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APPENDIX A: ALTERNATIVES CONSIDERED

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Alternative	Description
1A	Construct temporary Runway 8-26, rehabilitate existing runway, and restore operations to newly reconstructed existing runway. To implement, convert Taxiway M to a temporary 11,000-foot by 150-foot AC runway, 70 feet north of its existing centerline. Correct crown section on Taxiway M to correct longitudinal grade. Reconstruct Runway 8-26 to 11,000 feet by 150 feet of PCC with crown section and runway grooving.
1B	As with Alternative 1A, with the following variations. Shift temporary Runway 8-26 243 feet east of current alignment. Demolish airfield buildings and structures to accommodate ROFA of temporary runway. Achieve current FAA design standards and land use compatibility requirements for RPZs, as directed by AC 150/5300-13A, Change 1, by applying a displaced threshold of 915 feet on Runway 26, and utilizing declared distances. Reduce usable runway length to 10,085 feet TORA on Runway 26, and 10,950 feet Landing Distance Available (LDA) on Runway 8. All RPZ areas would be contained on Airport property
1C	As with Alternative 1A, with the following variations. Shift temporary Runway 8-26 478 feet east of current alignment. Demolish airfield buildings and structures to accommodate ROFA of temporary runway. Achieve current FAA design standards and land use compatibility requirements for RPZs, as directed by AC 150/5300-13A, Change 1, by applying a displaced threshold of 400 feet on Runway 8, a displaced threshold of 245 feet on Runway 26, and utilizing declared distances. Reduce usable runway length to 10,600 feet TORA on Runway 26, 10,715 feet TORA on Runway 8. Reduce LDA on Runway 8 to 10,715 feet on Runway on Runway 8 and 10,755 on Runway 26. Realign approximately 2,060 lineal feet of Borinquen Avenue (Route 107) to avoid placement in RPZ
2A	Construct new permanent Runway 8-26 to replace the existing Runway 8-26. To implement, construct 11,000 feet by 200 feet AC runway, 500 feet south of existing Runway 8-26 centerline. Convert existing Runway 8-26 to full length-parallel taxiway.
2B	Shift Runway 8-26 862 feet east and 500 feet south of current alignment. Achieve current FAA design standards and land use compatibility requirements for RPZs, as directed by AC 150/5300-13A, Change 1, by applying a displaced threshold of 325 feet on Runway 8, 130 feet on Runway 26, and utilizing declared distances. Reduce usable runway length to 10,698 feet TORA on Runway 26, 10,870 feet LDA on Runway 26, and 10,145 feet LDA on Runway 8. All RPZ areas would be contained on Airport property. RSA and ROFA would partially overlap documented sinkhole
2C	Shift Runway 8-26 862 feet east and 500 feet south of current alignment. Achieve current FAA design standards and land use compatibility requirements for RPZs, as directed by AC 150/5300-13A, Change 1, by applying a displaced threshold of 325 feet on Runway 8, 130 feet on Runway 26 utilizing declared distances and realigning 2,060 lineal feet of Borinquen Avenue (Route 107). Reduce usable runway length to 10,145 feet LDA on Runway 8 and 10,870 feet LDA on Runway 26.. RSA and ROFA would partially overlap documented sinkhole
2D	Shift Runway 8-26 1,187 feet east and 500 feet south of current alignment. Achieve current FAA design standards and land use compatibility requirements for RPZs, as directed by AC 150/5300-13A, Change 1, by applying a displaced threshold of 452 feet on Runway 8, and utilizing declared distances. Reduce usable runway length to 10,148 feet LDA on Runway 8, 10,548 feet LDA on Runway 26, and 10,675 TORA on Runway 8. RSA and ROFA would partially overlap documented sinkhole
No-Action	For comparative purposes under NEPA, impacts of each project Alternative described above will be assessed against the option of taking no action (i.e., not implementing or constructing the project).

1

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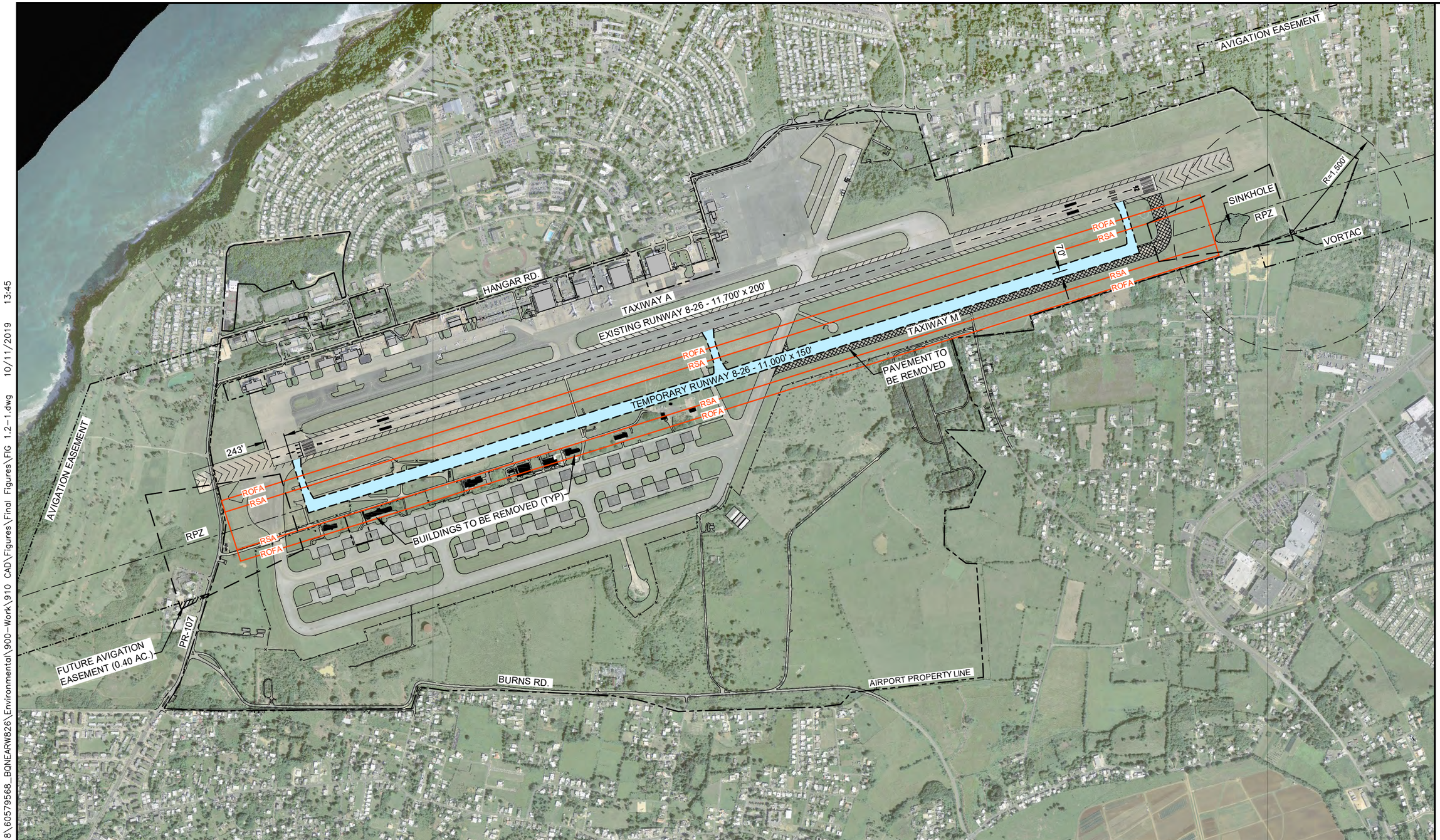

