





Build - SC 378 to US 1		Sheet 1 of 1	2 Sep 2015
Barrier View-Wall Larkin Woods		ICA Engineering	
Run name: Wall Larkin Woods		Project/Contract No. I-20 Widening	
Scale: <DNA - due to perspective>		TNM Version 2.5, Feb 2004	
		Analysis By: Will Kerr/Wayne Hall	
Roadway:	—————>	Ground Zone:	polygon
Receiver:	□	Tree Zone:	dashed polygon
Barrier:	┤—————>	Contour Zone:	polygon
Building Row:	—— ———	Parallel Barrier:	=====
Terrain Line:	—————	Skew Section:	—— ———>

**RESULTS: SOUND LEVELS**
**I-20 Widening**

ICA Engineering						2 September 2015							
Will Kerr/Wayne Hall						TNM 2.5							
						Calculated with TNM 2.5							
RESULTS: SOUND LEVELS													
PROJECT/CONTRACT:		I-20 Widening											
RUN:		Build - SC 378 to US 1											
BARRIER DESIGN:		INPUT HEIGHTS					Average pavement type shall be used unless						
							a State highway agency substantiates the use						
ATMOSPHERICS:		68 deg F, 50% RH					of a different type with approval of FHWA.						
Receiver													
Name	No.	#DUs	Existing	No Barrier				With Barrier					
			LAeq1h	LAeq1h		Increase over	existing	Type Impact	Calculated LAeq1h	Noise Reduction			
				Calculated	Crit'n	Calculated	Crit'n			Calculated	Calculated	Goal	Calculated minus Goal
							Sub'l Inc						
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB	
Receiver152	152	1	70.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0	
Receiver155	155	1	69.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0	
Receiver156	156	1	72.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0	
Receiver157	157	1	62.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0	
Receiver158	158	1	63.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0	
Receiver159	159	1	64.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0	
Receiver160	160	1	68.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0	
Receiver161	161	1	70.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0	
Receiver162	162	1	64.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0	
Receiver163	163	1	64.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0	
Receiver164	164	1	65.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0	
Receiver165	165	1	72.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0	
Receiver166	166	1	64.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0	
Receiver167	167	1	67.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0	
Receiver168	168	1	64.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0	
Receiver169	169	1	68.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0	
Receiver170	170	1	65.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0	
Receiver171	171	1	69.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0	
Receiver172	172	1	65.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0	
Receiver173	173	1	69.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0	
Receiver174	174	1	74.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0	
Receiver175	175	1	63.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0	
Receiver176	176	1	71.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0	
Receiver177	177	1	65.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0	

**RESULTS: SOUND LEVELS**
**I-20 Widening**

Receiver178	178	1	68.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0
Receiver179	179	1	73.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0
Receiver180	180	1	63.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0
Receiver181	181	1	64.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0
Receiver182	182	1	69.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0
Receiver183	183	1	73.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0
Receiver184	184	1	71.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0
Receiver185	185	1	69.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0
Receiver186	186	1	67.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0
Receiver189	189	1	68.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0
Receiver190	190	1	75.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0
Receiver191	191	1	68.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0
Receiver192	192	1	70.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0
Receiver193	193	1	68.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0
Receiver194	194	1	71.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0
Receiver195	195	1	66.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0
Receiver196	196	1	73.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0
Receiver197	197	1	71.0	72.1	66	1.1	15	Snd Lvl	61.1	11.0	8	3.0
Receiver199	199	1	75.0	75.5	66	0.5	15	Snd Lvl	60.2	15.3	8	7.3
Receiver200	200	1	66.0	65.6	66	-0.4	15	----	56.4	9.2	8	1.2
Receiver201	201	1	66.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0
Receiver202	202	1	70.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0
Receiver203	203	1	73.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0
Receiver204	204	1	75.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0
Receiver205	205	1	71.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0
Receiver206	206	1	73.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0
Receiver207	207	1	64.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0
Receiver208	208	1	66.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0
Receiver209	209	1	65.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0
Receiver210	210	1	65.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0
Receiver211	211	1	64.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0
Receiver212	212	1	66.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0
Receiver213	213	1	69.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0
Receiver214	214	1	65.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0
Receiver215	215	1	67.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0
Receiver218	218	1	70.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0
Receiver219	219	1	70.0	0.0	66	0.0	15	inactive	0.0	0.0	8	0.0
Receiver253	226	1	68.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Receiver254	227	1	68.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Receiver255	228	1	68.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Receiver256	229	1	64.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0

