı	60.1	3.4	œ	-4.6
themeworld 2n	78	10.0		65.3	99	65.3	10	1	61.2	4.1	80	-3.9
themeworld 2a	62	0.		64.8	99	64.8	10	I	29.0	5.8	œ	-2.2
themeworld 3a	80	1 0.		65.0	99	65.0	10		58.8	6.2	80	-1.8
themeworld 4b	8	1 0.0		59.3	99	59.3	10	*	56.5	2.8	œ	-5.2
themeworld 4a	82	1		61.5	99	61.5	10	1	58.6	2.9	œ	-5.1
Themeworld RV Pool	9	1		64.9	99	64.9	10	1	58.7		80	-1.8
Themeworld playground	=	1 0.0		70.4	99	70.4	10	Snd Lvl	67.5		80	-5.1
Themeworld 1g	36	1 0.0		64.8	99	64.8	10	1	58.3	6.5	œ	-1.5
Themeworld 1e	37	1		64.4	99	64.4	10	1	58.3		∞	-1.9
themeworld 1i	39	1 0.0		68.1	99	68.1	10	Snd Lvl	61.7	6.4	œ	-1.6
themeworld 1h	41	1		66.3	99	66.3	10	Snd Lvi	59.5	8.9	œ	-1.2
Dwelling Units	# DOS	Noise	Reduction									
			Avg	Max								
		용	쁑	æ								
All Selected		0 09		4.0	7.0							
All Impacted		14 2	2.9	0.9	2.0							
All that meet NR Goal		0		0.0	0.0							

RESULTS: SOUND LEVELS

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Stantec M Drauer				24 November 2015 TNM 2.5	ber 2015					
RESULTS: BARRIER DESCRIPTIONS PROJECT/CONTRACT: RUN: BARRIER DESIGN:	I-4 BtU PI I-4 Segme ROW 22	I4 BtU PD&E I4 Segment 5 Th ROW 22	D&E ent 5 Themeworld ROW	ROW						
Barriers										
Name	Type	Type Heights along Barrier	ong Barrie	_	Length	If Wall	If Berm			Cost
	60	Min	Avg	Мах		Area	Volume	Top Width	Run:Rise	
		#	ff	#	∉	sq ft	cu yd	¥	ft:ft	69
Theme ROW	>	22.00	22.00	22.00	1455	32003				960096
Retaining Wall	>	2.00	16.65	20.00	2768	46097				0
									Total Cost:	960096 :

RESULTS: BARRIER DESCRIPTIONS

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Stantec M Drauer RESULTS: SOUND LEVELS PROJECT/CONTRACT: RUN: BARRIER DESIGN: ATMOSPHERICS: Receiver Name						24	24 November 2015	oer 2015					
LTS: SOUND LEVELS ECT/CONTRACT: IER DESIGN: SPHERICS:						F 6	TNM 2.5	177	L.				
SPHERICS:	14 B 14 S ROV	I-4 BtU PD&E I-4 Segment 5 Th ROW 22	hemeworld ROW	M C		5		Calculated with Thim 2.5 Average pave	avement type	Average pavement type shall be used unless	ed unless	_	
/er	98	68 deg F, 50% RH	_					of a differ	ent type with	of a different type with approval of FHWA	FHWA.		
	No. #DUs	s Existina	No Barrier						With Barrier				
			LAeq1h		Increase	Increase over existing		Type	Calculated	Noise Reduction	ction		
			Calculated	Crit'n	Calculated		Crit'n Sub'l Inc	Impact	LAeq1h	Calculated	Goal	Calculated minus Goal	ated
		dBA	dBA	dBA	æ	ВB	æ		dBA	ф	ф	В	
Themeworld 1f	-	1 0.	.0 64.	6	99	64.3	10	1	90.0	3.4	0.	00	4.0
Themeworld 1j	2	1 0.	0.0	68.1 (99	68.1	10	Snd Lvl	61.3		σο.	80	-1.2
Themeworld 1k	က	1			99	68.2	10		61.3		6.9	8	<u>†</u>
Themeworld 11	4	1 0.			99	68.2	10		61.2		7.0	80	-1.0
Themeworld 1m	ĸ	1 0.	0.0		99	68.1	10		61.1		7.0	æ	-1.0
Themeworld 1n	7	1 0.		67.8	99	8.79	10		61.1		6.7	80	-1.3
Themeworld 10	œ	1 0.			99	2'.29	9		61.0		6.7	8	-1.3
Themeworld 1p	o	1 0.			99	67.3	10		61.2		6.1	8	6.1-
Themeworld 1q	10	1 0			99	6.79	10	Snd Lvl	61.6		6.3	œ	-1.7
Fort Summit KOA pool	12				99	63.7	10	1	63.5		0.2	8	-7.8
Fort Summit KOA 1	13	1 0			99	64.0	10	l	63.6		0.4	ဆ	-7.6
Fort Summit KOA 2	14	1			99	61.2	10	1	8.09		0.4	æ	-7.6
Fort Summit KOA 3	15	1 0			99	61.8	10	1	61.6		0.2	∞	-7.8
Fort Summit KOA 4	16	1	u		99	2.09	10	I	9.09		0.1	æ	-7.9
Ramada Pool	18	1			99	0.0	9	inactive	0.0		0.0	80	0.0
Quality Pool	20	1 0			99	0.0	10	inactive	0.0		0.0	00	0.0
themeworld 1d	43	1			99	63.2	10	i	59.8		3.4	00	4.6
themeworld 1c	44	1 0		63.2	99	63.2	10	i	60.1		3.1	00	4.9
themeworld 1b	45	1		63.0	99	63.0	10	i	60.1		2.9	8	-5.1
themeworld 1a	46	1		64.3	99	64.3	10	1	59.2		5.1	00	-2.9
themeworld 2b	48	1 0	0.0	61.8	99	61.8	10	1	58.5		3.3	œ	-4.7
themeworld 2c	49	1 0		61.8	99	61.8	10	i	6.09		6.0	00	-7.1
themeworld 2d	20	1		_	99	62.1	10	i	57.3		4.8	00	-3.2
themeworld 2e	51	1 0		9	99	62.6	10	I	97.6		5.0	œ	-3.0
themeworld 2f	25	1 0	0.0 62.	3	99	62.3	10	I	9.76		4.7	œ	-3.3

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themeworld 3b	23	1	0.0	61.1	99	61.1	10	I	5/.3	3.8	œ	-4.2
themeworld 3c	54	-	0.0	9.09	99	9.09	10	1	57.2	3.4	œ	-4.6
themeworld 3d	55	-	0.0	60.2	99	60.2	10	ı	58.3	1.9	œ	-6.1
themeworld 3e	26	-	0.0	60.2	99	60.2	10		57.1	3.1	œ	-4.9
themeworld 3f	22	-	0.0	60.4	99	60.4	10	ı	55.7	4.7	œ	-3.3
themeworld 3g	28	_	0.0	8.48	99	64.8	10	ı	57.4	7.4	œ	9.0-
themeworld 5a	69	-	0.0	9.79	99	9'29	10	Snd Lvl	60.2	7.4	œ	9.0-
themeworld 5b	09	_	0.0	8.99	99	8.99	10	Snd Lvi	59.9	6.9	œ	-1.1
themeworld 5c	61	-	0.0	66.1	99	66.1	10	Snd Lvl	59.7	6.4	œ	-1.6
themeworld 5d	62	_	0.0	65.6	99	65.6	10	-	59.8	5.8	∞	-2.2
themeworld 4c	63	-	0.0	29.0	99	59.0	10		55.2	3.8	æ	-4.2
themeworld 4d	49	-	0.0	58.6	99	58.6	10	ı	54.8	3.8	80	-4.2
themeworld 4f	92	-	0.0	58.4	99	58.4	10	ı	54.8	3.6	œ	4.4
themeworld 4g	99	-	0.0	58.3	99	58.3	10	1	54.9	3.4	80	4.6
themeworld 4h	29	-	0.0	58.4	99	58.4	10	1	54.8	3.6	œ	4.4
themeworld 4i	89	-	0.0	59.5	99	59.5	10	1	55.5	4.0	œ	4.0
themeworld 4e	69	-	0.0	58.4	99	58.4	10	ı	55.3	3.1	80	-4.9
themeworld 2g	7.1	-	0.0	65.4	99	65.4	10	1	9.69	5.8	80	-2.2
themeworld 2h	72	-	0.0	63.9	99	63.9	10	•	58.9	5.0	80	-3.0
themeworld 2i	73	-	0.0	63.4	99	63.4	10	1	28.7	4.7	ထ	-3.3
themeworld 2j	74	-	0.0	63.2	99	63.2	10	1	58.6	4.6	60	-3.4
themeworld 2k	7.5	~	0.0	63.2	99	63.2	9	1	58.6	4.6	80	-3.4
themeworld 21	92	-	0.0	63.1	99	63.1	10	1	59.1	4.0	8	4.0
themeworld 2m	77	-	0.0	63.5	99	63.5	10	1	26.7	3.8	œ	-4.2
themeworld 2n	78	-	0.0	65.3	99	65.3	10	ĺ	6.09	4.4	œ	-3.6
themeworld 2a	62	-	0.0	64.8	99	64.8	10		58.6	6.2	œ	-1.8
themeworld 3a	80	-	0.0	0.59	99	65.0	10	l	58.4	9.9	œ	4.1-
themeworld 4b	81	-	0.0	59.3	99	59.3	10		56.3	3.0	8	-5.0
themeworld 4a	82	-	0.0	61.5	99	61.5	10	i	58.3	3.2	œ	4.8
Themeworld RV Pool	9	-	0.0	64.9	99	64.9	10	t	58.5	6.4	80	-1.6
Themeworld playground	11	-	0.0	70.4	99	70.4	10	Snd Lvl	67.3	3.1	8	4.9
Themeworld 1g	36	_	0.0	64.8	99	64.8	10	***	57.9	6.9	00	-1:1
Themeworld 1e	37	-	0.0	64.4	99	64.4	10		58.0	6.4	œ	-1.6
themeworld 1i	39	_	0.0	68.1	99	68.1	10	Snd Lvl	61.0	7.1	œ	-0.9
themeworld 1h	41	1	0.0	66.3	99	66.3	10	Snd Lvl	59.0	7.3	œ	-0.7
Dwelling Units	# DNs	Js Noise	Reduction	Б								
		Min	Avg) Max	×							
		ВB	ВB	8								
All Selected		09	0.0	4.4	7.4							
All Impacted		14	3.1	6.5	7.4							
All that most NP Goal		c	0	00	0							

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RESULTS: BARRIER DESCRIPTIONS PROJECT/CONTRACT: RUN: BARRIER DESIGN:	I-4 BtU PD I-4 Segmer COMBO22	I4 BtU PD&E I4 Segment 5 ROW + Shoulder COMBO22	yk + Sh	oulder							
Barriers											
Name	Type	Heights along Barrier	long Bar	rier		Length	If Wall	If Berm			Cost
	8	Ē	Avg	Max			Area	Volume	Top Width	Run:Rise	
		₽	Ħ	Ħ	#		sq ft	cu yd	U	ft:ft	€
ROW Themeworld	3	22.00		22.00	22.00	828	18211				546317
14' shoulder	3	14.00		14.00	14.00	992	13892	01			416761
Retaining Wall	≥	2.00		16.65	20.00	2768	46097	_			0
										Total Cost:	t: 963078

RESULTS: BARRIER DESCRIPTIONS

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14 BtU PD&E 14 BtU PD&E 15 Segment 5 RC 15 Segment 5 RC 16 Segment 5 RC 17 Segment 5 RC 18 Segment 5 RC 19 Segment 6 RC 10 Segment 6 RC 10 Segment 6 RC 10 Segment 7 RC 14 Segment 5 RC 15 Segment 6 RC 15 Segment 6 RC 16 Segment 6 RC 18 Segment 7	5 ROW + Shoulder 10% RH 10% RH 11mg No Barrier 11mg No Barrier 12mg No Barrier 13mg No Barrier 14mg No Barrier 15mg N	Crit'n	Increase ov Calculated	Increase over existing Calculated Crit'n Sub'l Inc BB dB 64.1 10 68.0 10	Average pave a State highw of a different in wisting Type Calcrifn Impact LASub'l Inc 10	avement type ghway agency ent type with a With Barrier Calculated LAeq1h dBA	Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA. With Barrier Type Calculated Noise Reduction Impact LAeq1h Calculated Goal above the calculated Goal ABA AB AB Snd Lvi 61.0 7.0 Snd Lvi 60.8 7.3		ted -2.4
ver No. #DUS eworld 1f 1 1 eworld 1j 2 1 eworld 1k 3 1 eworld 1l 4 1 eworld 1m 5 1 eworld 1n 5 1 eworld 1n 5 1 eworld 1n 5 1 eworld 1n 6 1 eworld 1n 7 1	D 0.00000000000000000000000000000000000	Crit'n dBA 4.1 8.0 8.1 8.0 8			of a difference of a differenc	with Barrier Calculated LAeq1h dBA	Anion approval of FHWA. Noise Reduction Calculated Goal dB	ω ω	ted -2.4
wer No. #DUS eworld 1f 1 1 1 eworld 1j 2 1 1 eworld 1l 3 1 4 1 eworld 1l 5 1 4 1 eworld 1n 5 1 1 eworld 1n 6 1 1 eworld 1n 7 1 1	6.0 0.0 0.0 0.0 0.0	dBA dBA dBA 8.1			구 <u>트</u>		Noise Reduc Calculated dB 5.6	ω ω	ted -2.4
eworld 1f eworld 1j eworld 1l eworld 1l eworld 1m eworld 1m eworld 1n eworld 1n eworld 1n eworld 1n eworld 1n eworld 1o eworld 1o	0.0	dBA dBA dBA 8.1			<u> </u>		Noise Reduc Calculated dB 5.6	αο αο	ted -2.4
Pool	0.0000000000000000000000000000000000000	Crit'n dBA 6.0 5.0			<u>E</u>		Calculated dB 5.6 7.0 7.3	ω ω	ted -2.4
Pool	0.0	dBA	B	8			dB 5.6 7.0 7.3		-2.4
Pool 6 5 4 4 7 7 8 8	0 0 0 0 0					58.5		ω ω	-2.4
Pool 6 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	0.0 0 0 0				l	61.0		œ	
Pool 6 7 7 8 8	0.0				Snd Lvl				-1.0
Pool 6 7 7 8	0.0				Snd Lvl	8.09		œ	-0,7
Pool 7 8 8 8	0.0			68.0 10	Snd Lvl	8.09		Φ	9.0-
Pool 6	C	68.0	9 99		Snd Lvl	2.09		∞	-0.7
7 8	o.	65.0				0.63		ω	-2.0
Φ	0.0					9.09		ω	-0.7
	0.0							ω (o
Themeworld 1p 9 1	0.0							∞ (4.1-
Themeworld 1q 10 1	0.0					61.3		o	£. 1
yground 11	0.0				Sud Lvi	67.3		∞ (, Ç
Fort Summit KOA pool	0.0					63.6		ω (-7.8
Fort Summit KOA 1	0.0					63.6		x (-7.6
41	0.0			61.3 10	1	60.8	2 C	xo o	C.7-
Fort Summit KOA 3	D C	8. LO	99	61.9		0.10		o 00	-7.8
	0.0				inactive	0.0		œ	0.0
	0.0		99			0.0		ω	0.0
36	0.0					58.2	2 6.5	80	-1.5
	0.0		99	64.6 10		58.4		∞	-1.8
	0.0	67.9	99	67.9	Snd Lvl	60.7		∞	9. 9.
themeworld 1h 41	0.0	9.99	99	66.6 10	Snd Lvl			œ	4.0-
themeworld 1d 43 1	0.0	63.3	99			6.09		ω	5.6
themeworld 1c 44 1	0.0	63.3			1	60.7	7 2.6	œ	-5.4
themeworld 1b 45	0.0	63.1	99	63.1 10	1	60.4		80	5.3

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thomospin 10	NA.	_	0	V 19	99	64.4	10	1	20 0	4.5	œ	.3.5
tnemeworld Ta	4))	4.40	00	† 5	2		6.60	? r		5
themeworld 2b	48	_	0.0	62.0	99	62.0	10	ı	59.8	2.2	œ	-5.8
themeworld 2c	49	_	0.0	62.0	99	62.0	10	1	9.69	2.4	œ	-5.6
themeworld 2d	20		0.0	62.1	99	62.1	10	ı	57.9	4.2	œ	-3.8
themeworld 2e	51		0.0	62.6	99	62.6	10	1	58.1	4.5	œ	-3,5
themeworld 2f	52	_	0.0	62.4	99	62.4	10	1	67.9	4.5	œ	-3.5
themeworld 3b	53	L	0.0	61.0	99	61.0	10	ı	58.4	5.6	∞	-5.4
themeworld 3c	24	L	0.0	60.5	99	60.5	10	ı	58.0	2.5	œ	-5.5
themeworld 3d	55	_	0.0	60.2	99	60.2	10	1	58.8	1.4	œ	9.9-
themeworld 3e	56	Ļ	0.0	60.1	99	60.1	10	-	57.2	5.9	œ	5.1
themeworld 3f	57	_	0.0	60.4	99	60.4	9	1	56.1	4.3	œ	-3.7
themeworld 3g	28	L	0.0	64.8	99	64.8	10	-	57.5	7.3	œ	-0.7
themeworld 5a	29	L	0.0	97.9	99	9.79	10	Snd Lvl	61.6	0.9	œ	-2.0
themeworld 5b	09	_	0.0	6.99	99	6.99	10	Snd Lvl	61.0	5.9	∞	-2.1
themeworld 5c	61		0.0	66.3	99	66.3	10	Snd Lvl	60.7	5.6	œ	-2.4
themeworld 5d	62		0.0	929	99	65.6	10	I	60.4	5.2	æ	-2.8
themeworld 4c	63	_	0.0	58.8	99	58.8	10	1	56.0	2.8	80	-5.2
themeworld 4d	64	_	0.0	58.5	99	58.5	10	1	55.4	3.1	ھ	4.9
themeworld 4f	65	-	0.0	58.4	99	58.4	10	31	55.2	3.2	œ	4.8
themeworld 4g	99	_	0.0	58.4	99	58.4	10		55.2	3.2	œ	4.8
themeworld 4h	29	-	0.0	58.4	99	58.4	10	1	55.0	3,4	œ	4.6
themeworld 4i	89	_	0.0	29.7	99	2.69	10	ı	55.7	4.0	æ	4.0
themeworld 4e	69	-	0.0	58.3	99	58.3	10	1	55.0	3.3	œ	-4.7
themeworld 2g	71	-	0.0	66.5	99	66.5	10	Snd Lvl	8'09	5.7	œ	-2.3
themeworld 2h	72	_	0.0	65.0	99	65.0	10		0.09	5.0	80	-3.0
themeworld 2i	73	_	0.0	9.49	99	64.6	10		59.5	5.1	œ	-2.9
themeworld 2j	74	_	0.0	64.2	99	64.2	10	1	59.5	4.7	ω	-3.3
themeworld 2k	75	_	0.0	64.2	99	64.2	10	1	9.69	4.6	œ	-3.4
themeworld 2I	92	_	0.0	64.3	99	64.3	10		9.69	4.7	œ	-3.3
themeworld 2m	77	-	0.0	64.9	99	64.9	10	10000	59.8	5.1	œ	-2.9
themeworld 2n	78	_	0.0	66.2	99	66.2	10	Snd Lvl	6.09	5.3	œ	-2.7
themeworld 2a	62	_	0.0	65.2	99	65.2	10	Catal	59.8	5.4	œ	-2.6
themeworld 3a	80	_	0.0	63.5	99		10		59.4	4 .	œ	-3.9
themeworld 4b	8	-	0.0	59.5	99	59.5	10	I	9.95	2.9	œ	-5.1
themeworld 4a	82	1	0.0	63.4	99	63.4	10	ł	59.1	4.3	œ	-3.7
Dwelling Units	# DOS	Noise	Reduction	_								
		Δin	Avg	Max	×							
		ф	8	쁑								
All Selected		09	0.0	4.2	7.6							
All Impacted		16	3.0	6.4	9.2							
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Stantec M Drauer				23 TN	23 Novemb TNM 2.5	23 November 2015 TNM 2.5					
RESULTS: BARRIER DESCRIPTIONS PROJECT/CONTRACT: RUN: BARRIER DESIGN:	I-4 BtU PD I-4 Segme COMBO20	I4 BtU PD&E I4 Segment 5 ROW + Shoulder COMBO20	OW + Sh	oulder							
Barriers											
Name	Type	Type Heights along Barrier	along Bar	rier		Length	If Wall	If Berm			Cost
#S	§	Zi Ci	Avg	Мах	×		Area	Volume	Top Width	Run:Rise	
		Ħ	Œ	#		Ħ	sq ft	cu yd	#	ft:ft	ь
ROW Themeworld	3	20.00		20.00	20.00	828	16555				496652
14' shoulder	3	14.00		14.00	14.00	992	13892				416761
Retaining Wall	>	2.00		16.65	20.00	2768	46097				
										Total Cost:	913412