DECLARED DISTANCES

RUNWAY	TORA	TODA	ASDA	LDA
8	11,000'	11,000'	10,950'	10,950'
26	11,000'	11,000'	11,000'	11,000'

N

1000 0 1000

GRAPHIC SCALE IN FEET

RAFAEL HERNANDEZ AIRPORT
Aguadilla, Puerto Rico

RUNWAY 8-26 RECONSTRUCTION
ENVIRONMENTAL ASSESSMENT

ALTERNATIVE 1A

S:\Projects\P\Puerto Rico 2018\60579568_BQNEARW826\Environmental\900-Work\910 CAD\Figures\Final Figures\FIG 1.2-1.dwg 10/11/2019 13:45

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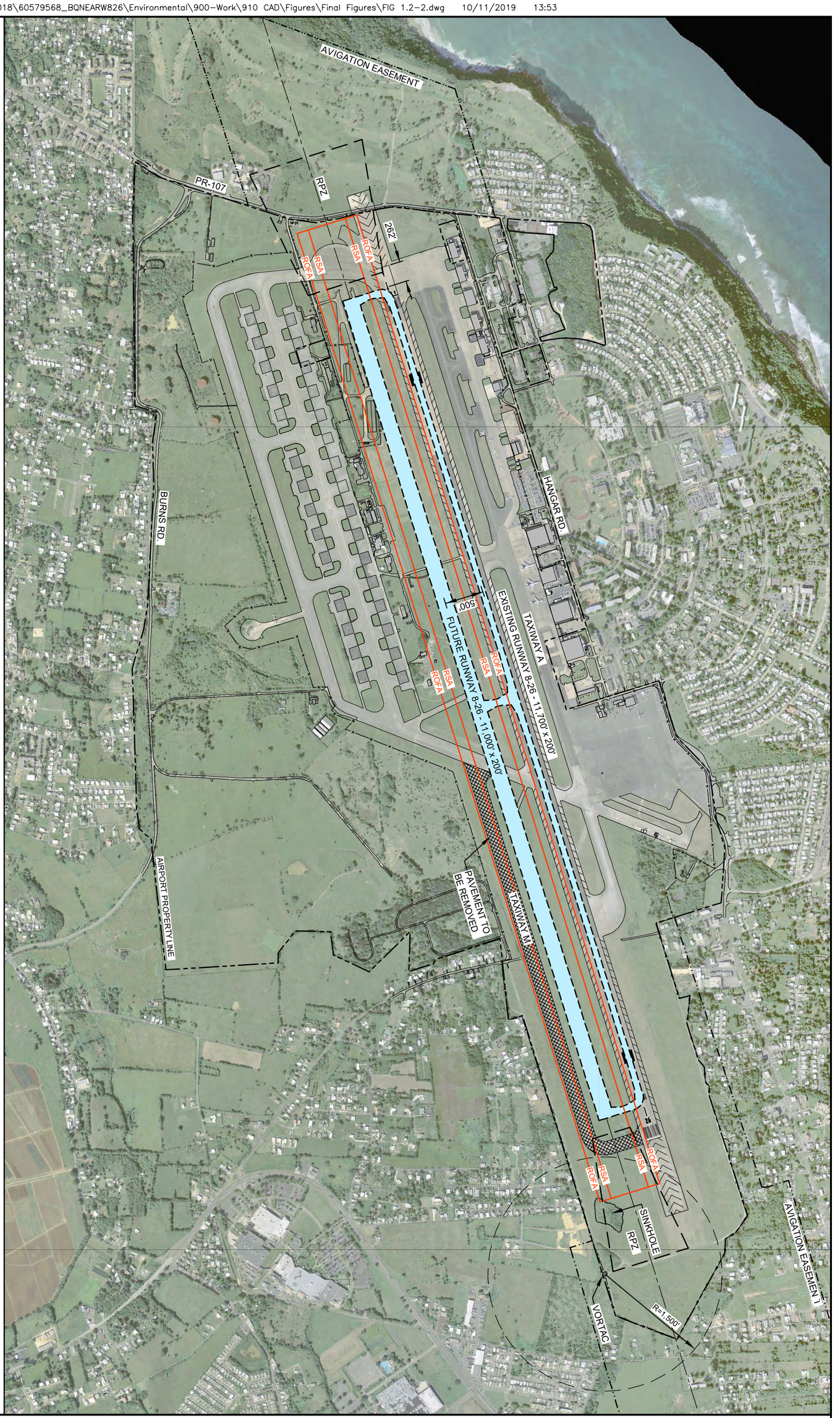
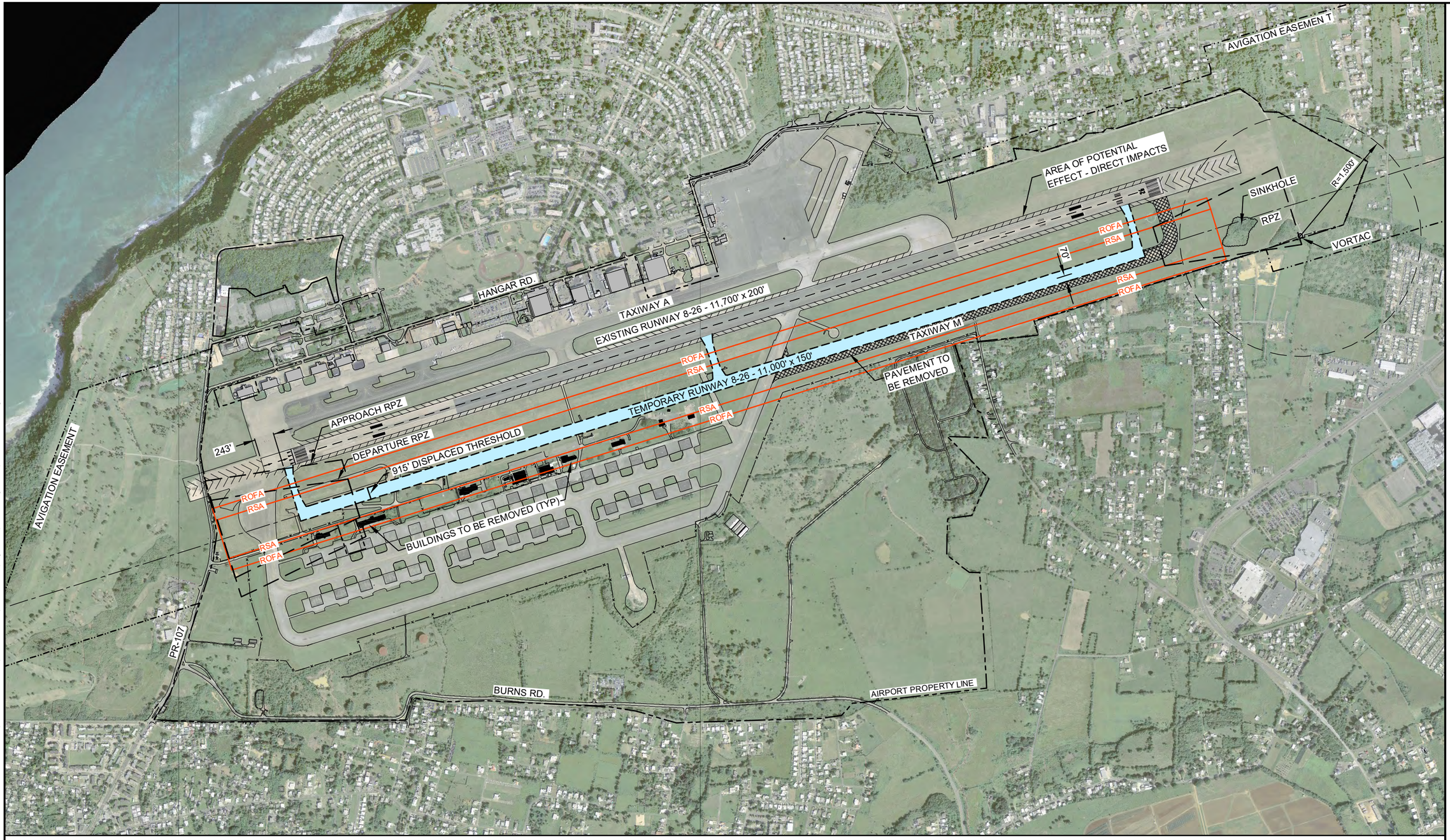


GRAPHIC SCALE IN FEET
1000 0 1000
N

ALTERNATIVE 2A

RAFAEL HERNANDEZ AIRPORT
Aguadilla, Puerto Rico
RUNWAY 8-26 RECONSTRUCTION
ENVIRONMENTAL ASSESSMENT



LEGEND

TEMPORARY PAVEMENT CONSTRUCTION

TO BE REMOVED

DECLARED DISTANCES

RUNWAY	TORA	TODA	ASDA	LDA
8	11,000'	11,000'	10,950'	10,035'
26	10,085'	11,000'	11,000'	11,000'