**RESULTS: SOUND LEVELS**
**I-20 Widening**

Receiver257	230	1	65.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Receiver258	231	1	65.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Receiver259	232	1	66.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Receiver260	233	1	68.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Receiver261	234	1	72.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Receiver262	235	1	73.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Receiver263	236	1	73.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Receiver264	237	1	73.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Receiver265	238	1	73.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Receiver266	239	1	71.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Receiver267	240	1	69.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Receiver268	241	1	67.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Receiver269	242	1	69.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Receiver270	243	1	68.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Receiver271	244	1	66.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Receiver272	245	1	65.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Receiver273	246	1	66.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Receiver274	247	1	65.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Receiver275	248	1	65.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Receiver276	249	1	64.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Receiver277	250	1	64.0	69.3	66	5.3	10	Snd Lvl	62.5	6.8	8	-1.2
Receiver278	251	1	66.0	67.5	66	1.5	10	Snd Lvl	61.3	6.2	8	-1.8
Receiver279	252	1	64.0	64.9	66	0.9	10	----	58.6	6.3	8	-1.7
Receiver280	253	1	67.0	68.9	66	1.9	10	Snd Lvl	60.3	8.6	8	0.6
Receiver281	254	1	66.0	67.5	66	1.5	10	Snd Lvl	59.8	7.7	8	-0.3
Receiver282	255	1	69.0	71.2	66	2.2	10	Snd Lvl	62.5	8.7	8	0.7
Receiver283	256	1	72.0	73.1	66	1.1	10	Snd Lvl	62.2	10.9	8	2.9
Receiver284	257	1	68.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Receiver285	258	1	67.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Receiver294	267	1	71.0	69.9	66	-1.1	10	Snd Lvl	59.9	10.0	8	2.0
Receiver295	306	1	0.0	67.8	66	67.8	10	Snd Lvl	63.4	4.4	8	-3.6
Receiver296	307	1	0.0	66.8	66	66.8	10	Snd Lvl	60.8	6.0	8	-2.0
Receiver297	308	1	0.0	66.2	66	66.2	10	Snd Lvl	60.0	6.2	8	-1.8
Receiver298	309	1	0.0	74.0	66	74.0	10	Snd Lvl	62.2	11.8	8	3.8
<b>Dwelling Units</b>		# DUs	<b>Noise Reduction</b>									
			<b>Min</b>	<b>Avg</b>	<b>Max</b>							
			<b>dB</b>	<b>dB</b>	<b>dB</b>							
All Selected		99	0.0	1.3	15.3							
All Impacted		13	4.4	8.7	15.3							
All that meet NR Goal		8	8.6	10.7	15.3							

**RESULTS: BARRIER-SEGMENT DESCRIPTIONS**
**I-20 Widening**

ICA Engineering												
Will Kerr/Wayne Hall											2 September 2015	
											TNM 2.5	

**RESULTS: BARRIER-SEGMENT DESCRIPTIONS**

**PROJECT/CONTRACT:** I-20 Widening  
**RUN:** Build - SC 378 to US 1  
**BARRIER DESIGN:** INPUT HEIGHTS

Barriers		Segments											
Name	Type	Name	No.	Heights			Length	If Wall				If Berm	Cost
				First Point	Average	Second Point		Area	On Struc?	Important Reflections?		Volume	
				ft	ft	ft	ft	sq ft				cu yd	\$
Barrier1	W	point39	39	25.00	25.00	25.00	50	1254					0
		299+00.00	2	25.00	25.00	25.00	100	2510					0
		298+00.00	3	25.00	25.00	25.00	100	2509					0
		297+00.00	4	25.00	25.00	25.00	100	2511					0
		296+00.00	5	25.00	25.00	25.00	100	2510					0
		295+00.00	6	25.00	25.00	25.00	100	2509					0
		294+00.00	7	25.00	25.00	25.00	93	2332					0
		293+00.00	8	25.00	25.00	25.00	101	2520					0
		292+00.00	9	25.00	25.00	25.00	99	2463					0
		291+00.00	10	25.00	25.00	25.00	101	2524					0
		290+00.00	11	25.00	25.00	25.00	98	2456					0
		289+00.00	12	25.00	25.00	25.00	100	2505					0
		288+00.00	13	25.00	25.00	25.00	90	2257					0
		287+00.00	15	25.00	25.00	25.00	100	2510					0
		286+00.00	16	25.00	25.00	25.00	100	2500					0
		285+00.00	17	25.00	25.00	25.00	101	2519					0
		284+00.00	18	25.00	25.00	25.00	102	2540					0
		283+00.00	19	25.00	25.00	25.00	98	2452					0
		282+00.00	20	25.00	25.00	25.00	104	2588					0
		281+00.00	21	25.00	25.00	25.00	97	2417					0
		280+00.00	22	25.00	25.00	25.00	111	2779					0
		279+00.00	23	25.00	25.00	25.00	102	2542					0
		278+00.00	24	25.00	25.00	25.00	102	2548					0
		277+00.00	25	25.00	25.00	25.00	101	2525					0
		276+00.00	26	25.00	25.00	25.00	103	2567					0
		275+00.00	27	25.00	25.00	25.00	98	2440					0