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Stantec M Drauer							2 ± 2	23 November 2015 TNM 2.5 Calculated with TN	23 November 2015 TNM 2.5 Calculated with TNM 2.5	12.5		_	_	
RESULTS: SOUND LEVELS PROJECT/CONTRACT: RUN: BARRIER DESIGN:	4. T	I-4 BtU PD&E I-4 Segment 5 R COMBO20		OW + Shoulder					Average a State hi	Average pavement type shall be used unless State highway agency substantiates the use	oe shall b	s used unles	- ν ω	
ATMOSPHERICS:	989	68 deg F, 50% RH	% RH						of a diffe	of a different type with approval of FHWA	approva	of FHWA.		
Receiver	SIIC#	e Existing		No Barrier						With Barrier	<u>_</u>			
				LAeq1h		Increase over existing	over ex	П	Type	Calculated		Noise Reduction		
				Calculated	Crit'n	Calculated	ō ō	U	Impact	LAeq1h	Calculated	ated Goal	Calcula minus Goal	Calculated minus Goal
		dBA	0	dBA	dBA	8	B	m		dBA	ф	g B	В	
Themaworld 1f	_	-	0.0	64.1		99	64.1	10	1	28	2.1	5.4	80	-2.6
Themeworld 1i	2	-	0.0	68.0		99	68.0	10	Snd Lvl		61.5	6.5	80	-1.5
Themeworld 1k	က	-	0.0	68.1		99	68.1	10	Snd Lvl		61.4	6.7	œ	-1.3
Themeworld 11	4	-	0.0	0.89		99	0.89	10	Snd Lvl		61.4	9.9	80	1.4
Themeworld 1m	2	-	0.0	68.0		99	0.89	10	Snd Lvl		61.3	6.7	ω	1.
Themeworld RV Pool	9	-	0.0	65.0		99	0.59	10			59.1	5.9	ω	-2.1
Themeworld 1n	7	-	0.0	6.79		99	67.9	9			61.2	6.7	100	-1.3
Themeworld 10	ω	-	0.0	67.7		99	2'.29	19			61.1	9.9	· ·	4. (
Themeworld 1p	6	-	0.0	67.5		99	67.5	10			61.3	6.2	20	2.5
Themeworld 1q	10	-	0.0	68.0		99	0.89	10			61.7	6.3	ω (-1.7
Themeworld playground	11	-	0.0	70.3		99	70.3	10	Sud LvI		67.4	2.9	∞ (5.1
Fort Summit KOA pool	12	-	0.0	63.8		99	63.8	10	1	39	63.6	0.2	∞ (-7.8
Fort Summit KOA 1	13	-	0.0	64.0		99	64.0	10	l	<u>છ</u>	63.6	4.0	00	9.7-
Fort Summit KOA 2	14	-	0.0	61.3		99	61.3	10	1	90	8.09	0.5	ω (-7.5
Fort Summit KOA 3	15	-	0.0	61.9		99	61.9	10	1	9	9.19	0.3	×	1.1-
Fort Summit KOA 4	16	-	0.0	2.09		99	2.09	9			60.5	0.2	∞	-7.8
Ramada Pool	8	-	0.0	0.0		99	0.0	10			0.0	0.0	œ	0.0
Quality Pool	20	-	0.0	0.0		99	0.0	10	inactive		0.0	0.0	ω .	0.0
Themeworld 1g	36	-	0.0	64.7		99	64.7	10	1	35	58.3	6.4	œ	-1.6
Themeworld 1e	37	-	0.0	64.6		99	64.6	10			58.5	6.1	œ	-1.9
themeworld 1i	39	-	0.0	6.79		99	67.9	10			61.2	6.7	œ	 S.
themeworld 1h	41	-	0.0	9.99		99	9.99	10	Snd Lvl		59.3	7.3	ω	-0.7
themeworld 1d	43	-	0.0	63.3		99	63.3	10	1	9	61.1	2.2	œ	-5.8
themeworld 1c	44	-	0.0	63.3		99	63.3	10	1	છ	8.09	2.5	œ	-5.5
themeworld 1b	AF	_	0.0	63	_	99	63.1	10	1	യ്	60.5	5.6	œ	-5.4

RESOLIS. SOUND LEVELS												
themeworld 1a	46	-	0.0	64.4	99	64.4	10	-	0'09	4.4	œ	9.6
themeworld 2b	48	-	0.0	62.0	99	62.0	9		59.9	2.1	œ	က် စ
themeworld 2c	49	-	0.0	62.0	99	62.0	10	1	9.69	2.4	œ	-5.6
themeworld 2d	20	-	0.0	62.1	99	62.1	10	Į.	58.0	4.1	œ	-3.9
themeworld 2e	51	-	0.0	62.6	99	62.6	10	1	58.1	4.5	œ	-3.5
themeworld 2f	52	-	0.0	62.4	99	62.4	9	*	58.0	4.4	æ	-3.6
themeworld 3b	53	-	0.0	61.0	99	61.0	9	1	58.5	2.5	œ	-5.5
themeworld 3c	25	-	0.0	60.5	99	60.5	10	ı	58.0	2.5	œ	-5.5
themeworld 3d	55	-	0.0	60.2	99	60.2	10	1	58.8	1.4	œ	-6.6
themeworld 3e	26	-	0.0	60.1	99	60.1	10	ŧ	57.3	2.8	œ	-5.2
themeworld 3f	25	-	0.0	60.4	99	60.4	10	1	56.2	4.2	œ	ج. 9.8
themeworld 3a	28	-	0.0	64.8	99	64.8	10	•	57.8	7.0	œ	-1.0
themeworld 5a	29	-	0.0	67.6	99	67.6	10	Snd Lvl	61.6	0.9	œ	-2.0
themeworld 5b	09	-	0.0	6.99	99	6.99	10	Snd Lvl	61.1	5.8	œ	-2.2
themeworld 5c	61	-	0.0	66.3	99	66.3	10	Snd Lvl	60.7	5.6	œ	-2.4
themeworld 5d	62	-	0.0	65.6	99	65.6	10	1	60.4	5.2	œ	-2.8
themeworld 4c	63	-	0.0	58.8	99	58.8	10	1	56.0	2.8	œ	-5.2
themeworld 4d	64	-	0.0	58.5	99	58.5	10	0.000	55.4	3.1	8	4.9
themeworld 4f	65	_	0.0	58.4	99	58.4	10	1	55.3	3.1	æ	-4.9
themeworld 4a	99	-	0.0	58.4	99	58.4	10	1	55.2	3.2	œ	4.8
themeworld 4h	29	-	0.0	58.4	99	58.4	10	1	55.1	3.3	œ	4.7
themeworld 4i	89	-	0.0	59.7	99	29.7	10	ļ	55.8	3.9	æ	-4.1
themeworld 4e	69	-	0.0	58.3	99	58.3	10	ļ	55.0	3.3	00	-4.7
themeworld 2g	71	-	0.0	66.5	99	66.5	10	Snd LvI	61.2	5.3	œ	-2.7
themeworld 2h	72	-	0.0	65.0	99	65.0	10	-	60.3	4.7	œ	-3.3
themeworld 2i	73	-	0.0	64.6	99	64.6	10		59.9	4.7	œ	-3.3
themeworld 2i	74	-	0.0	64.2	99	64.2	9		59.9	4.3	œ	-3.7
themeworld 2k	75	-	0.0	64.2	99	64.2	10	1	59.9	4.3	80	-3.7
themeworld 2	92	-	0.0	64.3	99	64.3	10	1	0.09	4.3	œ	-3.7
themeworld 2m	77	-	0.0	64.9	99	64.9	10	ì	60.2	4.7	æ	-3.3
themeworld 2n	78	-	0.0	66.2	99	66.2	10	Snd Lvl	61.2		œ	-3.0
themeworld 2a	62	-	0.0	65.2	99	65.2	9		59.8	5.4	œ	-2.6
themeworld 3a	80	-	0.0	63.5	99	63.5	10	i	59.4	4 .	œ	6.5
themeworld 4b	18	-	0.0	59.5	99	59.5	10		9.99	2.9	œ	- 5 .1
themeworld 4a	82	1	0.0	63.4	99	63.4	10	ŧ	59.1	4.3	œ	-3.7
Dwelling Units	*	DUS Noise	se Reduction	ion								
•		Z	Avg		ax							
		쁑	Ŗ		dВ							
All Selected		90	0.0	4.1	7.3							
All Impacted		16	5.9	6.1	7.3							
All that meet NR Goal		0	0.0	0.0	0.0							

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Stantec M Drauer				23 Nover TNM 2.5	23 November 2015 TNM 2.5					
RESULTS: BARRIER DESCRIPTIONS PROJECT/CONTRACT: RUN: BARRIER DESIGN:	I-4 BtU PE I-4 Segme COMBO18	I4 BtU PD&E I4 Segment 5 ROW + Shoulder COMBO18	OW + Sho	ulder						
Barriers										
Name	Туре	Type Heights along Barrier	long Barr	er	Length	If Wall	If Berm			Cost
		Min	Avg	Мах		Area	Volume	Top Width	Run:Rise	
		#	#	¥	#	sq ft	cu yd	#	ft:ft	₩.
ROW Themeworld	3	18.00	0 18.00	00 18.00	00 828	14900				446986
14' shoulder	3	14.00	0 14.00		14.00 992	13892	21			416761
Retaining Wall	>	2.00	0 16.65		20.00 2768	46097	7			0
									Total Cost:	: 863747

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Stantec M Drauer RESULTS: SOUND LEVELS PROJECT/CONTRACT: BARRIER DESIGN:													
RESULTS: SOUND LEVELS PROJECT/CONTRACT: RUN: BARRIER DESIGN:							23 November 2015 TNM 2.5 Calculated with TNM 2.5	ber 2015 I with TNM	2.5		-	_	
	14 B(COM	I-4 BtU PD&E I-4 Segment 5 RC COMBO18	ROW + Shoulder	L				Average p a State hi	Average pavement type shall be used unless a State highway agency substantiates the use	shall be use	ed unless tes the us	. 0	
ATMOSPHERICS:	P 89	68 deg F, 50% RH	_					of a differ	of a different type with approval of FHWA.	approval of	FHWA.		
Receiver	ALIC#	Existing	No Barrier						With Barrier				
		LAed	LAeq1h		Incre	Increase over existing	existing	Type	Calculated	Noise Reduction	uction		
			Calculated	Crit'n	Calcı	Calculated	Crit'n Sub'l Inc	Impact	LAeq1h	Calculated	Goal	Calculated minus	lated
		dBA	dBA	dBA	용		фВ		dBA	æ	용	8 8	
Themeworld 1f	-	1	0 64.1		99	64.1		I	29	0 5	1.3	œ	-2.9
Themeworld 1i	7	-	0.0 68.0	0.	99	68.0	0	Snd Lvl	62.1		5.9	œ	-2.1
Themeworld 1k	က	0	0.0 68.1	1	99	68.1	10	Snd Lvl	62.1		0.0	œ	-2.0
Themeworld 11	4	1	0.0	0	99	68.0	10	Snd Lvl	62.1		5.9	8	-2.1
Themeworld 1m	22	1	0.0 68.0	0	99	68.0	10	Snd LvI	61.9		6.1	00	-1.9
Themeworld RV Pool	9	1	0.0 65.0	0	99	65.0	10	1	59.3		5.7	œ	-2.3
Themeworld 1n	7	1	0.0	ō,	99	6.79	10	Snd Lvl	61.8		6.1	œ	6.1-
Themeworld 10	00	-	0.0	.7	99	67.7	10	Snd Lvl	61.7		0.9	œ	-2.0
Themeworld 1p	o	1	0.0	5.	99	67.5	10	Snd LvI	61.9		5.6	80	-2.4
Themeworld 1q	10	0	0.0 68.0	0.	99	68.0	10	Snd Lvl	62.2		5.8	œ	-2.2
Themeworld playground	Ξ	-	0.0	70.3	99	70.3		Snd Lvl	67.5		2.8	œ	-5.2
Fort Summit KOA pool	12	1	0.0 63.8	œί	99	63.8	10	1	63.6		0.2	œ	-7.8
Fort Summit KOA 1	5	-	0.0	64.0	99	64.0		1	63.6		0.4	œ	-7.6
Fort Summit KOA 2	14	-		61.3	99	61.3	10	1	8.09		0.5	œ	-7.5
Fort Summit KOA 3	15	1	0.0	61.9	99	61.9	10	1	61.6		5.3	œ	-7.7
Fort Summit KOA 4	16	-	0.0	2.09	99	60.7		1	60.5		0.2	œ	-7.8
Ramada Pool	18	1	0.0	0.0	99	0.0	10	inactive	0.0		0.0	ω	0.0
Quality Pool	20	1	0.0	0.0	99	0.0		inactive	0.0		0.0	œ	0.0
Themeworld 1g	36	1 0	0.0	64.7	99	64.7	10	1	58.5		6.2	œ	<u>.</u>
Themeworld 1e	37	1	0.0	64.6	99	64.6	10	1	58.6		0.9	œ	-2.0
themeworld 1i	39	1	0.0	6.79	99	6.79	10	Snd Lvl	61.8		6.1	œ	6.
themeworld 1h	14	1 0	0.0	9.99	99	9.99	10	Snd Lvl	59.6		7.0	œ	0.1-
themeworld 1d	43	1	0.0	63.3	99	63.3		1	61.3		2.0	œ	-6.0
themeworld 1c	44	0	0.0	63.3	99	63.3		1	61.0		2.3	œ	-5.7
themeworld 1b	45	1	0.0	63.1	99	63.1	10	(9.09		2.5	œ	-5.5
C:\TNM25\230168\TEST\combo				-					23 N	23 November 2015	15		

11.	37	-	0	61.1	99	64.4	10	100000	60.2	4.2	oc	۳- ص
tnemeworld 1a	4	-	0.0	† †	3	r (2 !		1 0	! ;) () L
themeworld 2b	48	-	0.0	62.0	99	62.0	9	I	59.9	2.1	x	٠. ت
themeworld 2c	49	-	0.0	62.0	99	62.0	10	1	29.7	2,3	ω	-5.7
themeworld 2d	20	-	0.0	62.1	99	62.1	10	T.	58.0	4.1	œ	-3.9
themeworld 2e	12	-	0.0	62.6	99	62.6	10	ı	58.2	4.4	œ	-3.6
themeworld 2f	52	-	0.0	62.4	99	62.4	10	ı	58.2	4.2	œ	-3.8 8.5
themeworld 3b	53	-	0.0	61.0	99	61.0	10	1	58.5	2.5	∞	-5,5
themeworld 3c	54	-	0.0	60.5	99	60.5	10	1	58.0	2.5	œ	-5.5
themeworld 3d	55	-	0.0	60.2	99	60.2	10	i	58.8	1.4	œ	-6.6
themeworld 3e	26	-	0.0	60.1	99	60.1	10	1	57.3	2.8	œ	-5.2
themeworld 3f	22	-	0.0	60.4	99	60.4	10	H	56.2	4.2	∞	-3,8
themeworld 3a	58	-	0.0	64.8	99	64.8	10	ı	58.0	8.9	œ	-1.2
themeworld 5a	29	-	0.0	9.79	99	9.79	10	Snd Lvl	61.6	0.9	œ	-2.0
themeworld 5b	09	-	0.0	6.99	99	6.99	10	Snd Lvl	61.1	5.8	œ	-2.2
themeworld 5c	61	-	0.0	66.3	99	66.3	10	Snd LvI	2.09	5.6	œ	-2.4
themeworld 5d	62	-	0.0	65.6	99	65.6	10	1	60.4	5.2	œ	-2.8
themeworld 4c	63	-	0.0	58.8	99	58.8	10	-	96.0	2.8	æ	-5.2
themeworld 4d	64	-	0.0	58.5	99	58.5	10	1	55.4	3.1	80	-4.9
themeworld 4f	65	-	0.0	58,4	99	58.4	10	3	55.3	3.1	œ	-4.9
themeworld 4a	99	-	0.0	58.4	99	58.4	10	1	55.3	3.1	80	4.9
themeworld 4h	29	-	0.0	58.4	99	58.4	10	-	55.2	3.2	00	4.8
themeworld 4i	89	-	0.0	2.69	99	2.69	10	- E	55.9	3.8	∞	4.2
themeworld 4e	69	-	0.0	58.3	99	58.3	10	1	55.0	3.3	Φ	-4.7
themeworld 2g	71	_	0.0	66.5	99	66.5	10	Snd Lvl	61.5	5.0	œ	ن 3.0
themeworld 2h	72	-	0.0	65.0	99	65.0	10	I	8.09	4.2	ထ	8. 9. 8.
themeworld 2i	73	-	0.0	64.6	99	64.6	10	1	60.4	4.2	œ	-3.8
themeworld 2i	74	-	0.0	64.2	99	64.2	10	1	60.3	3.9	ω	4.1
themeworld 2k	75	-	0.0	64.2	99	64.2	10	1	60.3	3.9	æ	4.1
themeworld 21	92	-	0.0	64.3	99	64.3	10		60.3	4.0	œ	4.0
themeworld 2m	77	-	0.0	64.9	99	64.9	10		60.5	4.4	œ	-3.6
themeworld 2n	78	-	0.0	66.2	99	66.2	10	Snd Lvl	61.5		œ	
themeworld 2a	62	-	0.0	65.2	99	65.2	10		59.9	5.3	œ	-2.7
themeworld 3a	80	-	0.0	63.5	99	63.5	10	-	59.5		Φ	4.0
themeworld 4b	8	-	0.0	59.5	99	59.5	10	344	9.99	2.9	œ	-5.1
themeworld 4a	82	-	0.0	63.4	99	63.4	9		59.1	4.3	ω	-3.7
Dwelling Units	#	# DUS Noise	se Reduction	uo								
		Σ	Avg	Max	×							
		쁑	g									
All Selected		09	0.0	3.9	7.0							
All Impacted		16	2.8	2.5	7.0							
		c	0	c	c							

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Stantec M Drauer				% F	23 November 2015 TNM 2.5	oer 2015					
RESULTS: BARRIER DESCRIPTIONS PROJECT/CONTRACT: RUN: BARRIER DESIGN:	14 BtU P 14 Segm COMBO	I4 BtU PD&E I4 Segment 5 ROW + Shoulder COMBO16	IS + MO	poulde	5						
Barriers											
Name	Type	Type Heights along Barrier	long Ba	rrier		Length	If Wall	If Berm			Cost
	_	Z C	Avg	Σ	Мах		Area	Volume	Top Width	Run:Rise	
		¥	⊭	Œ		Ħ	sq ft	cu yd	#	ft:ft	\$
ROW Themeworld	>	16.00		16.00	16.00	828	13244	-			397321
14' shoulder	>	14.00		14.00	14.00	992	13892	Q.			416761
Retaining Wall	≥	2.00		16.65	20.00	2768	46097				0
				l						Total Cost:	814082

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S: 68 deg F, 50% RH COMBO16 S: 68 deg F, 50% RH Calculated Calculated A 1 0 0 68.0 B 1 0 0 68.0 Calculated Calculated B 1 0 0 68.0 Calculated Calcu	#DUS Existing No Barria Calculate 14 Segment 5 ROW + Shoul COMBO16	Increase over existing Calculated Crit'n Sub'l In Calculated Crit'n Sub'l In Calculated Crit'n Calculated Crit'n Calculated Calculated	Average pave a State highword a State highword a State highword a Ca different in the Ca different in the Ca Carit'n impact LA Sub'l Inc Cab'l inc	Average p a State hig of a differ of a differ Type Impact	weement type sent type with a ent type with a With Barrier Calculated LAeq1h dBA 59.2	shall be used y substantiates approval of FI Noise Reduc Calculated dB	ω (Calculated minus Goal dB -3.1
No. #DUs Existing No Barrier	#DUS Existing No Barrier LAeq1h LAeq1h Calculated dBA dBA dBA dBA 1 0.0 68.0 1 0.0 68.0 1 0.0 68.0				With Barrier Calculated LAeq1h dBA 59.2	And approval of FH Noise Reducti Calculated dB 2 4.9		a to the second
ver No. #DUS Existing No Barrier eworld 1f 1 LAeq1h LAeq1h eworld 1f 1 0.0 68.0 eworld 1f 2 1 0.0 68.0 eworld 1l 4 1 0.0 68.0 eworld 1l 4 1 0.0 68.0 eworld 1n 5 1 0.0 68.0 eworld 1n 6 1 0.0 67.7 eworld 1n 6 1 0.0 67.2 eworld 1n 7 1 0.0 67.2 eworld 1p 9 1 0.0 67.2 eworld 1p 9 1 0.0 68.0 eworld 1p 1 0.0 68.0	#DUS Existing No Barrier LAeq1h Calculated dBA dBA dBA 1 0.0 68.0 1 0.0 68.0 1 0.0 68.0 1 0.0 68.0				Bar ulate q1h	Noise Reduc Calculated dB 4.9		ate line line line line line line line lin
eworld 1f eworld 1h eworld 1n eworld	LAeq1h Calculated Calcula				ulate 41h	Noise Reduc Calculated dB 4.9	-	ate .
Pool 64.1 Pool 68.0 Pool 67.7 Pool 67.7 Pool 67.7 Pool 67.7 A pool 17 0.0 67.8 A pool 17 0.0 67.8 A 2 14 1 0.0 67.8 A 3 15 1 0.0 67.8 A 4 0 0 0 000 Cool 67.7 A 4 0 0 0 000 Cool 67.7 A 5 1 0 0 0 000 Cool 67.7 A 6 1 0 0 0 000 Cool 67.7 A 7 0 0 0 000 Cool 67.7 A 7 0 0 0 000 Cool 67.7 A 7 0 0 0 000 Cool 67.7 A 7 0 0 00	dBA	Calculatec dB	Sub'l Ind		£	Calculated dB 4.9	ω (Te le
Pool 64.1 Pool 64.1 2 1 0.0 68.0 3 1 0.0 68.0 4 1 0.0 68.0 5 1 0.0 68.0 6 1 0.0 67.5 8 1 0.0 67.5 9 1 0.0 67.5 A pool 11 1 0.0 63.8 A 2 1 0.0 64.0 A 3 15 1 0.0 61.3 A 4 1 0.0 61.3 A 4 1 0.0 61.3 A 5 1 0.0 61.3 A 6 1 0.0 60.7 A 7 1 0.0 61.3 A 8 1 0.0 61.3 A 9 1 0.0 60.7 A 9 1 0.0 60.7 A 1 1 0.0 61.3	dBA dBA 64.1 0.0 68.0 1 0.0 68.0 1 0.0 68.0 1 0.0 68.0 1 0.0 68.0 1 0.0 65.0 65.0 65.0 65.0 65.0 65.0 65.0	8 _B	8			dB 4.9	ω (
Pool 2 1 0.0 3 1 0.0 0.0 4 1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	1 1 1 1 1 1 1 1 0.0				59.2	0.3.7	∞ (-3.1 -2.9 -2.7 -2.9
Pool 2 1 0.0 Pool 6 1 0.0 S 1 0.0 Were a 1 0.0 B 1 0.0 A pool 11 1 0.0 A 2 14 1 0.0 A 3 15 1 0.0 A 4 1 0.0 A 4 1 16 1 0.0 A 4 1 10 0.0 A 5 1 0.0 A 6 1 0.0 A 7 1 0.0 A 8 1 0.0 A 9 1 0.0 A 1 1 1 0.0 A 1 1 0.0 A 1 1 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0			200000	62.9		•	-2.9 -2.7 -2.9
Pool 6 1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	1 1 1 1 0.0			Snd Lvl	62 8		00	-2,7
Pool 6 1 0.0 Pool 6 1 0.0 We will be seen to see the seen to see the	0.0 0.0				2		∞	-2.9
Pool 6 1 0.0 Wground 7 1 0.0 9 1 0.0 Wground 11 1 0.0 0.0 Wground 11 1 0.0 0.0 Wground 12 1 0.0 Wground 12 1 0.0 Wground 13 1 0.0 Wground 14 1 0.0 Wground 15 1	0.0			Snd Lvl	67.9		∞	
Pool 6 1 0.0 7 1 0.0 8 1 0.0 9 1 0.0 yground 11 1 0.0 A pool 12 1 0.0 A 2 1 14 1 0.0 A 3 15 1 0.0 A 4 16 1 0.0 A 4 16 1 0.0 A 4 16 1 0.0 A 5 1 0.0	0.00			Snd Lvl	62.6		œ	-2.6
yground 10 0.0 yground 11 0.0 yground 11 1 0.0 yA 2 1 0.0 yA 3 15 1 0.0 yA 3 16 1 0.0 yA 4 16 1 0.0 yA 5 15 1 0.0	00	66 65.0			59.5		œ	-2.5
9 1 0.0 yground 11 1 0.0 A pool 12 1 0.0 A 2 1 0.0 A 3 1 1 0.0 A 4 1 6 1 0.0 A 5 4 1 6 1 0.0 A 6 1 0.0 A 7 1 18 1 0.0 A 7 1 18 1 0.0 A 8 1 0.0	•				62.5		∞	-2.6
yground 11 0.0 A pool 12 1 0.0 A 2 1 3 1 0.0 A 2 14 1 0.0 A 3 15 1 0.0 A 4 16 1 0.0 A 4 16 1 0.0 A 5 1 0.0	1 0.0				62.4		Φ	-2.7
yground 11 1 0.0 NA pool 12 1 0.0 NA 2 1 13 1 0.0 NA 3 15 1 0.0 NA 4 16 1 0.0 NA 4 16 1 0.0 NA 4 16 1 0.0 NA 5 18 1 0.0	1 0.0				62.5		∞	-3.0
11 1 0.0 13 1 0.0 14 1 0.0 15 1 0.0 16 1 0.0 36 1 0.0	1 0.0				62.7		∞	-2.7
12 1 0.0 14 1 0.0 15 1 0.0 16 1 0.0 20 1 0.0	1 0.0			Snd Lvl	67.7	24/14	00	-5.4
13 1 0.0 14 1 0.0 16 1 0.0 18 1 0.0 36 1 0.0	0.0				63.6		Φ (-7.8
14 1 0.0 16 1 0.0 18 1 0.0 20 1 0.0	1 0.0			I	63.6		Φ (9.7-
15 1 0.0 16 1 0.0 20 1 0.0 36 1 0.0	0.0			1	8.09	0.5	x 0 0	C.)-
16 1 0.0 18 1 0.0 20 1 0.0	1 0.0		10	1	61.6		0 0	7.7-
20 1 0.0 36 1 0.0	0.0	90.00		l avitacei	0.00	0.0	ο α	0.7-
36 1 0.0	. ·				9 0		α	5 0
Ç	- *	9			2.00		α	-2.0
	0.00				80 80			-2.2
0.00	0.00			Snd Lvl	62.4			-2.5
41 1 0.0	1 0:0			Snd Lvl	59.9		00	-1.3
43 1 0.0	1 0:0	66 63.3	3 10	1	61.5	1.8	œ	-6.2
1 44	1 0.0	66 63.3		-	61.2		∞	-5.9
themeworld 1b 45 1 0.0 63.1	1 0.0	66 63.1	1 10	1	8.09	.8 2.3	80	-5.7