N

1000 0 1000

GRAPHIC SCALE IN FEET

RAFAEL HERNANDEZ AIRPORT
Aguadilla, Puerto Rico
RUNWAY 8-26 RECONSTRUCTION
ENVIRONMENTAL ASSESSMENT

ALTERNATIVE 1B

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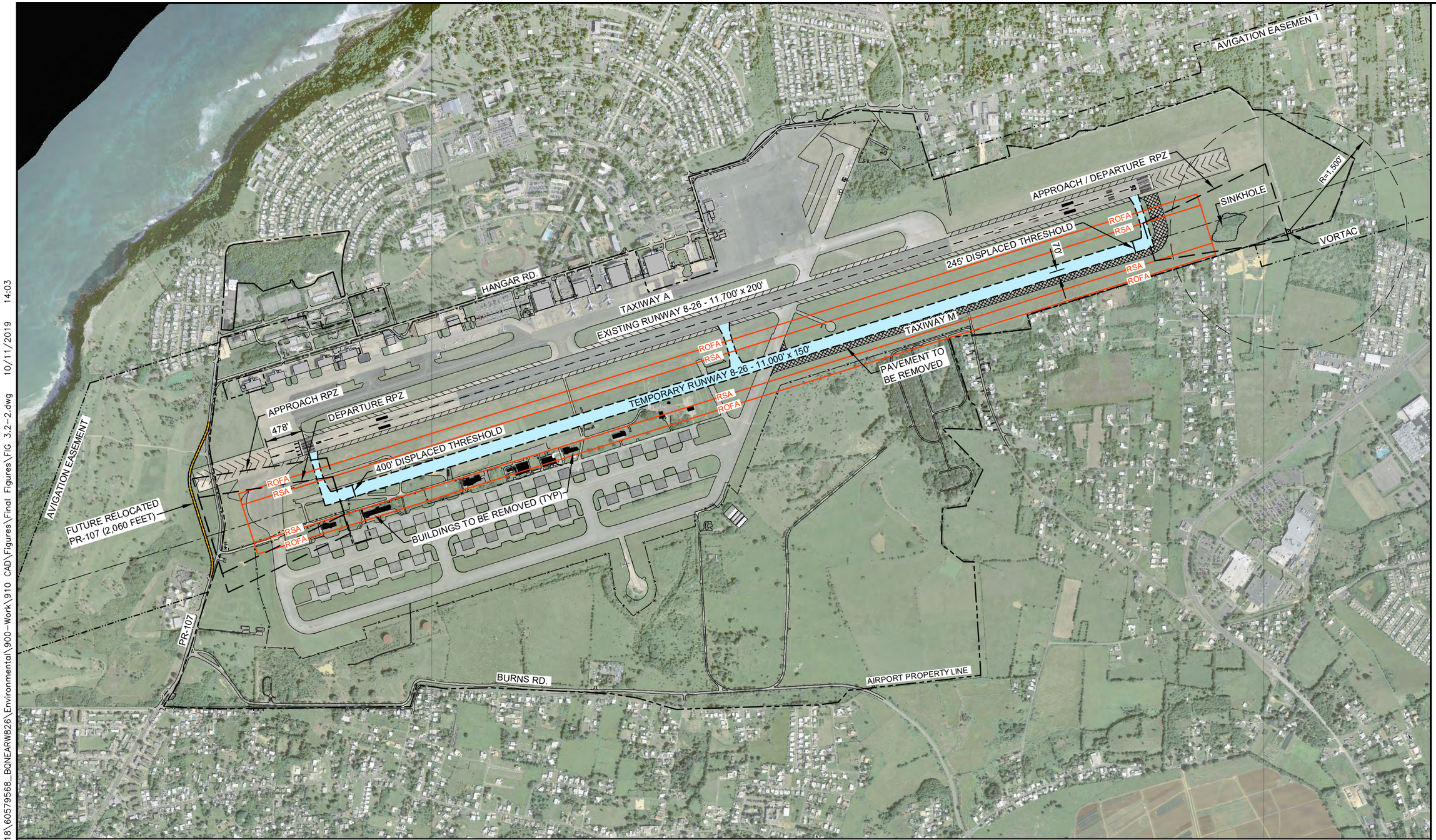


DECLARED DISTANCES

RUNWAY	TORA	TODA	ASDA	LDA
8	10,715'	11,000'	10,715'	10,715'
26	10,600'	11,000'	11,000'	10,755'