RESULTS: BARRIER-SEGMENT DESCRIPTIONS

I-20 Widening

		274+00.00	28	25.00	25.00	25.00	99	2484				0
		273+00.00	29	25.00	25.00	25.00	101	2532				0
		272+00.00	30	25.00	25.00	25.00	100	2511				0
		271+00.00	31	25.00	25.00	25.00	98	2449				0
		270+00.00	32	25.00	25.00	25.00	101	2528				0

## INPUT: BARRIERS

## I-20 Widening

ICA Engineering				2 September 2015															
Will Kerr/Wayne Hall				TNM 2.5															
INPUT: BARRIERS																			
PROJECT/CONTRACT:				I-20 Widening															
RUN:				Build - SC 378 to US 1															
Barrier								Points											
Name	Type	Height		If Wall	If Berm			Add'tnl	Name	No.	Coordinates	(bottom)	Height	Segment					
		Min	Max	\$ per	\$ per	Top	Run:Rise	\$ per			X	Y	Z	at	Seg Ht	Perturbs	On	Important	
				Unit	Unit	Width		Unit						Point	Incre-	#Up	#Dn	Struct?	Reflec-
				Area	Vol.			Length							ment				tions?
		ft	ft	\$/sq ft	\$/cu yd	ft	ft:ft	\$/ft			ft	ft	ft	ft	ft				
Barrier1	W	0.00	99.99	0.00				0.00	point39	39	1,944,475.4	785,418.1	358.95	25.00	2.00	0	7		
									299+00.00	2	1,944,519.4	785,442.2	358.40	25.00	2.00	0	7		
									298+00.00	3	1,944,607.4	785,490.6	357.40	25.00	2.00	0	7		
									297+00.00	4	1,944,695.4	785,538.8	356.10	25.00	2.00	0	7		
									296+00.00	5	1,944,783.4	785,587.2	354.50	25.00	2.00	0	7		
									295+00.00	6	1,944,871.4	785,635.6	352.50	25.00	2.00	0	7		
									294+00.00	7	1,944,959.4	785,683.8	349.80	25.00	2.00	0	7		
									293+00.00	8	1,945,040.0	785,730.8	346.80	25.00	2.00	0	7		
									292+00.00	9	1,945,128.8	785,778.6	343.30	25.00	2.00	0	7		
									291+00.00	10	1,945,214.4	785,827.3	339.60	25.00	2.00	0	7		
									290+00.00	11	1,945,302.1	785,877.2	335.90	25.00	2.00	0	7		
									289+00.00	12	1,945,388.8	785,923.6	332.30	25.00	2.00	0	7		
									288+00.00	13	1,945,476.5	785,971.9	328.80	25.00	2.00	0	7		
									287+00.00	15	1,945,554.9	786,016.8	325.40	25.00	2.00	0	7		
									286+00.00	16	1,945,640.6	786,068.9	321.80	25.00	2.00	0	7		
									285+00.00	17	1,945,723.8	786,124.6	318.10	25.00	2.00	0	7		
									284+00.00	18	1,945,807.1	786,181.1	314.40	25.00	2.00	0	7		
									283+00.00	19	1,945,889.6	786,240.4	310.70	25.00	2.00	0	7		
									282+00.00	20	1,945,967.8	786,299.8	307.00	25.00	2.00	0	7		
									281+00.00	21	1,946,046.4	786,367.1	303.30	25.00	2.00	0	7		
									280+00.00	22	1,946,120.5	786,429.1	299.70	25.00	2.00	0	7		
									279+00.00	23	1,946,205.2	786,501.1	295.90	25.00	2.00	0	7		
									278+00.00	24	1,946,278.8	786,571.3	292.20	25.00	2.00	0	7		
									277+00.00	25	1,946,348.9	786,645.2	288.50	25.00	2.00	0	7		
									276+00.00	26	1,946,418.9	786,718.1	284.80	25.00	2.00	0	7		
									275+00.00	27	1,946,486.5	786,795.3	281.00	25.00	2.00	0	7		
									274+00.00	28	1,946,548.6	786,870.6	277.20	25.00	2.00	0	7		
									273+00.00	29	1,946,610.1	786,948.6	273.50	25.00	2.00	0	7		
									272+00.00	30	1,946,670.8	787,029.8	269.70	25.00	2.00	0	7		
									271+00.00	31	1,946,730.8	787,110.3	265.70	25.00	2.00	0	7		
									270+00.00	32	1,946,786.4	787,190.9	261.80	25.00	2.00	0	7		
									269+00.00	33	1,946,845.4	787,273.1	258.40	25.00					