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themeworld 1a	46	C	0	64.4	99	64 4	10	1	603	4.1	œ	-3.9
themeworld 2b	48	0		62.0	99	62.0	10	1		2.1	00	-5.9
themeworld 2c	49	0		62.0	99	62.0	10	1	59.7	2.3	8	-5.7
themeworld 2d	20	0	0.0	62.1	99	62.1	10	i	58.1	4.0	Φ	4.0
themeworld 2e	51	0		62.6	99	97.9	10	ı	58.3	4.3	8	-3.7
themeworld 2f	, 25	0		62.4	99	62.4	10	ı	58.4	4.0	ω	4.0
themeworld 3b	53	0	0.0	0.10	99	61.0	10	ı	58.5	2.5	œ	-5.5
themeworld 3c	54	0		60.5	99	60.5	10		58.1	2.4	œ	-5.6
themeworld 3d	55	0	0.0	60.2	99	60.2	10	ı	58.9	1.3	00	-6.7
themeworld 3e	. 26	0	0.0	1.09	99	60.1	10	ı	57.4	2.7	ω	-5.3
themeworld 3f	57	0	0.0	60.4	99	60.4	10	į	56.3	1.4	80	-3.9
themeworld 3g	58	0		64.8	99	64.8	10	į	58.2	9.9	00	4.1-
themeworld 5a	. 29	0		9.79	99	9.79	10	Snd Lvl	61.6	0.9	ω	-2.0
themeworld 5b	09	0	0.0	6.99	99	6.99	10	Snd Lvl	61.1	5.8	œ	-2.2
themeworld 5c	61	0		66.3	99	66.3	10	Snd Lvl	2.09	5.6	∞	-2,4
themeworld 5d	62	0	0.0	65.6	99	65.6	10	1	60.4	5.2	œ	-2,8
themeworld 4c	63	0	0.0	58.8	99	58.8	10	ı	56.0	2.8	œ	-5.2
themeworld 4d	,	0	0.0	58.5	99	58.5	10	1	55.4	3.1	œ	4.9
themeworld 4f	65	0		58.4	99	58.4	10	1	55.3	5.7	œ	4.9
themeworld 4g	99	0		58.4	99	58.4	10	ı	55.4	3.0	œ	-5.0
themeworld 4h	. 29	0	0.0	58.4	99	58.4	10	1	55.3	3.1	œ	4.9
themeworld 4i	. 89	0		29.7	99	29.7	10	1	56.1	3.6	œ	4.4
themeworld 4e	69	0		58.3	99	58.3	10	1	55.1	3.2	œ	-4.8
themeworld 2g	. 11	0		66.5	99	66.5	10	Snd Lvl	62.0	4.5	œ	-3.5
themeworld 2h	, 22	0	0.0	65.0	99	65.0	10	1	61.3	3.7	œ	4.3
themeworld 2i	73	0	0.0	64.6	99	64.6	10	1	6.09	3.7	œ	4.3
themeworld 2j	74	0	0.0	64.2	99	64.2	10	1	8.09	3.4	œ	-4.6
themeworld 2k	75	0	0.0	64.2	99	64.2	10	ı	8.09	3.4	00	-4.6
themeworld 21	. 92	0		64.3	99	64.3	10		8.09	3.5	œ	4.5
themeworld 2m	. 22	0		64.9	99	64.9	10	ı	6.09	4.0	œ	-4.0
themeworld 2n	78	0	0.0	66.2	99	66.2	10	Snd Lvl	61.9	4.3	œ	-3.7
themeworld 2a	. 62	0	0.0	65.2	99	65.2	10	E	59.9	5.3	œ	-2.7
themeworld 3a	. 80	0		63.5	99	63.5	10	I	59.5	4.0	œ	-4.0
themeworld 4b		0	0.0	9.5	99	59.5	10	ı	56.6	2.9	œ	-5.1
themeworld 4a	82	0	0.0	63.4	99	63.4	10		59.1	4.3	œ	-3.7
Dwelling Units	# DNs	Noise	Reduction		-							
		Min	Avg	Max								
		g B	g B	쁑								
All Selected	09		0	3.6	6.7							
All Impacted	16		2.6	5.2	6.7							
All the transfer of the Contract	C											

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Stantec M Drauer				18 November 2015 TNM 2.5	ber 2015					
RESULTS: BARRIER DESCRIPTIONS PROJECT/CONTRACT:	<u>4</u>	I-4 Btu PD&E								
RUN: BARRIER DESIGN:	I-4 Segme Fest_14'	I-4 Segment 5 Festiva 14' Fest_14'	stiva 14'							
Barriers										1 10 10 10 10 10 10 10 10 10 10 10 10 10
Name	Type	Type Heights along Barrier	ong Barrie		Length	If Wall	If Berm			Cost
		Zi Ci	Avg	Мах		Area	Volume	Top Width	Run:Rise	
		¥	Ħ	ft	¥	sq ft	cu yd	¥	ft:ff	\$
Festiva 14	≥	14.00	14.00	14.00	954	13351				400523
									Total Cost:	400523

RESULTS: SOUND LEVELS							I-4 BtU PD&E	ш				
Stantec M Drauer RESULTS: SOUND LEVELS							18 Noverr TNM 2.5 Calculate	18 November 2015 TNM 2.5 Calculated with TNM 2.5	2.5		_	
PROJECT/CONTRACT:		I-4 BtU PD&E	PD&E									
RUN: Barrier design:		I-4 Segment Fest_14'	ent	5 Festiva 14'				Average	Average pavement type shall be used unless	shall be used	d unless	
ATMOSPHERICS:		68 deg	68 deg F, 50% RH	-				a State his	a State highway agency substantiates the use of a different type with approval of FHWA.	substantiate	s the use HWA.	
Receiver												
Name	No.	#DUs	Existing	No Barrier					With Barrier			
			LAeq1h	LAeq1h		Increase over existing	r existing	Type	Calculated	Noise Reduction	tion	
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc	Impact	LAeq1h	Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	В		dBA	дB	용	gp
Festiva 1	28	9	0.0	72.2	2 66	6 72.2	.2 10	Snd Lvl	65.7	6.5		8 -1.5
Festiva 3	29	8	0.0	72.6		66 72.6	.6 10	Snd Lvl	65.7	6.9		8 -1.1-
Festiva 2	31		0.0	74.9		66 74.9	.9	Snd Lvl	67.5	7.4		8 -0.6
Festiva 4	32	σ	0.0	73.5	99 9	6 73.5	.5 10	Snd Lvl	67.8	5.7		8 -2.3
Festiva 5	33		0.0	0 67.3	3 66	6 67.3	.3 10	Snd Lvi	65.4	1.9		8 -6.1
Festiva 6	34	2	0.0) 66.1	1 66	6 66.1	1 10	Snd Lvl	64.5	1.6		8 -6.4
Festiva 2nd a	39		0.0	0 62.1	1 66	5 62.1	.1 10	ı	60.3	1.8		8 -6.2
Festiva 2nd b	40	4	0.0	0 61.5	99 9	5 61.5	5 10	ı	59.2	2.3		8 -5.7
Festiva 2nd c	41	9	0.0	61.7	99 2	5 61.7	7. 10	i	59.3	2.4		
Dwelling Units		# DUS	Noise Reduction	duction								
			Min	Avg	Max							
			æ	쁑	ф							
All Selected		52	1.6	1.4	7.4	T.						
All Impacted		36	1.6	5.0	7.4	Tet						
All that meet NR Goal		0	0.0	0.0		0						

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RESULTS: SOUND LEVELS							14 Btu PD&E					
Stantec M Drauer RESULTS: SOUND LEVELS							18 November 2015 TNM 2.5 Calculated with TN	18 November 2015 TNM 2.5 Calculated with TNM 2.5	2.5			
PROJECT/CONTRACT: RUN: BARRIER DESIGN:		I-4 BtU PD&E I-4 Segment 5 Fest_14long	PD&E ment 5 tlong					Average p	avement type	Average pavement type shall be used unless	d unless	
ATMOSPHERICS:		98 deç	68 deg F, 50% RH	-				a State hi of a differ	ghway agency ent type with	a State highway agency substantiates the use of a different type with approval of FHWA.	s the use HWA.	_
Receiver												
Name	No.	#DNs	Existing	No Barrier					With Barrier			
			LAeq1h	LAeq1h		Increase over existing	existing	Туре	Calculated	Noise Reduction	tion	
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc	Impact	LAeq1h	Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dВ	8		dBA	dВ	ф	ф
Festiva 1	28		0.0	0 72.2		66 72.2	.2 10	Snd Lvl	65.7	6.5	10	8 -1.5
Festiva 3	29	8	0.0	72.6		66 72.6	.6	Snd Lvl	65.4	7.2	01	
Festiva 2	31		0.0	74.9		66 74	74.9 10	Snd Lvl	67.4	7.5	10	8 -0.5
Festiva 4	32	6	0.0	73.5		66 73.5	.5 10	Snd LvI	67.2	6.3	_	8 -1.7
Festiva 5	33		0.0	0 67.1		66 67.1	1 10	Snd Lvl	62.9	4.2	01	-3.8
Festiva 6	34	1 2	0.0	0.99		0.99 66.0	.0 10	Snd Lvl	62.4	3.6	10	8
Festiva 2nd a	39		0.0	0 62.1		66 62.1	.1 10	1	59.5	2.6	(0)	8 -5.4
Festiva 2nd b	40	4	0.0	0 61.5		66 61.5	.5 10	i	58.9	2.6		8 -5.4
Festiva 2nd c	41		0.0	0 61.5		66 61.5	.5 10	ì	59.2	2.3	_	8 -5.7
Dwelling Units		# DUs	Noise Re	Reduction								
			Min	Avg	Max							
			g B	쁑	용							
All Selected		52	2.3	3 4.8	3 7.5	2						
All Impacted		36	3.6	5.9	7.5	c)						
All that meet NR Goal		J	0.0	0.0	0.0	0						

Stantec M Drauer			8	18 November 2015 TNM 2.5	ber 2015					
RESULTS: BARRIER DESCRIPTIONS PROJECT/CONTRACT:	<u>4</u> Bt	I-4 BtU PD&E								
RUN: Barrier design:	I-4 Se Fest	I-4 Segment 5 Fest_14long								
Barriers										
Name	Туре	Heights a	Type Heights along Barrier	<u></u>	Length	If Wall	If Berm			Cost
		M C	Avg	Мах		Area	Volume	Top	Run:Rise	
		Ħ	Ħ	Ħ	¥	sq ft	cu yd	d=	ft:ft	€
Barrier10	≥	14.00	14.00	14.00	1287	18011				540330
									Total Cost:	540330

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Stantec M Drauer				18 November 2015 TNM 2.5	ber 2015					
RESULTS: BARRIER DESCRIPTIONS PROJECT/CONTRACT:	4 B	I-4 BtU PD&E								
RUN: Barrier design:	I-4 Segm Fest_16'	I-4 Segment 5 Festiva ROW Fest_16'	estiva ROM							
Barriers										
Name	Type	Type Heights along Barrier	long Barrie	_	Length	If Wall	If Berm			Cost
		Min	Avg	Мах		Area	Volume	Top	Run:Rise	
		#	Ħ	ff	¥	sq ft	cu yd	₽	ft:ft	€9
Barrier9	>	16.00	16.00	16.00	868	14362				430862
									Total Cost:	430862

Stantec									18 Noven	18 November 2015					
M Drauer									TNM 2.5 Calculate	TNM 2.5 Calculated with TNM 2.5	M 2.5			-	
RESULTS: SOUND LEVELS									Calculate	2 4101	100			-	
PROJECT/CONTRACT:		LA BEU	I-4 BtU PD&E												
RUN:		I-4 Seg	I-4 Segment 5 Festiva ROW	stiva F	ÕV										
BARRIER DESIGN:		Fest_16'	6,							Average	Average pavement type shall be used unless	e shall be use	ed unles	Ö	
										a State h	a State highway agency substantiates the use	y substantiat	es the u	IS e	
ATMOSPHERICS:		68 deg	68 deg F, 50% RH	I						of a diffe	of a different type with approval of FHWA.	approval of F	AWH:		
Receiver															
Name	No.	#DUs	Existing	No E	No Barrier						With Barrier				
			LAeq1h	LAeq1h	11h		Incr	Increase over existing	existing	Туре	Calculated	Noise Reduction	ction		
				Calc	Calculated	Crit'n	Calo	Calculated	Crit'n	Impact	LAeq1h	Calculated	Goal	င္မ	Calculated
									oub i inc					Goal	minus Goal
			dBA	dBA		dBA	В		В		dBA	dB	dВ	dВ	
Festiva 1	28		6 0.0	0	72.9		66	72.9	_	0 Snd Lvl	65.9	9 7.0	0	œ	-1.0
Festiva 3	29		0.0	.0	73.3		66	73.3	10	Snd Lvl	66.1		2	œ	-0.8
Festiva 2	31		9 0.0	0	75.1		66	75.1	10	Snd Lvi	67.5		6	œ	-0.4
Festiva 4	32	9	0.0	Ö	74.2		66	74.2	10	Snd Lvl	67.5	5 6.7	7	œ	<u>-1</u> .3
Festiva 5	33		2 0.0	0	67.6		66	67.6	10	Snd Lvl	65.3	3 2.3	ω	œ	-5.7
Festiva 6	34		2 0.0	0	66.3		66	66.3		Snd Lvl	64.6	6 1.7	7	œ	-ნ ა
Festiva 2nd a	39	6	0.0	Ö	62.4		66	62.4		1	60.3		_	œ	-5.9
Festiva 2nd b	40	4	0.0	ю	61.8		6	61.8	10	1	59.2	2 2.6	0	œ	-5.4
Festiva 2nd c	41	6	0.0	Ö	61.8		8	61.8	_	0	59.3		S)	œ	-5.5
Dwelling Units		# DUs	Noise Reduction	eductio	ň										
			Min	Avg		Max									
			В	윰		В									
All Selected		52	2 1.7	7	4.4	7	.6								
All Impacted		36	1.7	7	5.4	7	7.6								
All that meet NR Goal		0	0.0	0	0.0	0	0.0								

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Stantec M Drauer				18 November 2015 TNM 2.5	ber 2015					
RESULTS: BARRIER DESCRIPTIONS PROJECT/CONTRACT:	<u>4</u>	I-4 Btu PD&E								
RUN: BARRIER DESIGN:	I-4 Segm Fest_18'	I-4 Segment 5 Festiva ROW Fest_18'	stiva ROW							
Barriers										
Name	Type	Type Heights along Barrier	ong Barrie		Length	If Wall	If Berm			Cost
		Min	Avg	Мах	h	Area	Volume	Top Width	Run:Rise	
		Ħ	₩	Œ	₩	sq ft	cu yd	₩	ft:ff	69
Barrier9	>	18.00	18.00	18.00	868	16157				484719
									Total Cost:	484719

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RESULTS: SOUND LEVELS							I-4 BtU PD&E	щ					
Stantec M Drauer							18 Nover TNM 2.5	18 November 2015 TNM 2.5				-	
RESULTS: SOUND LEVELS							Calculate	Calculated with TNM 2.5	1 2.5			_	
PROJECT/CONTRACT:		I-4 BtU	1-4 BtU PD&E										
RUN:		I-4 Seg	I-4 Segment 5 Fee	Festiva ROW									
BARRIER DESIGN:		Fest_18'	īn					Average	pavement type	Average pavement type shall be used unless	d unless		
ATMOSPHERICS:		68 deg	68 deg F, 50% RH	-				a State h of a diffe	ghway agency ent type with	a State highway agency substantiates the use of a different type with approval of FHWA.	s the use HWA.		
Receiver													
Nате	No.	#DUs	Existing	No Barrier					With Barrier				
			LAeq1h	LAeq1h		Increase over existing	existing	Type	Calculated	Noise Reduction	tion		
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc	Impact	LAeq1h	Calculated	Goal	Calculated	pej
			dBA	dBA	dBA	8B	쁑		dBA	æ	g B	dB GB	
Festiva 1	28	9	0.0	72.9		66 72	72.9	10 Snd Lvl	65.2	7.7		œ	6.0
Festiva 3	29	8	0.0	73.3		66 73.3		10 Snd Lvl	65.0	8.3		80	0.3
Festiva 2	31	6	0.0	75.1		66 75.1		10 Snd Lvl	66.3	8.8		œ	0.8
Festiva 4	32	6	0.0	74.2		66 74.2		10 Snd Lvl	66.3	7.9		œ	-0.1
Festiva 5	33		0.0	9.79	100	92.29		10 Snd Lvl	65.0			80	-5.4
Festiva 6	34	2	0.0	66.3	i av	66 66.3		10 Snd Lvl	64.3	3 2.0		80	-6.0
Festiva 2nd a	39	9	0.0	62.4		66 62.4		10	59.8	1 5-32		8	-5.4
Festiva 2nd b	40		0.0	61.8		66 61.8		10	58.5	3.3		œ	-4.7
Festiva 2nd c	4	9	0.0	61.8	99 8	6 61.8	.8	-	58.8	3.0		80	-5.0
Dwelling Units		# DNs	Noise Re	Reduction									
			Ā	Avg	Max								_
			g B	æ	용								
All Selected		52	2.0	5.1	8.8	· ·							
All Impacted		36		6.2	8.8	m							
All that meet NR Goal		17	8.3	8.5	8.8	M							

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Stantec M Drauer				18 November 2015 TNM 2.5	ber 2015					
RESULTS: BARRIER DESCRIPTIONS PROJECT/CONTRACT: RUN: BARRIER DESIGN:	14 BtU P 14 Segm Fest_20'	I4 BtU PD&E I4 Segment 5 Festiva ROW Fest_20'	stiva ROW							
Barriers										
Name	Type	Type Heights along Barrier	ong Barrier		Length If Wall	If Wall	If Berm			Cost
		Min	Avg	Мах		Area	Volume	Top Width	Run:Rise	5) 1
	_	¥	#	Ħ	#	sq ft	cu yd	æ	ft:ft	€
Barrier9	>	20.00	20.00	20.00	868	17953				538577
									Total Cost:	538577