N

1000 0 1000

GRAPHIC SCALE IN FEET

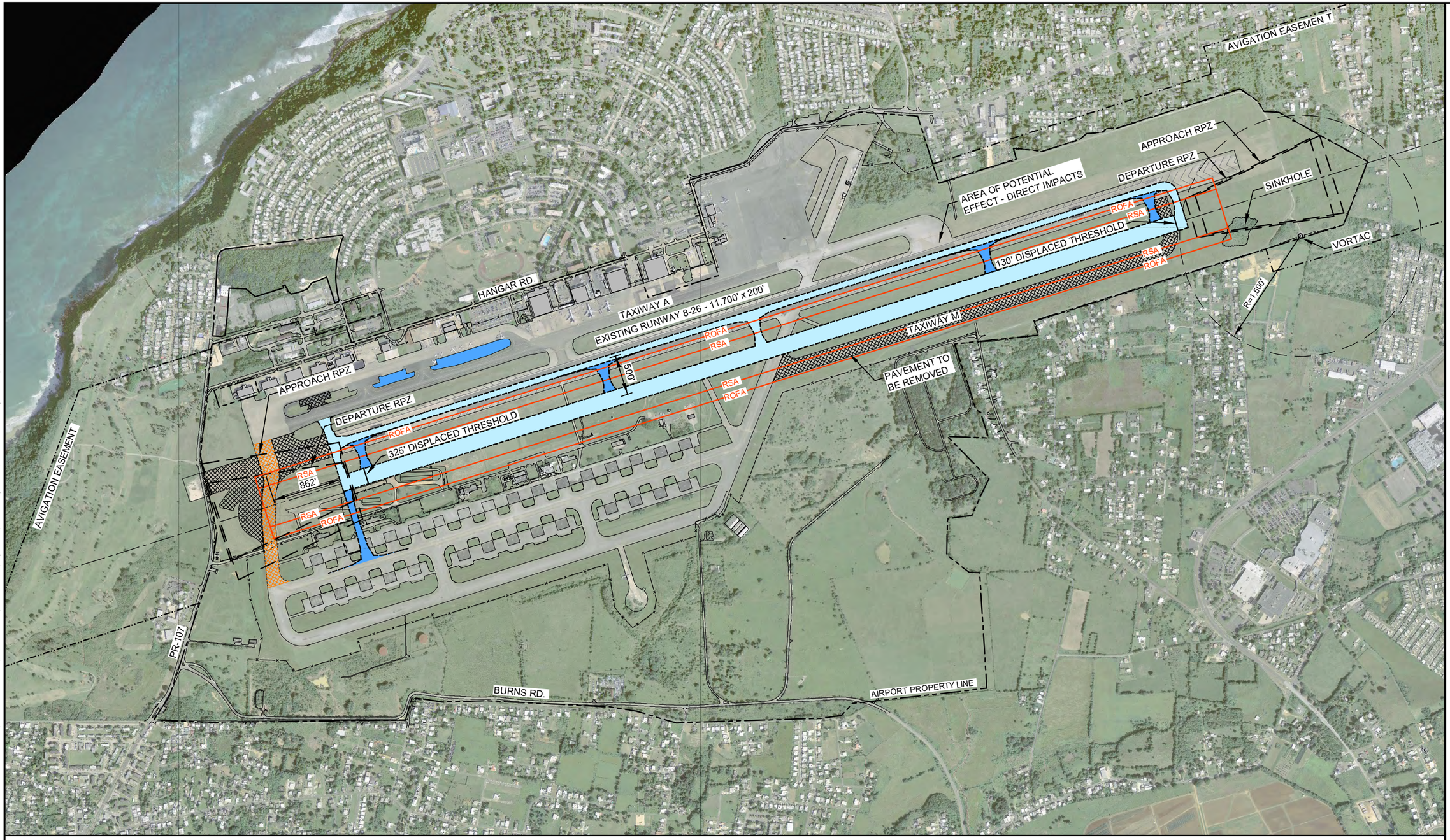
RAFAEL HERNANDEZ AIRPORT

Aguadilla, Puerto Rico

RUNWAY 8-26 RECONSTRUCTION
ENVIRONMENTAL ASSESSMENT

ALTERNATIVE 1C

S:\Projects\P\Puerto Rico 2018\60579568_BQNEARW826\Environmental\900-Work\910 CAD\Figures\Final Figures\FIG 3.2-2.dwg 10/11/2019 14:03



LEGEND

- INITIAL PAVEMENT CONSTRUCTION
- FUTURE TAXIWAY CONNECTIONS (ONCE JUSTIFIED)
- TO BE DEMOLISHED UPON TAXIWAY CONNECTION TO THE SOUTH

DECLARED DISTANCES

RUNWAY	TORA	TODA	ASDA	LDA
8	11,000'	11,000'	10,470'	10,145'
26	10,698'	11,000'	11,000'	10,870'