M Drauer				
RESULTS: SOUND LEVELS PROJECT/CONTRACT:	7	I-4 Btu PD&E	² D&E	
RUN:	7	4 Segn	I-4 Segment 5 Festi	
BARRIER DESIGN:	ш.	Fest_20'		
ATMOSPHERICS:	9	8 deg	68 deg F, 50% RH	
Receiver				1.5
Name	o N	#DUs	Existing LAeq1h	
			dBA	
Festiva 1	28	9	0.0	
Festiva 3	29	ω	0.0	11.00
Festiva 2	31	တ	0.0	
Festiva 4	32	6	0.0	
Festiva 5	33	2	0.0	
Festiva 6	34	2	0.0	
Festiva 2nd a	38	9	0.0	
Festiva 2nd b	40	4	0.0	
Festiva 2nd c	41	9	0.0	
Dwelling Units	**	DUS	Noise Redu	
			Min	
			В	
All Selected		52	2.2	
All Impacted		36	2.2	
All that meet NR Goal		32	8.3	

-5.8 5.1 -4.2 4.5

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2.2 2.9 3.8 3.5

59.5 58.0

58.3

64.1

5.1

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2.9

64.7

Snd Lvl

2 2 2 2 2 2 2 2 2

9.79 66.3

99 99 99 99 99

9.79

66.3 62.4 61.8 61.8

74.2

Snd Lvl

1 1 1

62.4 61.8

0.0

Max

Avg

Us Noise Reduction

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5.7 6.9

65.2

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65.2

8

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dBA

8

ВB

dBA

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72.9 75.1 74.2

72.9 73.3

64.6

64.1

Snd Lvl Snd Lvl

Snd Lvl Snd Lvl

Calculated

Calculated Goal

Impact

Crit'n Sub'l Inc

Type

Increase over existing Calculated Crit'n

Crit'n

Calculated

LAeq1h

No Barrier

Segment 5 Festiva ROW

Noise Reduction

With Barrier Calculated LAeq1h

a State highway agency substantiates the use Average pavement type shall be used unless

of a different type with approval of FHWA.

minus Goal dB

RESULTS: SOUND LEVELS

Stantec

Calculated with TNM 2.5

18 November 2015

TNM 2.5

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Stantec M Drauer				18 November 2015 TNM 2.5	ber 2015					
RESULTS: BARRIER DESCRIPTIONS PROJECT/CONTRACT:	<u>4</u> B	I-4 BtU PD&E								
RUN: BARRIER DESIGN:	I-4 Segm Fest_22'	I-4 Segment 5 Festiva ROW Fest_22'	stiva ROW							
Barriers										
Name	Туре	Type Heights along Barrier	long Barrie	L	Length	If Wall	If Berm			Cost
		Z E	Avg	Мах		Area	Volume	Top Width	Run:Rise	
		#	#	#	#	sq ft	cu yd	₽	ft:ft	8
Barrier9	≥	22.00	0 22.00	22.00	868	19748				592435
									Total Cost:	592435

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RESULTS: SOUND LEVELS							I-4 Btu PD&E	ш					
Stantec M Drauer							18 November 2015 TNM 2.5	lber 2015					
RESULTS: SOUND LEVELS							Calculate	Calculated with TNM 2.5	2.5		_		
PROJECT/CONTRACT:		I-4 BtU	I-4 BtU PD&E			-							
RUN:		I-4 Seg	1-4 Segment 5 Fee	Festiva ROW									
BARRIER DESIGN:		Fest_22'	5.					Average p	Average pavement type shall be used unless	shall be used	d unless		
ATMOSPHERICS:		98 dec	68 deg F, 50% RH	_				a State hig of a differ	a State highway agency substantiates the use of a different type with approval of FHWA.	substantiate	s the use IWA.		
Receiver													
Name	ò	#DOs	Existing	No Barrier					With Barrier				
			LAeq1h	LAeq1h		Increase over existing	r existing	Type	Calculated	Noise Reduction	tion		
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc	Impact	LAeq1h	Calculated	Goal	Calculated	pe
			dBA	dBA	dBA	8	g B		dBA	dB	용	dB dB	
Festiva 1	28		0.0	0 72.9	99 6	5 72.9	9	Snd Lvl	64.2	8.7		œ	0.7
Festiva 3	29	8	0.0	73.3	3 66				63.4			. &	6
Festiva 2	31	9	0.0	75.1	1 66	5 75.1	1 10	Snd LvI	64.4			00	2.7
Festiva 4	32		0.0	74.2	99 2	3 74.2	2 10	Snd Lvl	64.4	8.6		00	60
Festiva 5	33	3 2	0.0	9.79	99 9	9.79	01 9	Snd Lvl	64.5			8	9.
Festiva 6	34		0.0	0 66.3	3 66	5 66.3	3 10	Snd Lvl	63.9			8	5.6
Festiva 2nd a	39		0.0	62.4	99	5 62.4	10		59.2			80	8.
Festiva 2nd b	40		0.0	9 61.8	99 66	5 61.8	8 10	1	57.6			8	80.
Festiva 2nd c	41	9	0.0	91.8	3 66	61.8	10	ı	58.0	1000		80	4.2
Dwelling Units		# DNs	Noise Re	Reduction									
			Min	Avg	Max								
			ВВ	쁑	쁑								
All Selected		52	2.4	6.2	10.7								
All Impacted		36	2.4	7.4									
All that meet NR Goal		32	8.7	9.6	3 10.7								

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Stantec M Drauer				29 April 2016 TNM 2.5	016					
RESULTS: BARRIER DESCRIPTIONS PROJECT/CONTRACT: RUN:	14 BE	I-4 BtU PD&E I-4 Segment 5 Festiva ROW	stiva ROM							
BARRIER DESIGN:	P2 12sh	sh								
Barriers										
Name	Type	Type Heights along Barrier	ong Barrie	16	Length	If Wall	If Berm			Cost
		E E	Avg	Max		Area	Volume	Top Width	Run:Rise	
		¥	Ħ	Ħ	Œ	sq ft	cu yd	Ħ	ft:ft	ь
Barrier11	3	12.00	12.00	0 12.00	1164	13971				419125
									Total Cost:	419125

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Stantec M Praise								29 A	29 April 2016	<u>9</u>					
								Calcutat	utated	Calculated with TNM 2.5	2.5		_	-	
RESULTS: SOUND LEVELS PROJECT/CONTRACT: RUN: BARRIER DESIGN:	<u> </u>	14 BtU F 14 Segn P2 12sh	D&E	Festiva ROW	OW				`	9000	one was	Si od lledo	1	:	
ATMOSPHERICS:	. •	S ded	F. 50%	표						State high	Average pavernent type shan be used unless a State highway agency substantiates the use of a different type with annoval of EHWA	y substantial	ed unless tes the us FHWA	. 9	
Receiver												5			
Name	No.	#DUs	Existing	B oN Br	No Barrier						With Barrier				
			LAeq1h	LAeq1h	1 ^t		Increase over existing	ver exist		Type	Calculated	Noise Reduction	rction		
				Calc	Calculated	Crit'n	Calculated	Crit'n Sub'l Inc	U	Impact	LAeq1h	Calculated	Goal	Calcula	Calculated minus
			dBA	dBA		dBA	ВВ	g			dBA	8	용	를 명	
F Phase 2 a	42	2		0.0	67.4	99		67.4	10	Snd Lvl	66.9	0	5.	8	-7.5
F Phase 2 b	43	4		0.0	68.3	99		68.3	9	Snd Lvl	67.8	9		80	-7.5
F Phase 2 c	44	4		0.0	68.2	99		68.2	10	Snd Lvl	0.79		1.2	œ	9.9
F Phase 2 d	45	4		0.0	9'.29	99		9.79	1	Snd Lvl	65.8		1.8	8	-6.2
F Phase 2 e	46	4		0.0	66.3	99		66.3	10	Snd Lvl	63.0	3.	t,	80	-4.7
F Phase 2 f	47	4		0.0	62.9	99		62.9	10	ı	62.4	9.	rÇ.	œ	4.5
F Phase 2 g	48	4		0.0	74.6	99		74.6	10	Snd Lvl	66.1		ıçi	80	0.5
F Phase 2 h	49	4		0.0	74.8	99		74.8	10	Snd Lvl	65.8		9.0	œ	1.0
F Phase 2 i	51	4		0.0	64.6	99		64.6	10	į	60.7	7 3.	o.	æ	4.1
F Phase 2 j	52	4		0.0	65.2			65.2	10	i	2.09	7 4.	rč.	œ	-3.5
F Phase 2 k	53	4		0.0	64.5			64.5	10	1	59.9	9.4	9	œ	-3.4
F Phase 2	54	4		0.0	74.9	99		74.9	10	Snd Lvl	9:59	9.	4	œ	4.1
F Phase 2 m	55	4		0.0	74.7	99		74.7	10	Snd Lvl	65.5		9.5	∞	1.2
F Phase 2 n	56	4		0.0	74.8	99		74.8	10	Snd Lvl	65.6	9	2	σ	1.2
F Phase 2 o	25	4		0.0	75.2	99		75.2	10	Snd Lvi	65,6	9.	9	œ	1.6
F Phase 2 p	59	4		0.0	74.7			74.7	10	Snd Lvl	62.9		œ	∞	0.8
F Phase 2 q	09	4		0.0	74.9	99		74.9	10	Snd Lvl	66.2		8.7	œ	0.7
F Phase 2 r	61	4		0.0	74.8	99		74.8	10	Snd Lvl	67.2		9.7	œ	4.0
F Phase 2 s	62	4		0.0	74.8			74.8	10	Snd Lvl	69.4		4.	œ	-2.6
F Phase 2 t	63	4		0.0	65.2	99		65.2	10	****	61.9		3.3	œ	4.7
F Phase 2 u	99	4		0.0	62.4	99		62.4	10		6.09		1.5	œ	-6.5
F Phase 2 v	92	7		0.0	64.1	99		64.1	10	577	63.8		0.3	œ	-7.7
F Phase 2 w	99	4		0.0	61.7			61.7	10		61.3		0.4	æ	-7.6
F Phase 2 x	29	21		0.0	0.09	99		0.09	10	5000	59.6		0.4	œ	-7.6

RESULTS: SOUND LEVELS

29 April 2016

Dwelling Units	ina #	# DUs Noise Reduction	duction		
		Μi	Avg	Max	
		g B	ф	용	
All Selected		90 0.3	3. 4.8	9.6	
All Impacted		58 0.5	5 6.2	9.6	
All that meet NR Goal		32 8.5	9.1	9.6	

14 Btu PD&E

29 April 2016

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Stantec							•	29 April 2016	16					
M Drauer								TNM 2.5						
							J	Calculated with TNM 2.5	with TN	12.5				
RESULIS: SOUND LEVELS PROJECT/CONTRACT		A RHII PINSE	J. R.			_								
RUN:	· <u>-</u>	14 Segment 5		Festiva ROW		-								
BARRIER DESIGN:	<u>n.</u>	P2 14sh				_			Average a State h	Average pavement type shall be used unless a State highway agency substantiates the use	shall be use y substantiat	ed unless	ψ.	
ATMOSPHERICS:		68 deg	F, 50% RH						of a diffe	of a different type with approval of FHWA	approval of F	HWA.		
Receiver														
Name	No.	#DNs	Existing	No Barrier						With Barrier				
			LAeq1h	LAeq1h		Incr	Increase over existing	xisting	Type	Calculated	Noise Reduction	ction		
				Calculated	d Crit'n	Calc	Calculated	Crit'n Sub'l Inc	Impact	LAeq1h	Calculated	Goal	Calculated	lated
			dRA	ΔBΔ	δ B B	ą		g		۷۵۲	ą	9	Goal	
T C C C C C C C C C C C C C C C C C C C	42	r			27.4	3		,	0					ı
F Phase 2 h	43	1 4	9 0		t «	3 %		2 5		00.00	0.00	o u	0 0	C. 1-
F Dhose 2 c	? ?	-	2 0		0.00	3 8	2 0	2 5	- 1	0.70		2 0	0 0	7 0
F Phase 2 d	45	1 4	0.0		2.00.2 67.6	3 6	67 A	1		00.00		2 0	οα	Ģ ¢
F Phase 2 e	46	4	0.0		66.3	99	66.3	10		62.6) h	0 00	5 4
F Phase 2 f	47	4	0.0		62.9	99	62.9	10		62.1			0 00	-4.2
F Phase 2 g	48	4	0.0		74.6	99	74.6	10	Snd Lvl	65.3		m	œ	1.3
F Phase 2 h	49	4	0.0		74.8	99	74.8	10	Snd Lvl	64.9	9.9	o	00	1.9
F Phase 2 i	5	4	0.0		64.6	99	64.6	10	1	9.09	9.4.0	0	80	4.0
F Phase 2 j	52	4	0.0		65.2	99	65.2	10	ł	60.4	4.8	8	8	-3.2
F Phase 2 k	53	4	0.0		64.5	99	64.5	10	i	59.8	3 4.7	7	00	-3.3
F Phase 2 I	54	4	0.0		74.9	99	74.9	10	Snd Lvl	64.5	5 10,4	4	80	2.4
F Phase 2 m	55	4	0.0		74.7	99	7.4.7	10	Snd Lvl	64.5		2	80	2.2
F Phase 2 n	99	4	0.0		74.8	99	74.8	10	Snd Lvl	64.5	5 10.3	6	00	2.3
F Phase 2 o	22	4	0.0		75.2	99	75.2	10	Snd Lvl	64.6	5 10.6	9	00	2.6
F Phase 2 p	29	4	0.0		74.7	99	7.4.7	10	Snd Lvl	64.9	9.6	00	80	<u>6</u>
F Phase 2 q	9	4	0.0		74.9	99	74.9	10	Snd Lvl	65.4	9.5	2	80	1.5
F Phase 2 r	61	4	0.0		74.8	99	74.8	10	Snd Lvl	9.99	8.2	2	œ	0.2
F Phase 2 s	62	4	0.0		74.8	99	74.8	10	Snd Lvl	69.1	1 5.7	7	œ	-2.3
F Phase 2 t	63	4	0.0		65.2	99	65.2	10	1	61.8	3.4	4	œ	4.6
F Phase 2 u	64	4	0.0		62.4	99	62.4	10	1	8.09	1.6	G	œ	-6.4
F Phase 2 v	92	2	0.0		64.1	99	64.1	10	1	63.8	3 0.3	m	œ	-7.7
F Phase 2 w	99	4	0.0		61.7	99	61.7	10	1	61.3	3 0.4	4	∞	-7.6
F Phase 2 x	29	7	0.0		0.09	99	0.09	10	1	29.6	9.0	4	00	-7.6

I-4 BtU PD&E

RESULTS: SOUND LEVELS

RESULIS: SOUND LEVELS				
Owelling Units	# DUS	# DUs Noise Reduction	luction	
		Min	Avg	Max
		ф	qg	8
Il Selected	06	0.3	5.2	10.6
Il Impacted	58	0.5	6.8	
Il that meet NR Goal	36	8.2	9.6	

				Cost		€	488980	488980
					Run:Rise	ft:ff		Total Cost
					Top Width	#		
				If Berm	Volume	cn yd		
				If Wall	Area	sq ft	16299	
မှ				Length			1164	
29 April 2016 TNM 2.5					Мах	Œ	14.00	
- 1 is		tiva ROW		ng Barrier	Avg	ff	14.00	
	PD&E	I-4 Segment 5 Festiva ROW P2 14sh		Heights along Barrier	Min	T T	14.00	
	I-4 BtU	I-4 Segm P2 14sh		Type			≥	
Stantec M Drauer	RESULTS: BARRIER DESCRIPTIONS PROJECT/CONTRACT:	RUN: BARRIER DESIGN:	Barriers	Name			Barrier11	

14 Btu PD&E

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Stantec M Drauer				2 May 2016 TNM 2.5	ω					
RESULTS: BARRIER DESCRIPTIONS PROJECT/CONTRACT: RUN: BARRIER DESIGN:	7 4 8 4 8 4 8 5 5 5 5 5 5 5 5 5 5 5 5 5 5	I.4 BtU PD&E I.4 Segment 5 Festival Shoulder P2 long 12	stival Shou	ılder						
Barriers										
Name	Type	Type Heights along Barrier	long Barrie	L	Length	If Wall	If Berm			Cost
		Zi Zi	Avg	Мах		Area	Volume	Top Width	Run:Rise	
		₽	Ħ	Ħ	#	sq ft	cu yd	#	ft:ft	S
Barrier11	>	12.00	12.00	12.00	1552	18624				558711
									Total Cost:	558711

PD&E
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Stantec M Drauer								2 May 20 TNM 2.5 Calculat	2 May 2016 TNM 2.5 Calculated v	2 May 2016 TNM 2.5 Calculated with TNM 2.5	2.5		_	_	
RESULTS: SOUND LEVELS PROJECT/CONTRACT: RUN: BARRIER DESIGN:		I-4 BtU PD8 I-4 Segmer P2 Iong 12	SE It 5 F	estival Shoulder	oulder				4 , (verage p	Average pavement type shall be used unless	shall be u	sed unles	يور ع	
ATMOSPHERICS:		68 de	68 deg F, 50% R	표					υ Ο	f a differ	o state ingriway agency substantiates the use of a different type with approval of FHWA.	approval o	f FHWA.	D n	
Receiver															
Name	No.	#DUs			ier						With Barrier				
			LAedin	Calculated	1	Crit'n	Calculated	Increase over existing Calculated Crit'n		lype Impact	Carculated LAeq1h	Calculated Go	d Goal	Calc	Calculated
									20					minus Goal	sn _
			dBA	dBA	ס	dBA	ф	8	Ī		dBA	В	ф	명	
F Phase 2 a	42	0.1	2 0	0.0	68.1	99	75	68.1	10	Snd Lvl	63.1		5.0	8	-3.0
F Phase 2 b	43	~	4 0	0.0	68.7	99		68.7	10	Snd Lvl	63.1		5.6	8	-2.4
F Phase 2 c	44	-	4	0.0	68.4	99	10	68.4	10	Snd Lvl	62.7	2	2.7	œ	-2.3
F Phase 2 d	45	10	4	0.0	2.79	99		67.7	9	Snd Lvl	62.2	2	5.5	œ	-2.5
F Phase 2 e	46		4 0	0.0	66.3	99	10	66.3	10	Snd Lvl	61.0		5.3	80	-2.7
F Phase 2 f	47	_	4 0	0.0	0.99	99	10	0.99	1	Snd Lvl	8.09	~	5.2	œ	-2.8
F Phase 2 g	48	~	4 0	0.0	74.6	99		74.6	9	Snd Lvl	65.1	_	9.5	00	1.5
F Phase 2 h	49			0.0	74.8	99		74.8	9	Snd Lvl	65.1	_	9.7	00	1,7
F Phase 2 i	51		4	0.0	64.7	99		64.7	9	17000	59.7	7	5.0	00	-3.0
F Phase 2 j	52			0.0	65.3	99		65.3	5	Ì	59.9	6	5.4	æ	-2.6
F Phase 2 k	53			0.0	64.6	99		64.6	9		59.4	**	5.2	œ	-2.8
F Phase 2 I	54			0.0	74.9	99		74.9	5	Snd LvI	65.2	~	2.6	80	1.7
F Phase 2 m	55			0.0	74.7	99	,	74.7	9	Snd Lvl	65.2	-2	9.5	œ	1.5
F Phase 2 n	56	10		0.0	74.8	99		74.8	5	Snd Lvl	65.4	T+	9.4	œ	1.4
F Phase 2 o	57	N	0	0.0	75.2	99		75.2	9	Snd Lvl	65.5	2	9.7	œ	1.7
F Phase 2 p	59			0.0	74.7	99		7.4.7	9	Snd Lvl	65.8	~	8.9	œ	0.0
F Phase 2 q	09	_	4	0.0	74.9	99	**	74.9	6	Snd Lvl	66.2	2	8.7	œ	0.7
F Phase 2 r	61		4 0	0.0	74.8	99		74.8	9	Snd Lvl	67.2	~ !	9.7	œ	-0.4
F Phase 2 s	62	0.	4	0.0	74.8	99		74.8	9	Snd Lvl	69.4	**	5.4	80	-2.6
F Phase 2 t	63	~	4 0	0.0	65.2	99	10	65.2	10	I	61.9	9	3.3	œ	-4.7
F Phase 2 u	64		0	0.0	62.4	99		62.4	9	ł	6.09	6	1,5	œ	-6.5
F Phase 2 v	65	10	2 0	0.0	64.1	99		64.1	9	ŀ	63.8	~	0.3	∞	-7.7
F Phase 2 w	99	10	0	0.0	61.7	99		61.7	9	:	61.3	~	0.4	œ	-7.6
F Phase 2 x	29			0.0	0.09	99		0.09	10	1	59.6		0.4	œ	-7.6

C:\TNM25\I4\Fest Phase IIb long

					14 DIO 108E
Dwelling Units	# DOS	# DUS Noise Reduction	duction		
		Min	Avg	Max	
		쁑	дB	dB	
All Selected	6	90 0.3	5.9	9.7	
All Impacted	Ø	62 5.0	7.5	5 9.7	
All that meet NR Goal	32	2 8.7	4.6	7.6	

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Stantec M Drauer				2 May 2016 TNM 2.5	16			_		
RESULTS: BARRIER DESCRIPTIONS PROJECT/CONTRACT: RUN: BARRIER DESIGN:	74 SE	I4 BtU PD&E I4 Segment 5 Festival Shoulder P2 long 14	stival Sho	ulder						
Barriers										
Name	Type Hei	Heights a	ghts along Barrier	Je.	Length If Wall	If Wall	If Berm			Cost
		Min	Avg	Max		Area	Volume	Top Width	Run:Rise	
		Ħ	Ħ	Ħ	¥	sq ft	cu yd	#2	ft.ft	69
Barrier11	>	14.00	14.00	0 14.00	0 1552	2 21728				651829
									Total Cost:	651829