N

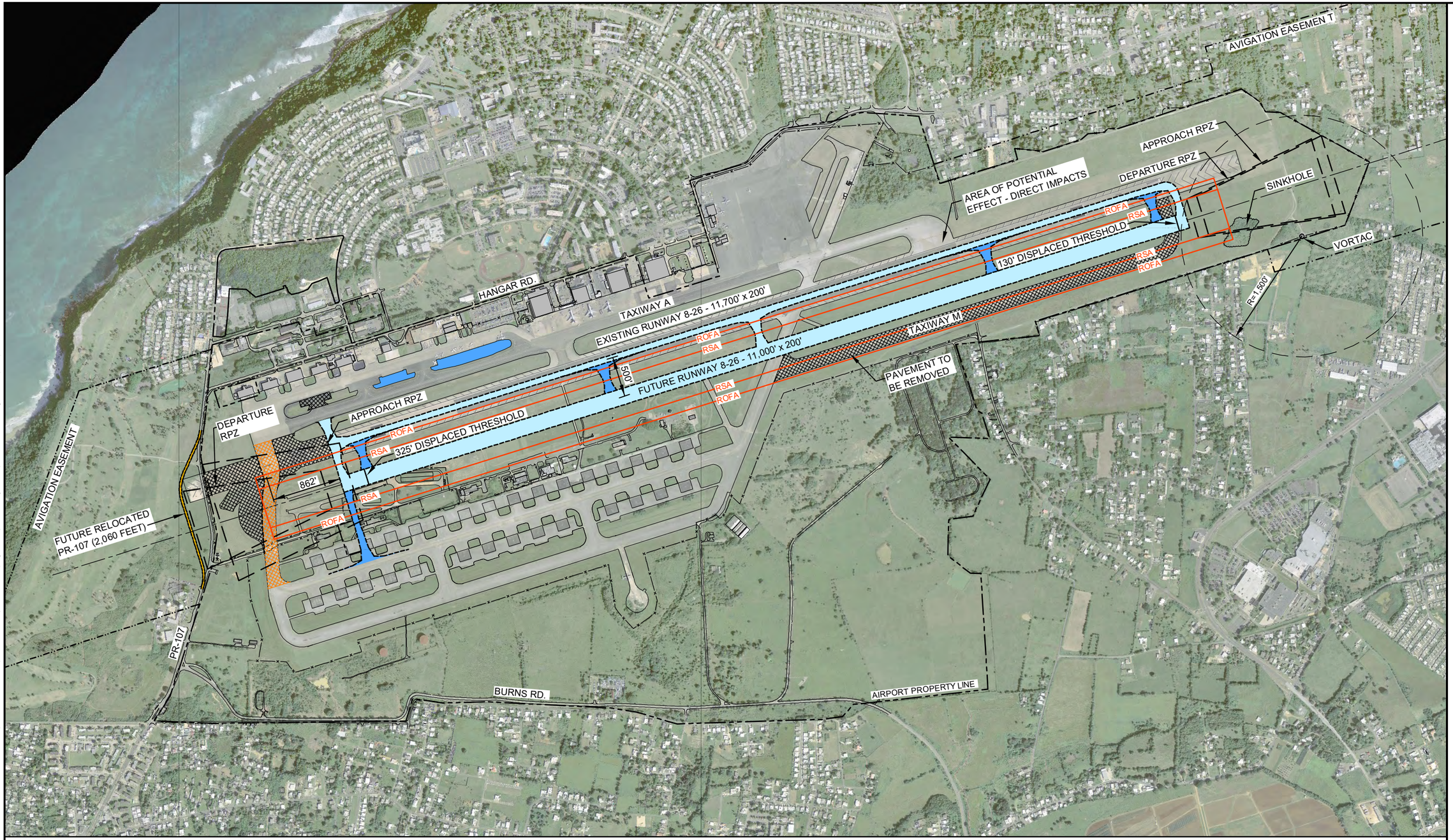
1000 0 1000

GRAPHIC SCALE IN FEET

RAFAEL HERNANDEZ AIRPORT
Aguadilla, Puerto Rico
RUNWAY 8-26 RECONSTRUCTION
ENVIRONMENTAL ASSESSMENT

ALTERNATIVE 2B

S:\Projects\P\Puerto Rico 2018\60579568_BQNEARW826\Environmental\900-Work\910 CAD\Figures\Final Figures\FIG 3.2-3.dwg 10/11/2019 14:07



LEGEND

- INITIAL PAVEMENT CONSTRUCTION
- FUTURE TAXIWAY CONNECTIONS (ONCE JUSTIFIED)
- TO BE DEMOLISHED UPON TAXIWAY CONNECTION TO THE SOUTH