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Parise P															
Main	Stantec M Drauer								2 May 201	9					
HENDENICALITY LA BRUN PORE LA Segment 5 Featival Shoulder P. Segment 5 Featival Shoulder									Calculate	d with T	NM 2.5		-	_	
P2 P3 P4 P5 P4 P5 P5 P5 P5 P5	RESULIS: SOUND LEVELS PROJECT/CONTRACT:		4 BtU F	D&E											
No. #DIS Existing No Barrier Increase over existing SPHERICS: Calculated Crit'n Calculated Calculated Crit'n Calculated Calculated Crit'n Calculated Calculated Crit'n Calculated Crit'n	RUN: BARRIER DESIGN:	_ L	4 Segn	_	stival Sho	ulder				Averag	te pavement fvr	d lleds of	solan bosn o	g	
No. #DUS Existing No Barrier Increase over existing Increas	ATMOSPHERICS:		Se dea	20%	I					a State	highway agen	cy substa	intiates the u	ISe	
No. #DUS Existing No Barrier Increase over existing Type Calculated Crift Impact Laeqth Lae	Receiver														
Calculated Critical Inpact Calculated Critical Inpact Calculated Critical Inpact Laeqth Calculated Critical Inpact Laeqth Calculated Critical Inpact Laeqth Calculated Critical Inpact Laeqth Calculated Critical Inpact Laeqth Calculated Calculated Critical Inpact Calculated Calculate	Name			Existing	No Barri	ег					With Barrie	<u>.</u>			
A				LAeq1h	LAeq1h		=	ncrease over	existing	Type	Calculated	-	Noise Reduction		
42 2 0.0 68.7 66 68.1 1 5 md Lwl 62.3 43 4 0.0 68.7 66 68.7 10 5 md Lwl 62.3 45 4 0.0 68.7 66 68.7 10 5 md Lwl 61.2 45 4 0.0 68.4 66 66.3 10 5 md Lwl 61.2 46 4 0.0 68.7 66 66.0 10 5 md Lwl 60.1 48 4 0.0 66.0 66.0 66.0 10 5 md Lwl 60.1 48 4 0.0 74.8 66 64.6 10 5 md Lwl 60.1 51 4 0.0 74.8 66 64.6 10 64.7 60 64.6 64.6 64.6 64.6 64.6 64.6 64.6 64.6 64.7 10 50.2 64.1 64.1 64.1 64.1 64.1 64.1					Calculat			alculated	Crit'n Sub'l Inc	Impaci		Calculated	ated Goal	Calcula	Calculated minus
42 2 0.0 68.7 66 68.7 10 Snd LvI 43 4 0.0 68.7 66 68.7 10 Snd LvI 44 4 0.0 68.7 66 68.7 10 Snd LvI 46 4 0.0 66.0 66.0 66.0 10 Snd LvI 47 4 0.0 66.0 66.0 66.0 10 Snd LvI 48 4 0.0 66.0 66.0 66.0 10 Snd LvI 48 4 0.0 66.0 66.0 66.0 10 Snd LvI 48 4 0.0 74.8 66 74.8 10 Snd LvI 51 4 0.0 64.7 66 64.7 10 Snd LvI 52 4 0.0 64.8 66 64.9 10 Snd LvI 52 4 0.0 74.8 66 74.9 66				dBA	dBA	dBA	ס	В	ф		dBA	g B	용	88	
43 4 0.0 68.7 66 68.4 10 Snd LW 44 4 0.0 68.4 66 68.4 10 Snd LW 45 4 0.0 67.7 66 66.3 66 67.7 10 Snd LW 46 4 0.0 74.6 66 66.3 10 Snd LW 48 4 0.0 74.6 66 66.3 10 Snd LW 49 4 0.0 74.8 66 64.7 10 Snd LW 51 4 0.0 64.7 66 64.7 10 Snd LW 52 4 0.0 64.7 66 64.5 10 10 53 4 0.0 64.7 66 64.5 10 10 54 4 0.0 74.7 66 74.8 66 74.8 10 Snd LW 55 4 0.0 74.7 66 74.8 66 74.8 10		42	2	0	0	68.1	99	68.1				4	5.7	œ	-2.3
44 4 0.0 68.4 66 68.4 10 Snd LvI 45 4 0.0 67.7 66 67.7 10 Snd LvI 46 4 0.0 66.3 66 66.0 10 Snd LvI 47 4 0.0 74.6 66 66.0 10 Snd LvI 51 4 0.0 74.8 66 64.7 10 Snd LvI 52 4 0.0 64.7 66 64.7 10 Snd LvI 53 4 0.0 64.7 66 64.8 10 54 4 0.0 74.7 66 65.3 10 55 4 0.0 74.7 66 74.9 10 Snd LvI 56 4 0.0 74.7 66 74.9 10 Snd LvI 60 4 0.0 74.9 66 74.9 10 Snd LvI	F Phase 2 b	43	4	0	0	68.7	99	68.7				6	6.4	00	-1.6
45 4 0.0 67.7 66 66.3 10 Snd LvI 46 4 0.0 66.3 66 66.3 10 Snd LvI 47 4 0.0 66.0 66 66.0 10 Snd LvI 48 4 0.0 74.8 66 64.7 10 Snd LvI 51 4 0.0 64.7 66 64.7 10 Snd LvI 52 4 0.0 64.6 66 64.7 10 Snd LvI 53 4 0.0 64.6 66 64.6 10 54 4 0.0 74.9 66 64.6 10 Snd LvI 55 4 0.0 74.7 66 74.9 10 Snd LvI 56 4 0.0 74.8 66 74.9 10 Snd LvI 60 4 0.0 74.8 66 74.9 10 Snd	F Phase 2 c	44	4	0.	0	68.4	99	68.4				.7	6.7	œ	6.
46 4 0.0 66.3 66 66.0 10 Snd Lvl 47 4 0.0 66.0 66 66.0 10 Snd Lvl 48 4 0.0 74.6 66 66.0 10 Snd Lvl 51 4 0.0 74.8 66 64.7 10 Snd Lvl 52 4 0.0 64.7 66 64.7 10 Snd Lvl 53 4 0.0 64.7 66 64.7 10 Snd Lvl 54 4 0.0 64.7 66 64.7 10 Snd Lvl 55 4 0.0 74.7 66 74.7 10 Snd Lvl 56 4 0.0 74.8 66 74.8 10 Snd Lvl 60 4 0.0 74.7 66 74.8 10 Snd Lvl 61 4 0.0 74.8 66 74.8 10 <td< td=""><td>F Phase 2 d</td><td>45</td><td>4</td><td>0</td><td>0</td><td>67.7</td><td>99</td><td>67.79</td><td></td><td>-</td><td></td><td>.2</td><td>6.5</td><td>00</td><td>-1.5</td></td<>	F Phase 2 d	45	4	0	0	67.7	99	67.79		-		.2	6.5	00	-1.5
47 4 0.0 66.0 66.0 66.0 10 Snd Lw 48 4 0.0 74.6 66 74.6 10 Snd Lw 49 4 0.0 74.8 66 64.7 10 Snd Lw 51 4 0.0 64.7 66 64.7 10 52 4 0.0 64.6 66 74.9 10 53 4 0.0 74.9 66 74.9 10 Snd Lw 54 4 0.0 74.7 66 74.9 10 Snd Lw 55 4 0.0 74.7 66 74.9 10 Snd Lw 55 4 0.0 74.7 66 74.9 10 Snd Lw 60 4 0.0 74.7 66 74.9 10 Snd Lw 61 4 0.0 74.9 66 74.9 10 Snd Lw 62 4 0.0 74.9 66 74.9 10 Snd Lw </td <td>F Phase 2 e</td> <td>46</td> <td>4</td> <td>0</td> <td>0</td> <td>66.3</td> <td>99</td> <td>66.3</td> <td></td> <td></td> <td></td> <td>_</td> <td>6.2</td> <td>ω</td> <td>-1.8</td>	F Phase 2 e	46	4	0	0	66.3	99	66.3				_	6.2	ω	-1.8
48 4 0.0 74.6 66 74.6 10 Snd LvI 49 4 0.0 74.8 66 74.8 10 Snd LvI 51 4 0.0 64.7 66 64.7 10 Snd LvI 52 4 0.0 64.6 66 64.6 10 53 4 0.0 74.7 66 74.9 10 Snd LvI 55 4 0.0 74.7 66 74.7 10 Snd LvI 56 4 0.0 74.7 66 74.7 10 Snd LvI 60 4 0.0 74.7 66 74.7 10 Snd LvI 60 4 0.0 74.7 66 74.7 10 Snd LvI 60 4 0.0 74.7 66 74.9 10 Snd LvI 61 4 0.0 74.8 66 74.8 10 Snd LvI 62 4 0.0 74.8 66 62.4 10 <	F Phase 2 f	47	4	0	0	0.99	99	0.99				1.2	5.8	œ	-2.2
49 4 0.0 74.8 66 74.8 10 sndLvI 51 4 0.0 64.7 66 64.7 10 52 4 0.0 64.6 66 64.6 10 53 4 0.0 74.9 66 64.6 10 54 4 0.0 74.7 66 74.7 10 sndLvI 56 4 0.0 74.7 66 74.8 10 sndLvI 57 4 0.0 74.7 66 74.7 10 sndLvI 60 4 0.0 74.7 66 74.7 10 sndLvI 60 4 0.0 74.7 66 74.9 10 sndLvI 61 4 0.0 74.8 66 74.9 10 sndLvI 62 4 0.0 74.8 66 74.8 10 sndLvI 63 4 0.0 74.8 66 65.2 10	F Phase 2 g	48	4	O.	0	74.6	99	74.6				6	10.7	80	2.7
51 4 0.0 64.7 66 64.7 10 52 4 0.0 64.6 66 64.6 10 54 4 0.0 74.9 66 74.9 10 55 4 0.0 74.7 66 74.7 10 8nd Lvl 56 4 0.0 74.7 66 74.7 10 8nd Lvl 56 4 0.0 74.7 66 74.7 10 8nd Lvl 60 4 0.0 74.7 66 74.7 10 8nd Lvl 60 4 0.0 74.7 66 74.8 10 8nd Lvl 60 4 0.0 74.8 66 74.8 10 8nd Lvl 61 4 0.0 74.8 66 74.8 10 8nd Lvl 62 4 0.0 74.8 66 74.8 10 8nd Lvl 63 4 0.0 65.2 66 65.2 10 10 <td>F Phase 2 h</td> <td>49</td> <td>4</td> <td>Ö</td> <td>0</td> <td>74.8</td> <td>99</td> <td>74.8</td> <td></td> <td></td> <td></td> <td>0.</td> <td>10.8</td> <td>80</td> <td>2.8</td>	F Phase 2 h	49	4	Ö	0	74.8	99	74.8				0.	10.8	80	2.8
52 4 0.0 65.3 66 65.3 10 53 4 0.0 74.9 66 74.9 10 8mLvl 54 4 0.0 74.7 66 74.9 10 8mLvl 56 4 0.0 74.7 66 74.8 10 8mLvl 57 4 0.0 74.8 66 74.8 10 8mLvl 59 4 0.0 74.7 66 74.7 10 8mLvl 60 4 0.0 74.7 66 74.7 10 8mLvl 60 4 0.0 74.7 66 74.7 10 8mLvl 61 4 0.0 74.8 66 74.9 10 8mLvl 62 4 0.0 74.8 66 74.9 10 8mLvl 62 4 0.0 74.8 66 74.9 10 8mLvl 64 4 0.0 62.4 66 74.8 10 8mLvl </td <td>F Phase 2 i</td> <td>51</td> <td>4</td> <td>o</td> <td>0</td> <td>64.7</td> <td>99</td> <td>64.7</td> <td></td> <td></td> <td></td> <td>5.5</td> <td>5.2</td> <td>60</td> <td>-2.8</td>	F Phase 2 i	51	4	o	0	64.7	99	64.7				5.5	5.2	60	-2.8
53 4 0.0 64.6 66 64.6 10 54 4 0.0 74.9 66 74.7 10 Snd LvI 55 4 0.0 74.7 66 74.7 10 Snd LvI 56 4 0.0 74.8 66 74.8 10 Snd LvI 57 4 0.0 74.7 66 74.7 10 Snd LvI 60 4 0.0 74.7 66 74.9 10 Snd LvI 60 4 0.0 74.8 66 74.8 10 Snd LvI 62 4 0.0 74.8 66 74.8 10 Snd LvI 63 4 0.0 65.2 66 65.2 10 5nd LvI 64 4 0.0 65.2 66 65.2 10 65 4 0.0 65.2 66 64.1 10 66 4 0.0 64.1 66 61.7 10 </td <td>F Phase 2 j</td> <td>52</td> <td>4</td> <td>o</td> <td>0</td> <td>65.3</td> <td>99</td> <td>65.3</td> <td></td> <td></td> <td></td> <td>5</td> <td>5.8</td> <td>œ</td> <td>-2.2</td>	F Phase 2 j	52	4	o	0	65.3	99	65.3				5	5.8	œ	-2.2
54 4 0.0 74.9 66 74.9 10 Snd LvI 55 4 0.0 74.7 66 74.8 10 Snd LvI 56 4 0.0 74.7 66 74.8 10 Snd LvI 57 4 0.0 74.7 66 74.7 10 Snd LvI 60 4 0.0 74.7 66 74.8 10 Snd LvI 61 4 0.0 74.8 66 74.8 10 Snd LvI 62 4 0.0 74.8 66 74.8 10 Snd LvI 63 4 0.0 65.2 66 65.2 10 5nd LvI 64 4 0.0 65.2 66 65.2 10 5nd LvI 65 4 0.0 64.1 66 64.1 10 5nd LvI 66 4 0.0 64.1 66 64.1 10 5nd LvI 66 4 0.0 61.7 66 61.7 10	F Phase 2 k	53	4	0	0	9.49	99	64.6			59	ε.	5.3	œ	-2.7
55 4 0.0 74.7 66 74.7 10 Snd LvI 56 4 0.0 74.8 66 74.8 10 Snd LvI 57 4 0.0 75.2 66 74.7 10 Snd LvI 60 4 0.0 74.9 66 74.8 10 Snd LvI 61 4 0.0 74.8 66 74.8 10 Snd LvI 62 4 0.0 74.8 66 74.8 10 Snd LvI 63 4 0.0 65.2 66 65.2 10 64 4 0.0 65.2 66 65.2 10 65 4 0.0 65.2 66 65.4 10 65 4 0.0 64.1 66 64.1 10 66 4 0.0 64.1 66 64.1 10 67 2 0.0 60.0 60.0 60.0 60.0	F Phase 2 I	54	4	ō	0	74.9	99	74.9				Ψ,	10.8	œ	2.8
56 4 0.0 74.8 66 74.8 10 Snd LvI 57 4 0.0 75.2 66 74.7 10 Snd LvI 60 4 0.0 74.7 66 74.9 10 Snd LvI 61 4 0.0 74.8 66 74.8 10 Snd LvI 62 4 0.0 74.8 66 74.8 10 Snd LvI 63 4 0.0 65.2 66 65.2 10 Snd LvI 64 4 0.0 62.4 66 62.4 10 5.2 65 2 0.0 64.1 66 64.1 10 65 4 0.0 64.1 66 64.1 10 66 4 0.0 60.0 64.1 10 67 2 0.0 60.0 66.0 60.0 10	F Phase 2 m	55	4	Ö.	0	74.7	99	74.7				-	10.6	80	2.6
57 4 0.0 75.2 66 75.2 10 Snd LvI 59 4 0.0 74.7 66 74.7 10 Snd LvI 60 4 0.0 74.8 66 74.8 10 Snd LvI 61 4 0.0 74.8 66 74.8 10 Snd LvI 62 4 0.0 65.2 66 65.2 10 Snd LvI 63 4 0.0 62.4 66 62.4 10 5nd LvI 64 4 0.0 62.4 66 64.1 10 65 2 0.0 64.1 66 64.1 10 66 4 0.0 61.7 66 61.7 10 67 2 0.0 60.0 66.0 60.0 60.0	F Phase 2 n	26	4	Ö	0	74.8	99	74.8				က	10.5	œ	2.5
59 4 0.0 74.7 66 74.7 10 Snd LvI 60 4 0.0 74.9 66 74.8 10 Snd LvI 62 4 0.0 74.8 66 74.8 10 Snd LvI 63 4 0.0 65.2 66 65.2 10 Snd LvI 64 4 0.0 62.4 66 62.4 10 65 2 0.0 64.1 66 64.1 10 66 4 0.0 61.7 66 61.7 10 67 2 0.0 60.0 66.0 10 60.0 10	F Phase 2 o	25	4	ō	0	75.2	99	75.2				4	10.8	œ	2.8
60 4 0.0 74.9 66 74.9 10 Snd LvI 61 4 0.0 74.8 66 74.8 10 Snd LvI 62 4 0.0 74.8 66 74.8 10 Snd LvI 63 4 0.0 65.2 66 65.2 10 64 4 0.0 62.4 66 64.1 10 65 2 0.0 64.1 66 64.1 10 66 4 0.0 61.7 66 61.7 10 67 2 0.0 60.0 66 10 60.0 10	F Phase 2 p	29	4	O	0	74.7	99	7.4.7				∞ .	6.6	∞	1.9
61 4 0.0 74.8 66 74.8 10 Snd Lvl 62 4 0.0 74.8 66 74.8 10 Snd Lvl 63 4 0.0 65.2 66 65.2 10 64 1 66 65.2 10 65 65.2 10 65 6 65.2 10	F Phase 2 q	09	4	0.0	0	74.9	99	74.9				е.	9.6	œ	1.6
62 4 0.0 74.8 66 74.8 10 Snd LvI 63 4 0.0 65.2 66 65.2 10 64 4 0.0 62.4 66 62.4 10 65 2 0.0 64.1 66 64.1 10 66 4 0.0 61.7 66 61.7 10 67 2 0.0 60.0 66 60.0 10	F Phase 2 r	19	4	0.0	0	74.8	99	74.8				9	8.2	00	0.2
63 4 0.0 65.2 66 65.2 10 64 4 0.0 62.4 66 62.4 10 65 2 0.0 64.1 66 64.1 10 66 4 0.0 61.7 66 61.7 10 67 2 0.0 60.0 66 60.0 10	F Phase 2 s	62	4	Ö	0	74.8	99	74.8				-	5.7	œ	-2.3
64 4 0.0 62.4 66 62.4 10 65 2 0.0 64.1 66 64.1 10 66 4 0.0 61.7 66 61.7 10 67 2 0.0 60.0 66 60.0 10	F Phase 2 t	63	4	0.0		65.2	99	65.2		1	61	.7	3,5	œ	4.5
65 2 0.0 64.1 66 64.1 10 66 4 0.0 61.7 66 61.7 10 67 2 0.0 60.0 66 60.0 10	F Phase 2 u	64	4	Ö		62.4	99	62.4		-	909	ω,	1.6	œ	4.9-
66 4 0.0 61.7 66 61.7 10 67 2 0.0 60.0 66 60.0 10	F Phase 2 v	65	2	0		64.1	99	64.1		1	63	œ.	0.3	œ	7.7-
67 2 0.0 60.0 66 60.0 10	F Phase 2 w	99	4	0.0		61.7	99	61.7		1	61	e,	4.0	œ	9.7-
	F Phase 2 x	29	7	ö		0.09	99	0.09		1	59	9.	9.0	œ	-7.6

		hase II
		:\TNM25\l4\Fest Phase
		:\TNM25\

Stantec M Drauer				29 April 2016 TNM 2.5	2016					
RESULTS: BARRIER DESCRIPTIONS PROJECT/CONTRACT: RUN: BARRIER DESIGN:	14 BtU 14 Seg P2 12	I4 BtU PD&E I4 Segment 5 Festiva ROW P2 12	estiva ROM							
Barriers										
Name	Type	Type Heights along Barrier	long Barrie	L	Length	If Wall	If Berm			Cost
		Min	Avg	Мах		Area	Volume	Top Width	Run:Rise	
		Ħ	₽	#	#	sq ft	cu yd	Ħ	ft:ff	69
Barrier10	3	12.00	0 12.00	0 12.00	0 1157	13890				416698
									Total Cost:	416698

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M Drauer RESULTS: SOUND LEVELS PROJECT/CONTRACT:							20 April 2016	016					_
RESULTS: SOUND LEVELS PROJECT/CONTRACT:							TNM 2.5	2					
RESULTS: SOUND LEVELS PROJECT/CONTRACT:							Calculated with TNM 2.5	d with 1	NM 2.5		_	_	
NI IO	_	I-4 BtU PD&E	PD&E										
	•	I-4 Segment 5		Festiva ROW				•	;				
BARRIER DESIGN:	-	P2 12				_		Avera a State	Average pavement type shall be used unless a State highway agency substantiates the use	pe shall be cy substant	used unless iates the us	, 9	
ATMOSPHERICS:		68 deg F, 50%	F, 50% RH					of a di	of a different type with approval of FHWA	h approval	of FHWA.		
Receiver	Ιİ	1 1											
Name	Š.	#DNs	Existing	No Barrier		8			With Barrier	. 1			
			LAeq1h	LAeq1h		Increase over	ver existing	Type			duction		
				Calculated	d Crit'n	Calculated	Sub'l Inc	Impact	t LAeq1h	Calculated	ed Goal	Calculated minus Goal	ated
			dBA	dBA	dBA	æ	쁑		dBA	ф	쁑	쁑	
F Phase 2 a	42	2	0.0		67.4	99	67.4	10 Snd Lvl		0.79	0.4	80	-7.6
F Phase 2 b	43	4	0.0		68.4	99	68.4	10 Snd Lvl		68.0	0.4	œ	-7.6
F Phase 2 c	44	4	0.0		68.3	99	68.3	10 Snd Lvl		67.2	1.1	00	6.9-
F Phase 2 d	45	4								0.99	1.7	œ	-6.3
F Phase 2 e	46	4						10 Snd Lvl		63.1	3.2	œ	4.
F Phase 2 f	47	4								62.3	3.6	œ	4.4
F Phase 2 g	48	4	0.0				~			65.8	8.8	œ	0.8
F Phase 2 h	49	4						10 Snd Lvl		65.5	9.2	œ	1.2
F Phase 2 i	51	4						10	99	2.09	4.0	œ	4.0
F Phase 2 j	52	4	0.0			99		10	<u> </u>	9.09	4.6	œ	-3.4
F Phase 2 k	53	4	0.0			99		01	56	59.8	4.7	œ	-3.3
F Phase 2 I	54	4	0.0		74.9	99		10 Snd Lvl		65.4	9.5	œ	1,5
F Phase 2 m	92	4	0.0		75.0	99	75.0 1			65.3	2.6	œ	1.7
F Phase 2 n	26	4			74.7	. 99	74.7	10 Snd Lvl		65.3	9.4	œ	1.4
F Phase 2 o	22	4	0.0		75.1	99	75.1	10 Snd Lvl		65.4	9.7	œ	1.7
F Phase 2 p	59	4	0.0		74.8	99	74.8	10 Snd Lvl		65.5	9.3	00	1.3
F Phase 2 q	09	4	0.0		75.1	99	75.1	10 Snd Lvl		65.7	9.4	œ	1.4
F Phase 2 r	61	4	0.0		74.9	. 99		10 Snd Lvl		66.4	8.5	ø	0.5
F Phase 2 s	62	4	0.0		74.9	99	74.9	10 Snd Lvl		68.2	6.7	80	-1.3
F Phase 2 t	63	4	0.0		65.1	99	65.1	10		61.7	3.4	80	-4.6
F Phase 2 u	4	4	0.0		62.4	99	62.4 1	10		6.09	1.5	00	-6.5
F Phase 2 v	65	2					64.1	10		63.8	0.3	œ	7.7-
F Phase 2 w	99	4						10	2	61.4	0.3	∞	-7.7
F Phase 2 x	29	2	0.0		0.09	99	60.0	10	3	29.7	0.3	8	-7.7