DECLARED DISTANCES

RUNWAY	TORA	TODA	ASDA	LDA
8	11,000'	11,000'	10,470'	10,145'
26	11,000'	11,000'	11,000'	10,870'

N

1000 0 1000

GRAPHIC SCALE IN FEET

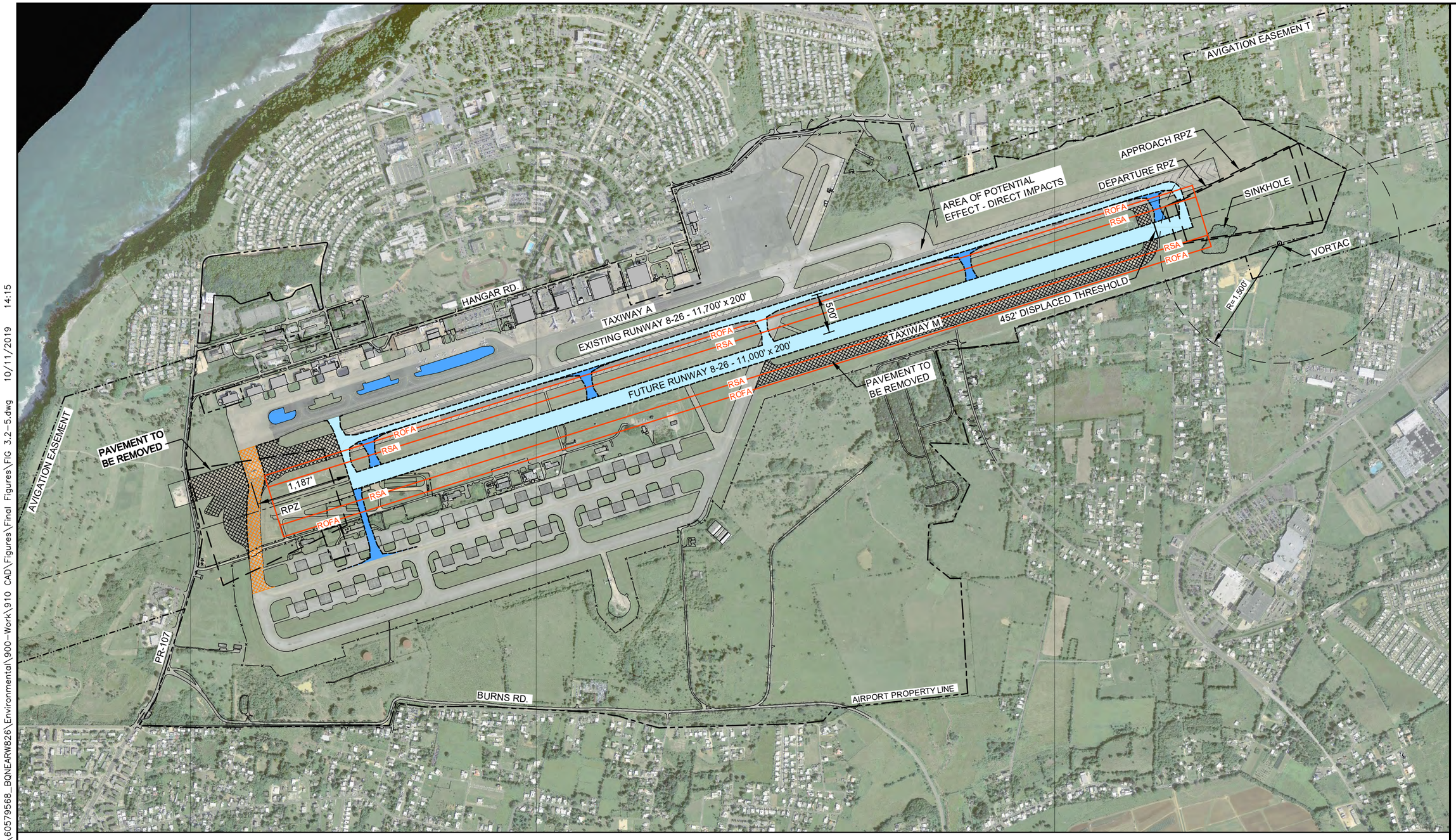
RAFAEL HERNANDEZ AIRPORT

Aguadilla, Puerto Rico

RUNWAY 8-26 RECONSTRUCTION
ENVIRONMENTAL ASSESSMENT

ALTERNATIVE 2C

S:\Projects\P\Puerto Rico 2018\60579568_BQNEARW826\Environmental\900-Work\910 CAD\Figures\Final Figures\FIG 3.2-4.dwg 10/11/2019 14:11



LEGEND

- INITIAL PAVEMENT CONSTRUCTION
- FUTURE TAXIWAY CONNECTIONS (ONCE JUSTIFIED)
- TO BE DEMOLISHED UPON TAXIWAY CONNECTION TO THE SOUTH

DECLARED DISTANCES

RUNWAY	TORA	TODA	ASDA	LDA
8	10,675'	11,000'	10,148'	10,148'
26	11,000'	11,000'	11,000'	10,548'

N

1000 0 1000

GRAPHIC SCALE IN FEET

RAFAEL HERNANDEZ AIRPORT
Aguadilla, Puerto Rico
RUNWAY 8-26 RECONSTRUCTION
ENVIRONMENTAL ASSESSMENT

ALTERNATIVE 2D

S:\Projects\P\Puerto Rico 2018\60579568_BQNEARW826\Environmental\900-Work\910 CAD\Figures\Final Figures\FIG 3.2-5.dwg 10/11/2019 14:15

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APPENDIX B: EXCERPT FROM PREVIOUS RECONNAISSANCE STUDY

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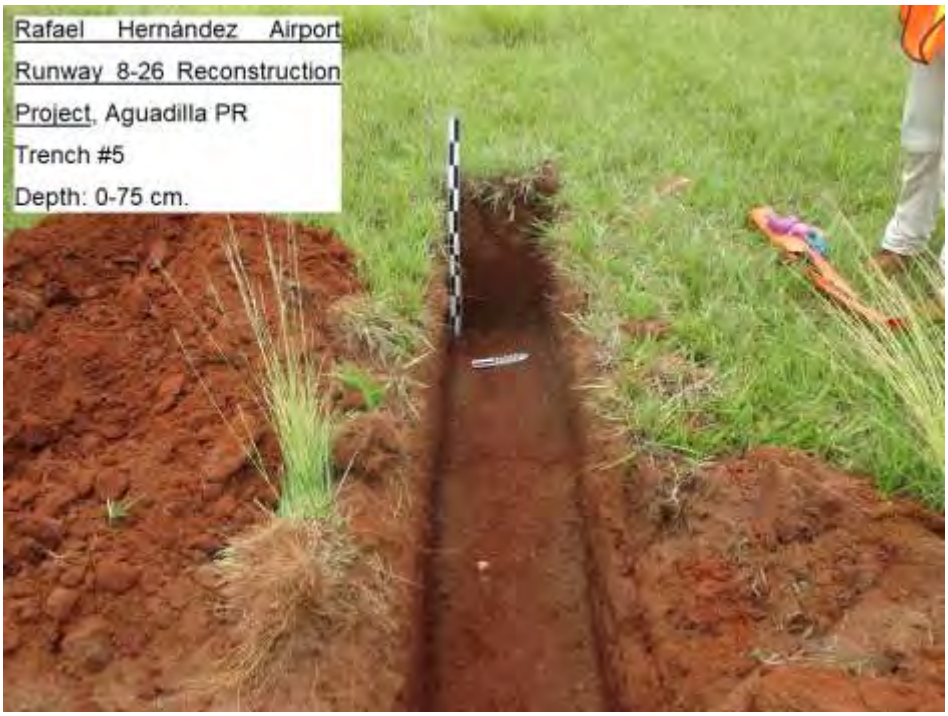
Table #3 Results of the Trenches

Test	Depth	Results	Composition	Munsell
T1	0-27 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	27-61 cm	Negative	Clay, Limestone Rock	7.5YR 3/6

(July, 2018)

T2	0-09 cm.	Negative	Clay. Yellowish Brown, weed	10YR 5/6
	09-43 cm	Negative	Clay, Limestone Rock	10YR 8/6
	43-56 cm.	Negative	Clay. Limestone Rock	7.5YR 3/4
	56-63 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T3	0-32 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	32-72 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T4	0-28 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	28-63 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T5	0-35 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	35-75 cm	Negative	Clay, Limestone Rock	7.5YR 3/6



(July, 2018)

T6	0-27 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	27-67 cm	Negative	Clay, Limestone Rock	7.5YR 3/6

(July, 2018)

T7	0-31 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4

	31-62 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T8	0-36 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	36-64 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T9	0-07 cm.	Negative	Clay. Yellowish Brown, weed	10YR 5/6
	07-34 cm	Negative	Clay, Limestone Rock	7.5YR 3/4
	34-85 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T10	0-31 cm.	Negative	Clay. Yellowish Brown, weed	10YR 5/6
	31-44 cm	Negative	Clay, Limestone Rock	7.5YR 3/4
	44-73 cm	Negative	Clay, Limestone Rock	7.5YR 3/6

(July, 2018)

T11	0-26 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	26-68 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T12	0-18 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	18-69 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T13	0-21 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	21-72 cm	Negative	Clay, Limestone Rock	7.5YR 3/6

(July, 2018)

T14	0-14 cm.	Negative	Clay. Yellowish Brown, weed	10YR 4/3
	14-22 cm	Negative	Clay, Limestone Rock	7.5YR 3/4
	22-53 cm.	Negative	Clay. Limestone Rock	10YR 7/6
	53-62 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T15	0-13 cm.	Negative	Clay. Yellowish Brown, weed	10YR 5/6
	13-23 cm	Negative	Clay, Limestone Rock	10YR 8/6
	23-35 cm.	Negative	Clay. Limestone Rock	7.5YR 3/4
	35-64 cm	Negative	Clay, Veined Limestone Rock	7.5YR 3/6
T16	0-21 cm.	Negative	Clay. Yellowish Brown, weed	10YR 4/3
	21-51 cm	Negative	Clay, Limestone Rock	7.5YR 3/4
	51-71 cm.	Negative	Clay. Limestone Rock	7.5YR 4/6
T17	0-12 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	12-68 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T18	0-25 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	25-73 cm	Negative	Clay, Limestone Rock	7.5YR 3/6