29 April 2016

RESULTS: SOUND LEVELS

Dwelling Units	# DOS	Noise Reduction	duction	
		Min	Avg	Max
		B	용	쁑
All Selected	06	0.3		5.0
All Impacted	58	9.0		6.5
All that meet NR Goal	36	8.5		9.3

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OUTRACT: 14 Segment 5 Festiva ROW P2 14 RICS: 68 deg F, 50% RH RICS: 69 deg F, 50% RH RICS: 60 deg											
1				2 + 2	27 April 2016 TNM 2.5	27 April 2016 TNM 2.5 Calculated with TNM 2.5	r u		_		
Fig deg F, 50% RH rer No. #DUS Existing In Darrier Calculated Info Crit'n Calculated Info Calculated Info Calculated Info Crit'n Calculated Info Ca	I-4 BtU PD&E I-4 Segment 5 Festiva R P2 14	Mo		Š		Average p	Average pavement type shall be used unless	shall be use	d unless		
See 2 a Academy and a composition of the composit						a state mig of a differe	a otate ingriway agency substantiates the use of a different type with approval of FHWA.	gpproval of F	es me use :HWA.	ds.	
Se2 a ABA ABA Calculated ATT Critical Led ATT Calculated ATT Critical Critic	#Dile Evieting	rior					Mith Borrior				
dBA Calculated Crit n 42 2 0.0 67.4 66 43 4 0.0 67.4 66 44 4 0.0 68.3 66 45 4 0.0 68.3 66 46 4 4 0.0 67.7 66 48 4 0.0 67.7 66 48 4 0.0 67.7 66 51 4 0.0 77.4 66 52 4 0.0 77.4 66 53 4 0.0 77.4 66 54 4 0.0 77.4 66 55 4 0.0 77.4 66 56 4 0.0 77.4 66 60 4 0.0 77.4 66 60 4 0.0 77.4 66 62 4 0.0 77.4 66 <th>#DOS EXISTING</th> <th>an iei 1h</th> <th>Increa</th> <th>Increase over existing</th> <th></th> <th>Type</th> <th>Calculated</th> <th>Noise Reduction</th> <th>ction</th> <th></th> <th></th>	#DOS EXISTING	an iei 1h	Increa	Increase over existing		Type	Calculated	Noise Reduction	ction		
42 2 0.0 67.4 66 43 4 0.0 67.4 66 43 4 0.0 68.3 66 44 4 0.0 68.3 66 45 4 0.0 67.7 66 47 4 0.0 65.9 66 48 4 0.0 65.2 66 48 4 0.0 74.7 66 51 4 0.0 74.7 66 52 4 0.0 64.5 66 53 4 0.0 74.7 66 54 4 0.0 74.8 66 55 4 0.0 74.8 66 50 4 0.0 74.8 66 60 4 0.0 74.9 66 60 4 0.0 74.9 66 61 4 0.0 74.9 66 <th>Calci</th> <th></th> <th>Calculated</th> <th></th> <th>Crit'n Sub'l Inc</th> <th>Impact</th> <th>LAeq1h</th> <th>Calculated</th> <th>Goal</th> <th>Calculated minus Goal</th> <th>ted</th>	Calci		Calculated		Crit'n Sub'l Inc	Impact	LAeq1h	Calculated	Goal	Calculated minus Goal	ted
42 2 0.0 67.4 43 4 0.0 68.3 44 4 0.0 68.3 45 4 0.0 67.7 46 4 0.0 66.3 47 4 0.0 66.3 48 4 0.0 74.7 51 4 0.0 64.7 52 4 0.0 64.5 53 4 0.0 74.7 56 4 0.0 74.7 56 4 0.0 74.7 59 4 0.0 74.7 60 4 0.0 74.7 60 4 0.0 74.7 60 4 0.0 74.8 60 4 0.0 74.8 60 4 0.0 74.9 61 4 0.0 74.9 62 4 0.0 74.9 63 4 0.0 74.9 64 4 0.0 62.4 <td></td> <td>dBA</td> <td>æ</td> <td>8B</td> <td></td> <td></td> <td>dBA</td> <td>dB B</td> <td>фB</td> <td>В</td> <td></td>		dBA	æ	8B			dBA	dB B	фB	В	
43 4 0.0 68.4 44 4 0.0 68.3 45 4 0.0 67.7 46 4 0.0 65.9 47 4 0.0 66.3 48 4 0.0 74.6 49 4 0.0 74.7 51 4 0.0 64.7 52 4 0.0 64.5 54 4 0.0 64.5 55 4 0.0 74.7 56 4 0.0 74.7 59 4 0.0 74.8 60 4 0.0 74.8 60 4 0.0 74.9 62 4 0.0 74.9 63 4 0.0 65.1 64 4 0.0 65.1 65 5 0 0 65.1 65 6 0 0 65.1 65 6 0 0 65.1 65 <td< td=""><td>2 0</td><td>67.4</td><td>99</td><td>67.4</td><td>10</td><td>Snd Lvl</td><td>67.0</td><td>0.4</td><td>4</td><td>œ</td><td>-7.6</td></td<>	2 0	67.4	99	67.4	10	Snd Lvl	67.0	0.4	4	œ	-7.6
44 4 0.0 68.3 45 4 0.0 67.7 46 4 0.0 65.9 47 4 0.0 65.9 48 4 0.0 74.7 51 4 0.0 74.7 52 4 0.0 64.5 53 4 0.0 64.5 54 4 0.0 74.9 55 4 0.0 74.7 56 4 0.0 74.7 56 4 0.0 74.7 60 4 0.0 74.7 60 4 0.0 74.8 60 4 0.0 74.9 61 4 0.0 74.9 62 4 0.0 74.9 63 4 0.0 65.1 64 4 0.0 65.1 65 5 0 0 65.1 65 6 0 0 65.1 66 7 <	4	68.4	99	68.4	10	Snd LvI	68.0	0.4	4	œ	-7.6
45 4 0.0 67.7 46 4 0.0 66.3 47 4 0.0 65.9 48 4 0.0 74.6 49 4 0.0 74.7 51 4 0.0 64.7 52 4 0.0 64.5 53 4 0.0 74.9 54 4 0.0 74.7 55 4 0.0 74.7 56 4 0.0 74.7 57 4 0.0 74.7 60 4 0.0 74.7 60 4 0.0 74.7 60 4 0.0 74.9 61 4 0.0 74.9 62 4 0.0 74.9 63 4 0.0 65.1 64 4 0.0 65.1 65 5 0 66.1 66 4 0.0 64.1 66 4 0.0 64.1	4	68.3	99	68.3	10	Snd Lvl	67.1	1.2	2	8	-6.8
46 4 0.0 66.3 47 4 0.0 65.9 48 4 0.0 74.6 49 4 0.0 74.7 51 4 0.0 64.7 52 4 0.0 64.5 53 4 0.0 64.5 54 4 0.0 74.9 55 4 0.0 74.7 56 4 0.0 74.7 57 4 0.0 74.7 60 4 0.0 74.8 60 4 0.0 74.9 62 4 0.0 74.9 63 4 0.0 74.9 64 4 0.0 65.1 65 5 0 65.1 64 4 0.0 65.1 65 4 0.0 65.1 65 5 0 66.4 66 4 0.0 66.1 66 4 0.0 66.1 66 4 0.0 66.1 66 4 0.0 66.1 66 6 6 6 66 <	4	2.78	99	2'.29	10	Snd LvI	65.8		0	œ	6.1
47 4 0.0 65.9 48 4 0.0 74.6 49 4 0.0 74.7 51 4 0.0 64.7 52 4 0.0 64.5 53 4 0.0 64.5 54 4 0.0 74.9 55 4 0.0 74.7 56 4 0.0 74.7 57 4 0.0 74.7 59 4 0.0 74.8 60 4 0.0 74.9 61 4 0.0 74.9 62 4 0.0 74.9 63 4 0.0 65.1 64 4 0.0 65.1 65 5 0 66.4 64 6 0 66.1 65 6 0 66.1 66 7 0 66.1	4	66.3	99	66.3	10	Snd LvI	62.7		9	œ	4.4
48 4 0.0 74.6 49 4 0.0 74.7 51 4 0.0 64.7 52 4 0.0 64.5 53 4 0.0 74.9 54 4 0.0 74.9 55 4 0.0 74.7 57 4 0.0 74.7 59 4 0.0 74.8 60 4 0.0 74.9 61 4 0.0 74.9 62 4 0.0 74.9 63 4 0.0 74.9 64 4 0.0 65.1 65 5 0 0 65.1 64 4 0.0 65.1 65 5 0 0 65.1 65 6 0 0 65.1 66 4 0 0 66.1 66 4 0 0 64.1 66 4 0 0 66.1	4	62.9	99	62.9	10		62.1		æ	8	4.2
49 4 0.0 74.7 51 4 0.0 64.7 52 4 0.0 64.5 53 4 0.0 64.5 54 4 0.0 74.9 55 4 0.0 75.1 57 4 0.0 74.7 59 4 0.0 74.8 60 4 0.0 74.9 61 4 0.0 74.9 62 4 0.0 74.9 63 4 0.0 74.9 64 4 0.0 65.1 65 2 0.0 65.1 64 4 0.0 65.1 65 2 0.0 65.1 66 4 0.0 65.1 66 4 0.0 66.1 66 4 0.0 66.1 66 4 0.0 66.1 66 4 0.0 66.1 66 4 0.0 66.1 <td>4</td> <td>74.6</td> <td>99</td> <td>74.6</td> <td>9</td> <td>Snd Lvl</td> <td>64.9</td> <td></td> <td>7</td> <td>æ</td> <td>1.7</td>	4	74.6	99	74.6	9	Snd Lvl	64.9		7	æ	1.7
51 4 0.0 64.7 52 4 0.0 65.2 53 4 0.0 64.5 54 4 0.0 74.9 55 4 0.0 74.7 56 4 0.0 74.7 59 4 0.0 75.1 60 4 0.0 74.9 61 4 0.0 74.9 62 4 0.0 74.9 63 4 0.0 65.1 64 4 0.0 65.1 65 2 0.0 64.1 65 2 0.0 64.1 66 4 0.0 66.1	4	74.7	99	74.7	10	Snd Lvl	64.5	10.2	2	œ	2.2
52 4 0.0 64.5 53 4 0.0 74.9 54 4 0.0 74.9 55 4 0.0 74.7 56 4 0.0 74.7 57 4 0.0 74.8 60 4 0.0 75.1 61 4 0.0 74.9 62 4 0.0 74.9 63 4 0.0 74.9 64 4 0.0 65.1 65 2 0.0 64.1 66 4 0.0 64.1 66 4 0.0 64.1	4	64.7	99	64.7	10	ì	2.09		0	80	4.0
53 4 0.0 64.5 54 4 0.0 74.9 56 4 0.0 74.7 57 4 0.0 74.7 59 4 0.0 75.1 60 4 0.0 75.1 61 4 0.0 74.9 62 4 0.0 74.9 63 4 0.0 65.1 64 4 0.0 65.1 65 2 0.0 64.1 66 4 0.0 64.1	4	65.2	99	65.2	10	1	9.09		9	6 0	4.6
54 4 0.0 74.9 55 4 0.0 75.0 56 4 0.0 74.7 57 4 0.0 75.1 60 4 0.0 75.1 61 4 0.0 74.9 62 4 0.0 74.9 63 4 0.0 65.1 64 4 0.0 65.1 65 2 0.0 64.1 66 4 0.0 64.1	4	64.5	99	64.5	10	•	59.9		9	œ	-3.4
55 4 0.0 75.0 56 4 0.0 74.7 57 4 0.0 75.1 59 4 0.0 74.8 60 4 0.0 74.9 61 4 0.0 74.9 62 4 0.0 74.9 63 4 0.0 65.1 64 4 0.0 62.4 65 2 0.0 64.1 66 4 0.0 64.1	4	74.9	99	74.9	10	Snd Lvl	64.3		9	œ	2.6
56 4 0.0 74.7 57 4 0.0 75.1 59 4 0.0 74.8 60 4 0.0 75.1 61 4 0.0 74.9 62 4 0.0 74.9 63 4 0.0 65.1 64 4 0.0 65.1 65 2 0.0 64.1 66 4 0.0 64.1	4	75.0	99	75.0	9	Snd Lvl	64.3		7	œ	2.7
57 4 0.0 75.1 59 4 0.0 74.8 60 4 0.0 75.1 61 4 0.0 74.9 62 4 0.0 74.9 63 4 0.0 65.1 64 4 0.0 65.1 65 2 0.0 64.1 66 4 0.0 64.1	4	74.7	99	74.7	9	Snd Lvl	64.3		4	œ	2.4
59 4 0.0 74.8 60 4 0.0 75.1 61 4 0.0 74.9 62 4 0.0 74.9 63 4 0.0 74.9 64 4 0.0 65.1 65 2 0.0 64.1 66 4 0.0 64.1	4	75.1	99	75.1	10	Snd Lvl	64.3		œ	ထ	2.8
60 4 0.0 75.1 61 4 0.0 74.9 62 4 0.0 74.9 63 4 0.0 65.1 64 4 0.0 62.4 65 2 0.0 64.1 66 4 0.0 64.1	4	74.8	99	74.8	10	Snd Lvl	64.5	5 10.3	9	80	2.3
61 4 0.0 74.9 62 4 0.0 74.9 63 4 0.0 65.1 64 4 0.0 62.4 65 2 0.0 64.1 66 4 0.0 64.1	4	75.1	99	75.1	10	Snd Lvl	64.7	10.4	4	80	2.4
62 4 0.0 74.9 63 4 0.0 65.1 64 4 0.0 62.4 65 2 0.0 64.1 66 4 0.0 64.1	4	74.9	99	74.9	10	Snd Lvl	65.7		2	00	1.2
63 4 0.0 65.1 64 4 0.0 62.4 65 2 0.0 64.1 66 4 0.0 64.1	4	74.9	99	74.9	10	Snd Lvl	67.8		1	œ	6.0
64 4 0.0 62.4 65 2 0.0 64.1 66 4 0.0 64.1	4	65.1	99	65.1	10	1	61.8	3 3.3	3	œ	4.7
65 2 0.0 64.1 66 4 0.0 61.7	4	62.4	99	62.4	10	- Carrier	8.09	1.6	9	œ	-6.4
66 4 0.0 61.7	2	64.1	99	64.1	10	3	63.8	3: 0.3	8	œ	7.7-
	4	61.7	99	61.7	10	1	61.3	3 0.4	4	∞	-7.6
2 0.0 60.0	67 2 0.0	0.09	99	0.09	10	1	59.6	3 0.4	4	œ	-7.6

RESULTS: SOUND LEVELS

C:\TNM25\I4\Fest Phase II

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Dwelling Units	# DUs	# DUs Noise Reduction	duction	
		Min	Avg	Max
		ф	ф	æ
All Selected	06	0.3	5.4	4 10.8
All Impacted	58	0.0	1.7	10.8
All that meet NR Goal	36	9.2	10.3	3 10.8

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Stantec M Drauer				27 April 2016 TNM 2.5	2016					
RESULTS: BARRIER DESCRIPTIONS PROJECT/CONTRACT: RUN: BARRIER DESIGN:	14 Btt 14 Se P2 14	I.4 BtU PD&E I.4 Segment 5 Festiva ROW P2 14	stiva ROW							
Barriers										
Name	Type	Type Heights along Barrier	ong Barrie	_	Length If Wall	If Wall	If Berm			Cost
		Zi Ci	Avg	Max		Area	Volume	Top Width	Run:Rise	
		¥	¥	¥	e	sq ft	cu yd	#	ft:ft	69
Barrier10	>	14.00	14.00	14.00	0 1157	7 16205				486147
									Total Cost:	486147

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Stantec M Drauer				27 April 2016 TNM 2.5	916						
RESULTS: BARRIER DESCRIPTIONS PROJECT/CONTRACT: RUN: BARRIER DESIGN:	14 Btt 14 Seç P2 16	I-4 BtU PD&E I-4 Segment 5 Festiva ROW P2 16	stiva ROW								
Barriers											
Name	Type	Heights along Barrier	ong Barrie		Length	If Wall	If Berm			Cost	
		Min	Avg	Мах		Area	Volume	Top Width	Run:Rise		
		¥	¥	Ĥ	#	sq ft	cu yd	₩	ft.ft	G	
Barrier10	8	16.00	16.00	16.00	1157	18520				555597	97
									Total Cost:	555597	97

4	407
	April
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M Drauer							27 April 2016 TNM 2.5	2016					· ·	
RESULTS: SOUND LEVELS PROJECT/CONTRACT: RUN: BARRIER DESIGN:	2 2 4	I-4 BtU PD&E I-4 Segment 5 Festiva ROW P2 16	&E nt 5 Fest	iva ROW			Calculat	ed with Ave	Calculated with TNM 2.5 Average paver	ement type	with TNM 2.5 Average pavement type shall be used unless	unless		
ATMOSPHERICS:		68 deg F, 50%	50% RH					ofa	ate nignv different	vay agency type with	a State nighway agency substantiates the use of a different type with approval of FHWA.	the use		
Receiver Name	No.	#DUS Ex	Existina	No Barrier					3	With Barrier				
			LAeq1h	LAeq1h		Increase o	Increase over existing	Type		Calculated	Noise Reduction	ion	L	
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc		t	LAeq1h	Calculated	Goal	Calculated minus Goal	ated
		dBA		dBA	dBA	B	ВВ		dBA	Ą	dB	dB	8	
F Phase 2 a	42	2	0.0	9	67.4	99	67.4	10 Sn	Snd Lvl	0.79	0.4		8	-7.6
F Phase 2 b	43	4	0.0	39	68.4	99	68.4	10 Sn	Snd Lvl	6.79	0.5		80	-7.5
F Phase 2 c	44	4	0.0	39	68.3		68.3	10 Sn	Snd Lvl	67.1	1.2		00	φ.
F Phase 2 d	45	4	0.0	9			25.		Snd Lvl	65.7	2.0		œ	-6.0
F Phase 2 e	46	4	0.0	99		99			Snd Lvl	62.5			00	4.2
F Phase 2 f	47	4	0.0	39				10	1	61.7	4.2		ω	-3.8
F Phase 2 g	48	4	0.0	7.					Snd Lvl	64.3	10.3		00	2.3
F Phase 2 h	49	4	0.0	7.					Snd Lvl	63.7	11.0		8	3.0
F Phase 2 i	51	4	0.0	9	64.7	99	64.7	10	1	60.3	4.4		œ	-3.6
F Phase 2 j	52	4	0.0	99					1	60.1			œ	-2.9
F Phase 2 k	53	4	0.0	79				10	1	59.4	5.1		œ	-2.9
F Phase 2 I	54	4	0.0	7/					Snd Lvl	63.5	11,4		80	3.4
F Phase 2 m	55	4	0.0	7.					Snd Lvl	63.4	11.6		œ	3.6
F Phase 2 n	99	4	0.0	1/			74.7	10 Sn	Snd LvI	63.4	11.3		80	3.3
F Phase 2 o	22	4	0.0	7.5			75.1	10 Sn	Snd Lvl	63.5	9.11		80	3.6
F Phase 2 p	29	4	0.0	7/			74.8	10 Sn	Snd Lvl	63.7	11.1		80	3.1
F Phase 2 q	09	4	0.0	75	75.1	99	75.1	10 Sn	Snd Lvl	64.0	11.1		80	3.1
F Phase 2 r	61	4	0.0	77	74.9	99	74.9	10 Sn	Snd Lvl	65.1	8.6		60	£.
F Phase 2 s	62	4	0.0	74	74.9		74.9	10 Sn	Snd Lvl	67.5	7.4		œ	9.0-
F Phase 2 t	63	4	0.0	39			65.1	10	1	61.4	3.7		œ	4.3
F Phase 2 u	64	4	0.0	79			62.4	10	1	60.7	1.7		œ	-6.3
F Phase 2 v	92	2	0.0	9	64.1		64.1	10	1	63.8	0.3		œ	-7.7
F Phase 2 w	99	4	0.0	6,			61.7	10	1	61.3	0.4		00	-7.6
F Phase 2 x	29	7	0.0	9	9 0.09	99	0.09	10	1	59.6	0.4		00	-7.6

RESULTS: SOUND LEVELS

RESULTS: SOUND LEVELS					I-4 BtU PD&E
Dwelling Units	# DNs	Noise Reduction	duction		
		Min	Avg	Max	
		쁑	g B	g B	
All Selected	06	0.3		5.8	11.6
All Impacted	58	0.4		9.7	11.6
All that meet NR Goal	36	9.6		11.0	11.6

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Stantec M Drauer				27 April 2016 TNM 2.5	:016					
RESULTS: BARRIER DESCRIPTIONS PROJECT/CONTRACT: RUN: BARRIER DESIGN:	1-4 BtU 1-4 Seg P2 18	I-4 BtU PD&E I-4 Segment 5 Festiva ROW P2 18	estiva ROW							
Barriers										
Name	Type	Type Heights along Barrier	long Barrie		Length	If Wall	If Berm			Cost
		Z C	Avg	Мах		Area	Volume	Top	Run:Rise	
		₽	¥	#	ft	sq ft	cu yd	₽	frif	S
Barrier10	≥	18.00	18.00	18.00	1157	20835				625046
									Total Cost:	625046

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Symble Paris Par															
Secret Form	Stantec								27 April '	2016					
Average Aver	M Drauer								TNM 2.5	2					
The Segment 5 Feetiva ROW 1-4 Segment 5	SEGIII TS: SOLIND LEVELS								Calculate	ed with 1	NM 2.5		_	_	
Mo. #	PROJECT/CONTRACT: RUN: BARRIER DESIGN:		14 Btt 1-4 Se P2 18	J PD&E gment 5	stiva RO	>				Averag	- Payement fun	64 104 104	700		
No. #EUIS Existing Learning	ATMOSPHERICS:		68 de	g F, 50% R	I					a State	highway agent	sy substanti	ates the us	a es	
No. #DDs Existing LAeqrin LAeqrin Calculated Increase over existing Calculated Type Calculated Calculated Calculated Note and Calculated Calculated Milth Barrier Calculated Calculated Calculated 	Receiver									5	netern type with	i approvai c	I FHWA.		
Calculated Cirity Calc	Name	No.	#DUS	Existin	No Bar	rier					With Barrie	L			
Calculated Critic Calculated Critic Impact LAequit Calculated Cutic Calculated Cutic Calculated Cutic Calculated Calcula				LAeq1h	LAeq1			Increase ove	existing	Type	Calculated	Noise Rec	duction	-	
Mathematical Control of the contro					Calcul		rith	Calculated	Crit'n Sub'l Inc	Impaci		Calculate	d Goal	Calcu	lated
42 2 0.0 67.4 10 Snd Lvi 67.0 0.4 8 43 4 0.0 68.4 66 68.4 10 Snd Lvi 67.0 0.5 8 45 4 0.0 68.3 66 68.3 10 Snd Lvi 67.0 1.3 8 46 4 0.0 67.7 66 68.3 10 Snd Lvi 65.6 2.1 8 46 4 0.0 65.3 66 66.3 10 Snd Lvi 65.6 2.1 8 48 4 0.0 65.3 66 66.3 10 Snd Lvi 65.3 4.0 8 51 4 0.0 65.3 66 64.7 10 Snd Lvi 65.3 11.0 8 52 4 0.0 64.7 66 64.7 10 Snd Lvi 62.3 11.0 8 55 4 0.0 64.				dBA	dBA	6	BA	æ	g		dBA	æ	쁑	д В 6	
43 44 0.0 68.4 66 68.4 10 Snd LWI 67.9 0.5 8 44 4 0.0 68.3 66 68.3 10 Snd LWI 65.6 2.1 8 46 4 0.0 66.3 66 68.3 10 Snd LWI 65.6 2.1 8 46 4 0.0 65.9 66 65.9 10 50.1 8 48 4 0.0 65.9 66 65.9 10 61.5 4.4 6 49 4 0.0 65.9 66 65.9 10 61.5 4.4 6 51 4 0.0 64.7 66 65.2 10 66.7 11 66.7 11 66.7 11 66.7 11 66.7 11 66.7 11 66.7 11 66.7 11 66.7 11 66.7 11 66.7 11 66.7	F Phase 2 a	42			0	67.4	99		4		29	0	0.4	00	-7.6
44 4 0.0 68.3 66 68.3 10 Snd Lyl 67.7 13 6 46 4 0.0 66.3 66 66.9 10 5.6 2.1 8 46 4 0.0 66.3 66 66.9 10 5.6 2.1 8 48 4 0.0 65.3 66 66.9 10 5.4 4 6 66.9 66.9 10 5.4 4 6 66.9 66.9 10 5.0 11.7 8 51 4 0.0 74.7 66 64.5 10 5.0 4.8 8 8 8 8 11.7 8 11.7 8 11.7 8 11.7 8 11.7 8 11.7 8 11.7 8 8 8 8 11.7 8 8 8 9 8 11.7 8 9 8 11.7 8 9	F Phase 2 b	43			0	68.4	99				29		0.5	000	. 7
45 4 0.0 66.7 66.3 66.3 10 Snd Lvi 65.6 2.1 8 46 4 0.0 66.3 66.3 66.3 10 Snd Lvi 62.3 4.0 8 48 4 0.0 66.3 66 74.6 10 Snd Lvi 62.3 4.0 8 51 4 0.0 74.7 66 74.7 10 Snd Lvi 63.6 11.0 8 52 4 0.0 64.7 66 64.7 10 Snd Lvi 63.6 11.7 8 52 4 0.0 64.7 66 64.5 10 5.0 4 8 8 54 4 0.0 64.5 66 64.5 10 5.0 4 8 8 8 55 4 0.0 64.5 66 74.9 10 5.0 12.3 12.3 12.3 55	F Phase 2 c	44			0	68.3	99			1			6	000	2 4
46 4 0.0 66.3 66.9 66.3 10 sec.3 4.0 sec.3 4.1 sec.3 4.0 sec.3 4.1 sec.3 4.0 sec.3 4.1 sec.3 4.2 sec.3 4.2 <td>F Phase 2 d</td> <td>45</td> <td></td> <td></td> <td>0</td> <td>2.79</td> <td>99</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>2.1</td> <td>0</td> <td>-5.9</td>	F Phase 2 d	45			0	2.79	99						2.1	0	-5.9
47 4 0.0 65.9 66.9 65.9 10 61.5 44 8 48 4 0.0 74.6 66 74.6 10 Snd LM 63.6 11.0 8 51 4 0.0 74.7 66 64.7 10 59.9 4.8 8 52 4 0.0 64.7 66 64.7 10 59.9 4.8 8 53 4 0.0 64.5 66 64.5 10 59.9 4.8 8 54 4 0.0 64.5 66 64.5 10 59.9 6.5 8 55 4 0.0 74.7 66 75.0 10 50.0 12.1 8 56 4 0.0 74.7 66 75.1 10 50.0 10 10 10 50.0 10 10 10 10 10	F Phase 2 e	46			0	66.3	99						4.0	00	4
48 4 0.0 74.6 66 74.6 10 Snd LvI 63.6 11.0 8 49 4 0.0 74.7 66 74.7 10 Snd LvI 63.0 11.7 8 51 4 0.0 64.7 66 65.2 10 59.6 4.8 8 52 4 0.0 64.5 66 64.5 10 59.6 5.6 8 54 4 0.0 74.9 66 74.9 10 Snd LvI 62.7 12.2 8 55 4 0.0 74.7 66 75.0 10 Snd LvI 62.7 12.3 8 56 4 0.0 74.7 66 75.1 10 Snd LvI 62.7 12.4 8 59 4 0.0 74.7 66 75.1 10 Snd LvI 62.7 12.4 8 60 4 <td>F Phase 2 f</td> <td>47</td> <td></td> <td></td> <td>0</td> <td>62.9</td> <td>99</td> <td></td> <td></td> <td>0</td> <td>61</td> <td></td> <td>4.4</td> <td>00</td> <td>-3.6</td>	F Phase 2 f	47			0	62.9	99			0	61		4.4	00	-3.6
49 4 0.0 74.7 66 74.7 10 Snd LvI 63.0 11.7 8 51 4 0.0 64.7 66 64.7 10 59.9 4.8 8 52 4 0.0 64.5 66 64.5 10 59.0 5.5 8 54 4 0.0 64.5 66 74.9 10 Snd LvI 62.7 12.2 8 55 4 0.0 75.1 66 75.1 10 Snd LvI 62.7 12.2 8 56 4 0.0 74.7 66 75.1 10 Snd LvI 62.7 12.4 8 57 4 0.0 75.1 66 75.1 10 Snd LvI 62.7 12.4 8 60 4 0.0 75.1 66 75.1 10 Snd LvI 62.7 12.4 8 61 4 </td <td>r Phase 2 g</td> <td>48</td> <td></td> <td></td> <td>0</td> <td>74.6</td> <td>99</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>0:1</td> <td>00</td> <td>3.0</td>	r Phase 2 g	48			0	74.6	99						0:1	00	3.0
51 4 0.0 64.7 66 64.7 10 59.9 4.8 8 52 4 0.0 64.5 66 65.2 10 59.6 5.6 8 53 4 0.0 64.5 66 64.5 10 59.6 5.6 8 54 4 0.0 74.9 66 74.9 10 5nd LM 62.7 12.2 8 55 4 0.0 74.7 66 74.7 10 5nd LM 62.7 12.1 8 56 4 0.0 74.7 66 74.7 10 5nd LM 62.7 12.1 8 60 4 0.0 74.8 66 74.8 10 5nd LM 62.7 12.4 8 61 4 0.0 74.9 66 74.9 10 5nd LM 62.7 11.8 8 62 4	F Phase 2 h	49			0	74.7	99						1.7	œ	3.7
52 4 0.0 65.2 66 65.2 10 59.6 5.6 8 53 4 0.0 64.5 66 64.5 10 59.0 5.5 8 74 6 64.5 10 59.0 5.5 8 55 4 0.0 74.9 66 75.0 10 74.7 66 75.1 10 5.7 12.1 8 56 4 0.0 75.1 66 75.1 10 5.0 12.1 8 60 4 0.0 75.1 66 75.1 10 5.0 11.8 8 61 4 0.0 75.1 66 75.1 10 66 75.1 11.8 8 62 4 0.0 74.9 66 74.9 10 50.4 10.3 11.8 8 65 4 0.0 65.1 66	F Phase 2 i	51			0	64.7	99			-	59.		4.8	00	-3.2
53 4 0.0 64.5 66 64.5 10 59.0 5.5 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	F Phase 2 j	52			0	65.2	99				59.4		5.6	œ	-2.4
54 4 0.0 74.9 66 74.9 10 Snd LNI 62.7 12.2 8 55 4 0.0 75.0 66 75.0 10 Snd LNI 62.7 12.3 8 56 4 0.0 74.7 66 75.1 10 Snd LNI 62.7 12.4 8 59 4 0.0 75.1 66 75.1 10 Snd LNI 62.7 11.8 8 60 4 0.0 75.1 66 75.1 10 Snd LNI 63.0 11.8 8 61 4 0.0 75.1 66 75.1 10 Snd LNI 64.6 10.3 8 62 4 0.0 74.9 66 74.9 10 Snd LNI 67.2 11.8 8 63 4 0.0 74.9 66 65.1 10 50.6 67.2 10 10.8 8 <t< td=""><td>F Phase 2 K</td><td>53</td><td></td><td></td><td>0</td><td>64.5</td><td>99</td><td></td><td></td><td>- 0</td><td>59.</td><td></td><td>5.5</td><td>00</td><td>-2.5</td></t<>	F Phase 2 K	53			0	64.5	99			- 0	59.		5.5	00	-2.5
55 4 0.0 75.0 66 75.0 10 Snd LvI 62.6 12.1 8 5 8 5 7 1 1 2 3 8 5 8 5 7 1 1 2 3 8 8 5 8 7 1 1 2 3 8 8 7 1 1 2 3 8 8 7 1 1 2 3 8 8 7 1 1 2 3 8 8 7 1 1 2 4 8 66 75.1 10 Snd LvI 62.7 12.4 8 8 8 8 1 1 1 2 3 1 1 1 8 8 8 1 1 1 2 3 1 1 1 8 8 8 1 1 1 2 3 1 1 1 8 8 1 1 1 1 2 3 1 1 1 1 1 1 2 3 1 1 1 1 1 1	F Phase 2	54			0	74.9	99			100		-	2.2	00	4.2
56 4 0.0 74.7 66 75.1 10 Snd LvI 62.6 12.1 8 57 4 0.0 75.1 66 75.1 10 Snd LvI 62.7 12.4 8 60 4 0.0 74.8 66 75.1 10 Snd LvI 63.3 11.8 8 61 4 0.0 75.1 66 74.9 10 Snd LvI 63.3 11.8 8 62 4 0.0 74.9 66 74.9 10 Snd LvI 64.6 10.3 8 63 4 0.0 65.1 66 65.1 10 67.2 7.6 8 64 4 0.0 65.1 66 65.1 10 67.2 1.8 8 65 2 0.0 64.1 66 62.4 10 61.2 1.8 8 66 4	F Phase 2 m	55			0	75.0	99						2.3	00	4.3
57 4 0.0 75.1 66 75.1 10 Snd LvI 62.7 12.4 8 59 4 0.0 74.8 66 74.8 10 Snd LvI 63.3 11.8 8 60 4 0.0 75.1 66 74.9 10 Snd LvI 63.3 11.8 8 61 4 0.0 74.9 66 74.9 10 Snd LvI 67.3 7.6 8 63 4 0.0 74.9 66 65.1 10 Snd LvI 67.3 7.6 8 64 4 0.0 65.1 66 65.1 10 60.6 1.8 60.6 1.8 60.6 1.8 60.6 1.8 60.6 1.8 60.6 1.8 60.6 60.0 60.0 60.0 60.0 60.0 60.0 60.0 60.0 60.0 6	F Phase 2 n	26			C	74.7	99						2.1	œ	4.1
59 4 0.0 74.8 66 75.1 10 Snd Lvl 63.3 11.8 8 60 4 0.0 75.1 66 75.1 10 Snd Lvl 63.3 11.8 8 61 4 0.0 74.9 66 74.9 10 Snd Lvl 67.3 7.6 8 62 4 0.0 74.9 66 65.1 10 Snd Lvl 67.3 7.6 8 63 4 0.0 65.1 66 65.1 10 50.6 1.8 8 65 2 0.0 64.1 66 62.4 10 60.8 1.8 8 66 4 0.0 64.1 66 61.7 10 61.3 0.4 8 66 4 0.0 60.0 66.0 60.0 60.0 60.0 60.0 60.0 60.0 60.0 60.0 60.0 60.0 60.0 60.0 60.0 60.0 60.0 <	F Phase Z o	57			0	75.1	99						2.4	œ	4.4
60 4 0.0 75.1 66 75.1 10 Snd LvI 63.3 11.8 8 61 4 0.0 74.9 66 74.9 10 Snd LvI 64.6 10.3 8 62 4 0.0 74.9 66 65.1 10 Snd LvI 67.3 7.6 8 63 4 0.0 65.1 66 65.1 10 61.2 3.9 8 65 2 0.0 64.1 66 64.1 10 60.6 1.8 8 66 4 0.0 64.1 66 61.7 10 61.3 0.4 8 67 2 0.0 60.0 66.0 60.0	F Phase 2 p	29			0	74.8	99						80.	œ	3.8
61 4 0.0 74.9 66 74.9 10 Snd LvI 64.6 10.3 8 62 4 0.0 74.9 66 65.1 10 Snd LvI 67.3 7.6 8 63 4 0.0 65.1 66 65.1 10 61.2 3.9 8 64 4 0.0 62.4 66 62.4 10 60.6 1.8 8 65 2 0.0 64.1 66 61.7 10 61.3 0.4 8 66 4 0.0 60.0 66 60.0 10 61.7 10 61.3 0.4 8	F Phase 2 q	09			C	75.1	99						89	00	38
62 4 0.0 74.9 66 74.9 10 Snd Lvl 67.3 7.6 8 63 4 0.0 65.1 66 65.1 10 61.2 3.9 8 64 4 0.0 62.4 66 64.1 10 60.6 1.8 8 65 2 0.0 64.1 66 64.1 10 61.3 0.4 8 66 4 0.0 60.0 66 60.0 10 59.6 0.4 8	F Phase 2 r	61			C	74.9	99						0.3	oc	23
63 4 0.0 65.1 66 65.1 10 61.2 3.9 8 64 4 0.0 62.4 66 62.4 10 60.6 1.8 8 65 2 0.0 64.1 66 64.1 10 63.8 0.3 8 66 4 0.0 61.7 66 61.7 10 61.3 0.4 8 67 2 0.0 60.0 66 60.0 10 59.6 0.4 8	F Phase 2 s	62	*		C	74.9	99						7.6	000	-0.4
64 4 0.0 62.4 66 62.4 10 60.6 1.8 8 65 2 0.0 64.1 66 64.1 10 63.8 0.3 8 66 4 0.0 61.7 66 61.7 10 61.3 0.4 8 67 2 0.0 60.0 66 60.0 10 59.6 0.4 8	F Phase 2 t	63	7		0	65.1	99			-	61.		3.9	00	4
Phase 2 v 65 2 0.0 64.1 66 64.1 10 63.8 0.3 8 Phase 2 w 66 4 0.0 61.7 66 61.7 10 61.3 0.4 8 Phase 2 x 67 2 0.0 60.0 66 60.0 10 59.6 0.4 8	F Phase 2 u	64	•		c	62.4	99			1	9:09		.8	000	-6.2
Phase 2 w 66 4 0.0 61.7 66 61.7 10 61.3 0.4 8 Phase 2 x 67 2 0.0 60.0 66 60.0 10 59.6 0.4 8	F Phase 2 v	92	. •		C	64.1	99			1	63.8		7.3	00	-7.7
Phase 2 x	F Phase 2 w	99				61.7	99			1	61.3		7.4	00	-7.6
	F Phase 2 x	29	. 1		_	0.09	99				59.6		7.4	0 00	. 1-

RESULTS: SOUND LEVELS

Dwelling Units	# DOS	# DUs Noise Reduction	duction	
		Min	Avg	Max
		æ	g	8
All Selected	06	0.3		
All Impacted	58		8.1	12.4
All that meet NR Goal	36	10.3		

14 BtU PD&E

Stantec M Drauer				27 April 2016 TNM 2.5	016					
RESULTS: BARRIER DESCRIPTIONS PROJECT/CONTRACT: RUN: BARRIER DESIGN:	14 Btl 14 Se P2 20	I-4 BtU PD&E I-4 Segment 5 Festiva ROW P2 20	stiva ROM							
Barriers										
Name	Type	Type Heights along Barrier	ong Barrie	-	Length	If Wall	If Berm			Cost
		Min	Avg	Мах		Area	Volume	Top Width	Run:Rise	
		Ħ	Ħ	ff	Ħ	sd ft	cu yd	₽	ftf	G
Barrier10	≥	20.00	20.00	20.00	1157	23150				694496
									Total Cost	694496

14 BtU PD&E

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SE SOUND LEVELS R DESIGN: LAS BEILD PORE LAS BEILD ARTIFLE AND	Stantec								3							
14 Bit DRE 14 Segment 5 Festiva ROW 14 Segment 5 Festiva ROW 14 Segment 5 Festiva ROW 15 20	M Drauer							A V	ırıı 201 2.5	٥						
FEX DEATH PABE ER DESIGN: F2 20 SPHERICS: F2 20 SPHERICS: ADM Market ADM Market SPHERICS: ADM Market ADM Market BPA Market BPA Market ADM Market BPA Market ADM Market BPA Market ADM Market BPA Market ADM Market <th colsp<="" th=""><th>RESULTS: SOUND LEVELS</th><th></th><th></th><th></th><th></th><th></th><th></th><th>Calcı</th><th>lated \</th><th>with TNM</th><th>2.5</th><th></th><th>_</th><th>_</th><th></th></th>	<th>RESULTS: SOUND LEVELS</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th>Calcı</th> <th>lated \</th> <th>with TNM</th> <th>2.5</th> <th></th> <th>_</th> <th>_</th> <th></th>	RESULTS: SOUND LEVELS							Calcı	lated \	with TNM	2.5		_	_	
P2 20 SPHERICS: 68 deg F, 50% RH Acatulated calculated calcu	PROJECT/CONTRACT: RUN:	7 7 7	BtU PD8	iE t 5 Fest	iva ROW											
No. #Dus Existing No. #Dus Existing Academic and Academic an	DATRIER DESIGN: ATMOSPHERICS:		: 20 3 dea F. 5	0% RH					< 0.0	verage p	avement type hway agency	shall be use substantiat	ed unless es the us	. O		
NO. #DDs Existing No. Barrier Increase over existing Type Calculated 22 Calculated Crift Calculated Crift Calculated Crift Impact Laeqth 82 2 Calculated Crift Laeqth Calculated Crift Calculated Crift Calculated Crift Calculated Crift Calculated Crift Calculated Crift Calculated Calculated <td< th=""><th>Receiver</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th>•</th><th></th><th>in type with</th><th>appiovai oi r</th><th>YAY.</th><th></th><th></th></td<>	Receiver								•		in type with	appiovai oi r	YAY.			
March Calculated Critic Calculated Critic Impact Calculated Critic Calculated Critic Impact Calculated Critic Impact Calculated Calculated Critic Impact Calculated Calculated Critic Impact Calculated Calc	Name			sting	No Barrier						With Barrier					
Accordated Critic Calculated Critic Calculated Critic Subl line Impact LAeqth LAeq			LA	d1h	LAeq1h		Increase	over existing		ype	Calculated	Noise Reduction	ction			
42 2 0.0 67.4 66 67.4 66 67.4 66 67.4 66 67.4 10 Snd LvI 67.9 43 4 0.0 68.4 66 68.4 10 Snd LvI 67.9 44 4 0.0 68.3 66 66.3 10 Snd LvI 67.0 45 4 0.0 68.3 66 66.3 10 Snd LvI 67.0 46 4 0.0 68.3 66 66.3 10 Snd LvI 67.1 46 4 0.0 66.3 66 66.3 10 62.1 48 4 0.0 74.7 66 74.7 10 50.2 51 4 0.0 74.7 66 64.5 10 62.3 52 4 0.0 74.9 66 66.2 10 66.1 54 4 0.0 74.9 66 74.9<					Calculated	Crit'n	Calculate		2	Ħ	LAeq1h	Calculated	Goal	Calculated	ilated	
42 2 0.0 65.4 66 67.4 10 Snd LvI 43 4 0.0 68.4 66 68.4 10 Snd LvI 44 4 0.0 67.7 66 68.3 10 Snd LvI 46 4 0.0 65.9 66 66.3 10 Snd LvI 47 4 0.0 65.9 66 65.9 10 Snd LvI 48 4 0.0 65.9 66 65.9 10 Snd LvI 48 4 0.0 74.6 66 65.9 10 Snd LvI 48 4 0.0 74.7 66 74.7 10 Snd LvI 51 4 0.0 74.7 66 65.2 10 10 10 52 4 0.0 65.2 66 65.0 10 10 10 54 4 0.0 74.9 66 74.9			dB∕		dBA	dBA	æ	g			dBA	8B	쁑	8 8		
43 4 0.0 68.4 66 68.3 10 Snd LvI 44 4 0.0 68.3 66 68.3 10 Snd LvI 45 4 0.0 66.3 66 66.3 10 Snd LvI 46 4 0.0 65.9 66 66.3 10 Snd LvI 48 4 0.0 74.6 66 64.7 10 Snd LvI 49 4 0.0 74.7 66 64.7 10 Snd LvI 51 4 0.0 64.7 66 64.5 10 52 4 0.0 64.7 66 64.5 10 53 4 0.0 64.5 66 64.5 10 54 4 0.0 64.5 66 64.5 10 55 4 0.0 77.1 66 74.7 10 Snd LvI 56 4 0.0 77.8 66 74.7 10 Snd LvI </td <td>F Phase 2 a</td> <td>42</td> <td>2</td> <td>0.0</td> <td>67.4</td> <td></td> <td>98</td> <td>67.4</td> <td>10</td> <td>Snd Lvl</td> <td>6.99</td> <td>0.5</td> <td>5</td> <td>80</td> <td>-7.5</td>	F Phase 2 a	42	2	0.0	67.4		98	67.4	10	Snd Lvl	6.99	0.5	5	80	-7.5	
44 4 0.0 68.3 66 68.3 10 Snd LvI 45 4 0.0 67.7 66 66.3 10 Snd LvI 46 4 0.0 66.3 66 66.3 10 Snd LvI 47 4 0.0 65.2 66 66.3 10 Snd LvI 48 4 0.0 74.7 66 64.7 10 Snd LvI 51 4 0.0 74.7 66 64.7 10 Snd LvI 52 4 0.0 64.5 66 64.5 10 Snd LvI 53 4 0.0 64.5 66 64.5 10 Snd LvI 54 4 0.0 77.0 66 74.9 66 74.9 10 Snd LvI 55 4 0.0 77.7 66 74.9 66 74.9 66 74.9 66 74.9 66 74.9 <	F Phase 2 b	43	4	0.0	68.4		99	68.4	10	Snd Lvl	67.9		2	0	-7.5	
45 4 0.0 67.7 66 67.7 10 Snd LvI 46 4 0.0 66.3 66 66.3 10 Snd LvI 47 4 0.0 65.2 66 65.9 10 Snd LvI 48 4 0.0 74.7 66 64.7 10 Snd LvI 51 4 0.0 64.5 66 64.7 10 Snd LvI 52 4 0.0 64.5 66 64.7 10 Snd LvI 53 4 0.0 64.5 66 64.5 10 Snd LvI 1 55 4 0.0 74.9 66 74.9 10 Snd LvI 56 4 0.0 77.1 66 74.9 66 74.9 10 Snd LvI 60 4 0.0 77.1 66 74.9 10 Snd LvI 61 4 0.0 77.9	F Phase 2 c	44	4	0.0	68.3		99	68.3	10	Snd Lvl	0.79		8	ω	-6.7	
46 4 0.0 66.3 66 66.3 10 Snd Lvl 47 4 0.0 65.9 66 65.9 10 48 4 0.0 74.6 66 74.6 10 Snd Lvl 51 4 0.0 74.7 66 64.7 10 Snd Lvl 52 4 0.0 64.7 66 64.7 10 Snd Lvl 52 4 0.0 64.5 66 64.5 10 53 4 0.0 64.5 66 64.5 10 54 4 0.0 74.9 66 74.7 10 Snd Lvl 55 4 0.0 74.7 66 74.7 10 Snd Lvl 55 4 0.0 77.7 66 74.8 66 74.8 10 Snd Lvl 60 4 0.0 77.9 66 74.9	F Phase 2 d	45	4	0.0	67.7		99	2.79	10	Snd Lvl	65.6	2.1	_	ø	-5.9	
47 4 0.0 65.9 66.9 65.9 10 48 4 0.0 74.6 66 74.6 10 Snd Lvl 49 4 0.0 74.7 66 74.7 10 Snd Lvl 51 4 0.0 64.7 66 64.7 10 52 4 0.0 64.5 66 74.9 10 54 4 0.0 74.9 66 74.9 10 Snd Lvl 55 4 0.0 74.9 66 74.9 10 Snd Lvl 55 4 0.0 74.7 66 74.7 10 Snd Lvl 56 4 0.0 74.8 66 74.9 10 Snd Lvl 60 4 0.0 74.8 66 74.9 10 Snd Lvl 61 4 0.0 74.9 66 74.9 10 Snd Lvl 62 4 0.0 74.9 66 65.1 10 Snd	F Phase 2 e	46	4	0.0	66.3		90	66.3	10	Snd Lvl	62.1	4.2	2	80	-3.8	
48 4 0.0 74.6 66 74.6 10 Snd Lvi 49 4 0.0 74.7 66 74.7 10 Snd Lvi 51 4 0.0 64.7 66 64.7 10 Snd Lvi 52 4 0.0 64.5 66 64.5 10 53 4 0.0 64.5 66 64.5 10 Snd Lvi 54 4 0.0 74.9 66 74.9 10 Snd Lvi 55 4 0.0 74.7 66 74.7 10 Snd Lvi 55 4 0.0 75.1 66 75.1 10 Snd Lvi 60 4 0.0 75.1 66 75.1 10 Snd Lvi 61 4 0.0 75.1 66 75.1 10 Snd Lvi 62 4 0.0 74.9 66 75.1 10 Snd Lvi 63 4 0.0 74.9 66 65.1 10 <	F Phase 2 f	47	4	0.0	65.9		9	62.9	10	1	61.3	4.6	9	œ	-3.4	
49 4 0.0 74.7 66 74.7 10 Snd LvI 51 4 0.0 64.7 66 64.7 10 52 4 0.0 64.5 66 64.5 10 53 4 0.0 64.5 66 64.5 10 54 4 0.0 75.0 66 74.7 10 Snd LvI 56 4 0.0 74.7 66 74.7 10 Snd LvI 57 4 0.0 74.7 66 74.7 10 Snd LvI 60 4 0.0 75.1 66 74.8 10 Snd LvI 60 4 0.0 74.9 66 74.9 10 Snd LvI 61 4 0.0 74.9 66 74.9 10 Snd LvI 62 4 0.0 74.9 66 74.9 10 63 4 0.0 74.9 66 74.9 10	F Phase 2 g	48	4	0.0	74.6		99	74.6	9	Snd Lvl	63.2		4	œ	3.4	
51 4 0.0 64.7 66 64.7 10 52 4 0.0 64.5 66 65.2 10 53 4 0.0 74.9 66 64.5 10 1 55 4 0.0 75.0 66 74.7 10 8nd Lvl 56 4 0.0 75.1 66 75.1 10 8nd Lvl 57 4 0.0 75.1 66 75.1 10 8nd Lvl 59 4 0.0 75.1 66 75.1 10 8nd Lvl 60 4 0.0 75.1 66 75.1 10 8nd Lvl 61 4 0.0 75.1 66 75.1 10 8nd Lvl 62 4 0.0 74.9 66 75.1 10 8nd Lvl 63 4 0.0 74.9 66 65.1 10 64 4 0.0 74.9 66 65.1 10	F Phase 2 h	49	4	0.0	74.7		99	74.7	9	Snd Lvl	62.5	12.2	2	œ	4.2	
52 4 0.0 65.2 66 65.2 10 53 4 0.0 64.5 66 64.5 10 1 54 4 0.0 74.9 66 74.9 10 Snd Lvl 56 4 0.0 74.7 66 76.7 10 Snd Lvl 57 4 0.0 77.1 66 74.8 10 Snd Lvl 60 4 0.0 77.1 66 77.1 10 Snd Lvl 60 4 0.0 77.1 66 77.2 10 Snd Lvl 61 4 0.0 77.9 66 77.9 10 Snd Lvl 62 4 0.0 74.9 66 74.9 10 Snd Lvl 63 4 0.0 74.9 66 65.1 10 5.0 67.1 66 67.1 10 64 4 0.0 62.4 66 65.1 10	F Phase 2 I	51	4	0.0	64.7		99	64.7	9	1	59.5	5.2	2	00	-2.8	
53 4 0.0 64.5 66 64.5 10 1 54 4 0.0 74.9 66 75.0 10 Snd LvI 56 4 0.0 75.0 66 75.1 10 Snd LvI 56 4 0.0 75.1 66 75.1 10 Snd LvI 57 4 0.0 75.1 66 75.1 10 Snd LvI 60 4 0.0 75.1 66 75.1 10 Snd LvI 61 4 0.0 75.1 66 74.9 10 Snd LvI 62 4 0.0 74.9 66 74.9 10 Snd LvI 63 4 0.0 74.9 66 74.9 10 Snd LvI 64 4 0.0 65.1 66 65.1 10 50.1 67.1 10	F Phase 2 j	52	4	0.0	65.2		9	65.2	9	1	59.3	5.9	6	00	-2.1	
54 4 0.0 74.9 66 74.9 10 Snd LvI 55 4 0.0 75.0 66 75.0 10 Snd LvI 56 4 0.0 74.7 66 75.0 10 Snd LvI 57 4 0.0 77.7 66 775.1 10 Snd LvI 57 4 0.0 77.1 66 775.1 10 Snd LvI 59 4 0.0 775.1 66 775.1 10 Snd LvI 50 4 0.0 77.1 66 775.1 10 Snd LvI 51 4 0.0 77.9 66 775.1 10 Snd LvI 51 51 4 0.0 774.9 66 775.1 10 Snd LvI 51 51 51 51 51 51 51 51 51 51 51 51 51	F Phase 2 K	23	4	0.0	64.5		တ္တ	64.5	9	1	58.6		6	œ	-2.1	
55 4 0.0 75.0 66 75.0 10 Snd LvI 56 4 0.0 74.7 66 74.7 10 Snd LvI 57 4 0.0 75.1 66 75.1 10 Snd LvI 60 4 0.0 75.1 66 75.1 10 Snd LvI 61 4 0.0 75.1 66 74.9 66 74.9 10 Snd LvI 62 4 0.0 74.9 66 74.9 10 Snd LvI 63 4 0.0 65.1 66 65.1 10 Snd LvI 64 4 0.0 65.1 66 65.1 10 65 2 0.0 64.1 66 64.1 10 66 4 0.0 64.1 66 64.1 10 66 4 0.0 60.0 60.0 60.0 60.0 66 4 0.0 60.0 60.0	F Phase 2 I	24	4	0.0	74.9		တ္	74.9	10	Snd Lvl	62.2	12.7	7	80	4.7	
56 4 0.0 74.7 66 74.7 10 Snd Lwl 57 4 0.0 75.1 66 75.1 10 Snd Lwl 60 4 0.0 74.8 66 75.1 10 Snd Lwl 61 4 0.0 75.1 66 75.1 10 Snd Lwl 62 4 0.0 74.9 66 74.9 10 Snd Lwl 63 4 0.0 65.1 66 65.1 10 Snd Lwl 64 4 0.0 65.1 66 62.4 10 5nd Lwl 65 2 0.0 64.1 66 62.4 10 65 4 0.0 64.1 66 64.1 10 66 4 0.0 64.1 66 64.1 10 66 4 0.0 60.0 60.0 60.0 10 67 2 0.0 60.0 60.0 10 <td>r Phase 2 m</td> <td>55</td> <td>4</td> <td>0.0</td> <td>75.0</td> <td></td> <td>ထွ</td> <td>75.0</td> <td>9</td> <td>Snd LvI</td> <td>62.1</td> <td>12.9</td> <td>0</td> <td>œ</td> <td>4.9</td>	r Phase 2 m	55	4	0.0	75.0		ထွ	75.0	9	Snd LvI	62.1	12.9	0	œ	4.9	
57 4 0.0 75.1 66 75.1 10 Snd LvI 59 4 0.0 74.8 66 74.8 10 Snd LvI 60 4 0.0 75.1 66 75.1 10 Snd LvI 61 4 0.0 74.9 66 74.9 10 Snd LvI 63 4 0.0 65.1 66 65.1 10 Snd LvI 64 4 0.0 62.4 66 62.4 10 65 2 0.0 64.1 66 62.4 10 66 4 0.0 64.1 66 64.1 10 66 4 0.0 64.1 66 64.1 10 66 4 0.0 60.0 60.0 60.0 60.0	F Phase 2 n	26	4	0.0	74.7		ဖွ	74.7	9	Snd Lvl	62.0	12.7	7	80	4.7	
59 4 0.0 74.8 66 74.8 10 Snd LvI 60 4 0.0 75.1 66 75.1 10 Snd LvI 61 4 0.0 74.9 66 74.9 10 Snd LvI 62 4 0.0 74.9 66 65.1 10 Snd LvI 63 4 0.0 65.1 66 65.1 10 64 4 0.0 64.1 66 64.1 10 65 4 0.0 64.1 66 64.1 10 66 4 0.0 61.7 66 61.7 10 67 2 0.0 60.0 66.0 10 10	F Phase 2 o	22	4	0.0	75.1		9	75.1	10	Snd Lvl	62.1	13.0	0	00	5.0	
60 4 0.0 75.1 66 75.1 10 Snd Lvl 61 62 75.1 10 Snd Lvl 62 74.9 66 74.9 10 Snd Lvl 63 4 0.0 65.1 66 65.1 10 Snd Lvl 64 4 0.0 65.4 66 65.1 10 Snd Lvl 65 6 65	F Phase 2 p	29	4	0.0	74.8		9	74.8	10	Snd Lvl	62.4	12.4	4	00	4.4	
61 4 0.0 74.9 66 74.9 10 Snd Lvl 62 4 0.0 74.9 66 74.9 10 Snd Lvl 63 4 0.0 65.1 66 65.1 10 64 4 0.0 62.4 66 62.4 10 65 2 0.0 64.1 66 64.1 10 66 4 0.0 61.7 66 61.7 10 67 2 0.0 60.0 66 60.0 10	F Phase 2 q	09	4	0.0	75.1		9	75.1	10	Snd Lvl	62.8	12.3	6	80	4.3	
62 4 0.0 74.9 66 74.9 10 Snd LvI 63 4 0.0 65.1 66 65.1 10 64 4 0.0 62.4 66 62.4 10 65 2 0.0 64.1 66 64.1 10 66 4 0.0 61.7 66 61.7 10 67 2 0.0 60.0 66 60.0 10	F Phase 2 r	61	4	0.0	74.9		9	74.9	10	Snd Lvl	64.3	10.6	0	8	2.6	
63 4 0.0 65.1 66 65.1 10 64 4 0.0 62.4 66 62.4 10 65 2 0.0 64.1 66 64.1 10 66 4 0.0 61.7 66 61.7 10 67 2 0.0 60.0 66 60.0 10	F Phase 2 s	62	4	0.0	74.9		9	74.9	9	Snd Lvi	67.2	7.7	7	80	-0.3	
64 4 0.0 62.4 66 62.4 10 65 2 0.0 64.1 66 64.1 10 66 4 0.0 61.7 66 61.7 10 67 2 0.0 60.0 66 60.0 10	F Phase 2 t	63	4	0.0	65.1		9	65.1	10	ı	6.09	4.2	2	8	-3.8	
65 2 0.0 64.1 66 64.1 10 — 66 4 0.0 61.7 66 61.7 10 — 67 2 0.0 60.0 66 60.0 10 —	F Phase 2 u	64	4	0.0	62.4		9	62.4	10	ı	60.5	1.9	O	8	-6.1	
66 4 0.0 61.7 66 61.7 10 67 2 0.0 60.0 66 60.0 10	F Phase 2 v	65	7	0.0	64.1	250	9	64.1	9	ı	63.8	0.3	3	œ	7.7-	
67 2 0.0 60.0 66 60.0 10	F Phase 2 w	99	4	0.0	61.7		9	61.7	10	ı	61.3	4.0	4	80	-7.6	
	F Phase 2 x	29	2	0.0	0.09		9	0.09	6	ı	9.69	0.4	vi	00	-7.6	

I-4 BtU PD&E

Dwelling Units	# DNs	# DUs Noise Reduction	duction	
		Min	Avg	Max
		쁑	쁑	g B
All Selected	06	0.3		6.5 13.0
All Impacted	58			8.4 13.0
All that meet NR Goal	98	-		12.2 13.0

=	
Fest Phase	
C:\TNM25\14	

Stantec M Drauer				29 April 2016 TNM 2.5	16			_		
RESULTS: BARRIER DESCRIPTIONS PROJECT/CONTRACT: RUN: BARRIER DESIGN:	14 Btt 14 Sec P2 22	I4 BtU PD&E I4 Segment 5 Festiva ROW P2 22	stiva ROW							
Barriers										
Name	Type	Type Heights along Barrier	ong Barrie		Length	If Wall	If Berm			Cost
		Min	Avg	Мах		Area	Volume	Top Width	Run:Rise	
		#	Ħ	¥	Ħ	sq ft	cu yd	#	ft:ft	69
Barrier10	≯	22.00	22.00	22.00	1157	25465			1.5	763946
									Total Cost:	763946

14 BtU PD&E

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							TNT	TNM 2.5	TNM 2.5 Calculated with TNM 2.5	2 E		_	_	
RESULTS: SOUND LEVELS PROJECT/CONTRACT: RUN: BARRIER DESIGN:		1-4 Btt 1-4 Sec P2 22	J PD&E gment 5	Festiva ROW					With Living	With IMM 2.5 Average pavement type shall be used unless	shall be use	ed unless	-	
ATMOSPHERICS:		9 9	68 deg F, 50% RH	I					State high	a State highway agency substantiates the use of a different type with approval of FHWA.	substantiat approval of I	tes the us FHWA.	Ф	
Receiver														
Name	No.	#DNs		No Barrier						With Barrier				
			LAeq1h	LAeq1h		Increase	Increase over existing		Type	Calculated	Noise Reduction	ıction		
				Calculated	Crit'n	Calculated		2	Impact	LAeq1h	Calculated	Goal	Calculated minus Goal	ted
			dBA	dBA	dBA	8	B			dBA	8	g _B	8	
F Phase 2 a	42	2	2 0,	.0 67	4	99	67.4	10	Snd Lvl	6.99	Ö	3	œ	-7.5
F Phase 2 b	43	က	4 0.	0.0 68.4		99	68,4	0	Snd LvI	6.79		0.5	œ	-7.5
F Phase 2 c	44	4	4 0.	0.0 68.3		99	68,3	10	Snd Lvl	6.99		1.4	8	9.9
F Phase 2 d	45	2	4	0.0		99	2.79	10	Snd Lvl	65.5		2.2	œ	-5.8
F Phase 2 e	46	မ	4	0.0 66.3		99	66.3	10	Snd Lvl	62.0		4.3	œ	-3.7
F Phase 2 f	47		0.			99	62.9	10	-	61.0		6.	80	-3.1
F Phase 2 g	48	œ				99	74.6	10	Snd Lvl	62.8	11.8	∞.	8	3.8
F Phase 2 h	49	o				99	74.7	10	Snd Lvl	62.0	12.7	7.	ထ	4.7
F Phase 2 i	51					99	64.7	10	-	59.2		5	8	-2.5
F Phase 2 j	52	0	.0			99	65.2	10	l	58.9		6.3	8	-1.7
F Phase 2 k	53	က	4			99	64.5	10	1	58.1		6.4	8	-1.6
F Phase 2	54	4				99	74.9	10	Snd Lvl	61.6		.3	8	5.3
F Phase 2 m	55	2				99	75.0	10	Snd Lvl	61.5		70	®	5.5
F Phase 2 n	56	0				99	74.7	9	Snd Lvl	61.5		.2	œ	5.2
F Phase 2 o	22	2				99	75.1	9	Snd Lvl	61.5		9.	œ	5.6
F Phase 2 p	29	0				99	74.8	9	Snd Lvl	61.9		o,	æ	4.9
F Phase 2 q	9	0	4 0.0			99	75.1	10	Snd Lvl	62.3	12.8	œί	80	4.8
F Phase 2 r	61		4 0.0	.0 74.9		99	74.9	10	Snd LvI	64.0	10.	o,	æ	2.9
F Phase 2 s	62	2	4 0.0	.0 74.9		99	74.9	10	Snd Lvl	0.79		7.9	œ	0.1
F Phase 2 t	63	e	4 0.0	.0 65.1		99	65.1	10	I	60.7		4.4	œ	-3.6
F Phase 2 u	64	4				99	62.4	10	1	60.4		2.0	œ	9.0
F Phase 2 v	65	ID.				99	64.1	10	ŀ	63.8		0.3	œ	-7.7
F Phase 2 w	99	(C)	4 0.0			99	61.7	10	ı	61.3		0.4	80	-7,6
F Phase 2 x	67	7		0.09 0.		99	0.09	9	1	59.6		0.4	œ	9.7-

RESULTS: SOUND LEVELS

RESOLIS. SOUND LEVEES				
Dwelling Units	# DNs	# DUs Noise Reduction	duction	
	-	Min	Avg	Max
		쁑	ф	æ
Il Selected	06	0.3	6.8	13.6
All Impacted	58	0.5		13.6
All that meet NR Goal	36	10.9	12.7	13.6

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