(August, 2018)

T19	0-32 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	32-67 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T20	0-28 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	28-72 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T21	0-51 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	51-77 cm	Negative	Clay, Limestone Rock	7.5YR 3/6

(August, 2018)

T22	0-43 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	43-64 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T23	0-24 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4

	24-54 cm	Negative	Clay, Limestone Rock	2.5YR 3/6
	54-66 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T24	0-34 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	34-59 cm	Negative	Clay, Limestone Rock	2.5YR 3/6
	59-64 cm	Negative	Clay, Limestone Rock	7.5YR 3/6

(August, 2018)

T25	0-26 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	26-51 cm	Negative	Clay, Limestone Rock	2.5YR 3/6
	51-66 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T26	0-24 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	24-54 cm	Negative	Clay, Limestone Rock	2.5YR 3/6
	54-66 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T27	0-43 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	43-64 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T28	0-58 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	58-87 cm	Negative	Clay, Limestone Rock	7.5YR 3/6

T29	0-13 cm.	Negative	Asphalt, weed	Gley 2.5/N
	13-48 cm	Negative	Clay, Limestone Rock	10YR 8/6
	48-59 cm.	**Positive**	Clay. Limestone Rock Water channel	7.5YR 3/4

59-66 cm **Positive** Clay, Limestone Rock Water channel 7.5YR 3/6

This water channel has 8cm width from 58cm-66cm. Has 20cm depth

View of the Channel's Top (August, 2018)

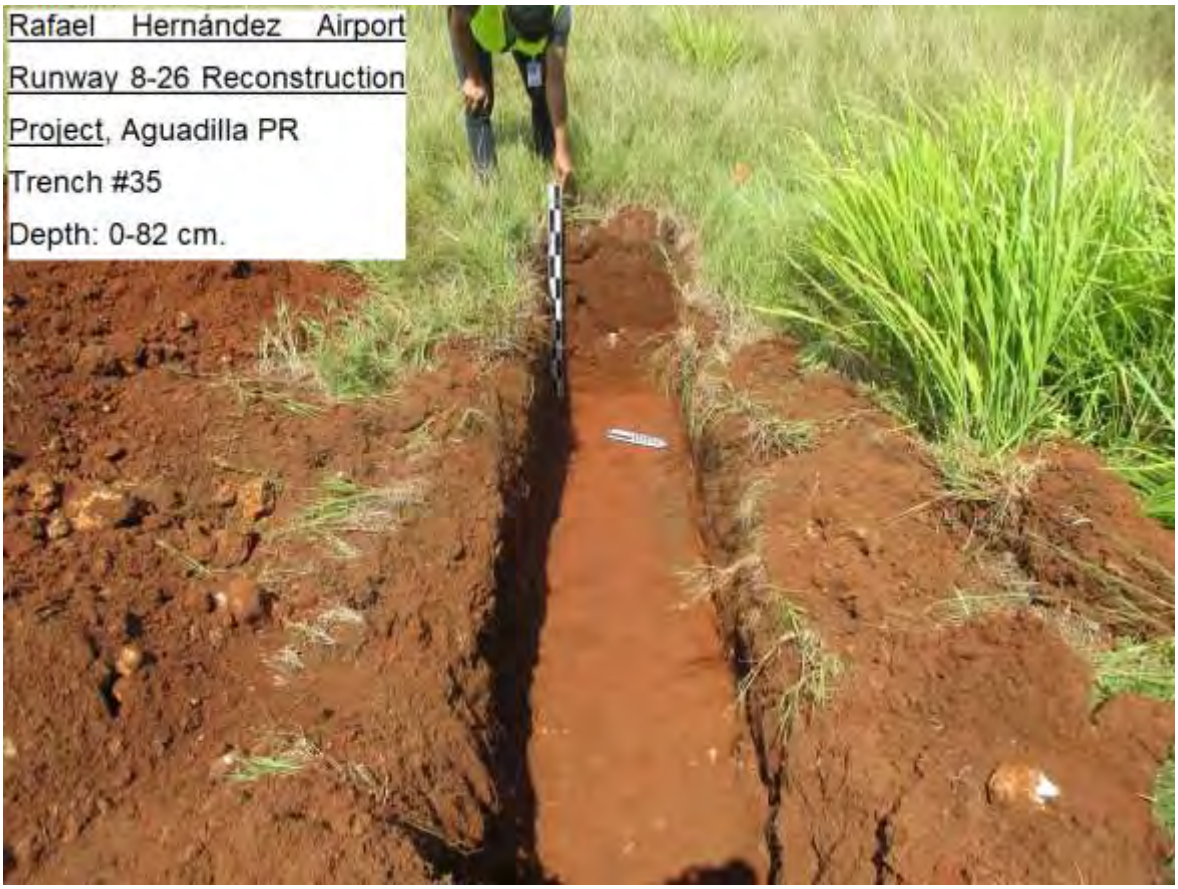
View of the Channel's Top (August, 2018)

View of the Channel (August, 2018)

View of the Channel (August, 2018)

T30	0-43 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	43-71 cm	Negative	Clay, Limestone Rock	7.5YR 3/6

T31	0-39 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	39-74 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T32	0-47 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	47-73 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T33	0-29 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	29-62 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T34	0-38 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	39-74 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T35	0-53 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	53-82 cm	Negative	Clay, Limestone Rock	7.5YR 3/6



(August, 2018)

T36	0-22 cm.	Negative	Clay. Yellowish Brown, weed	2.5YR 4/6
	22-47 cm	Negative	Clay, Limestone Rock	7.5YR 3/4
	47-75 cm	Negative	Clay, Limestone Rock	7.5YR 3/6

T37	0-34 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	34-71 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T38	0-42 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	42-82 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T39	0-39 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	39-85 cm	**Positive**	Clay, Limestone Rock, Cement Block	7.5YR 3/6

At Northwest we found a Cement Block. Has 74cm width

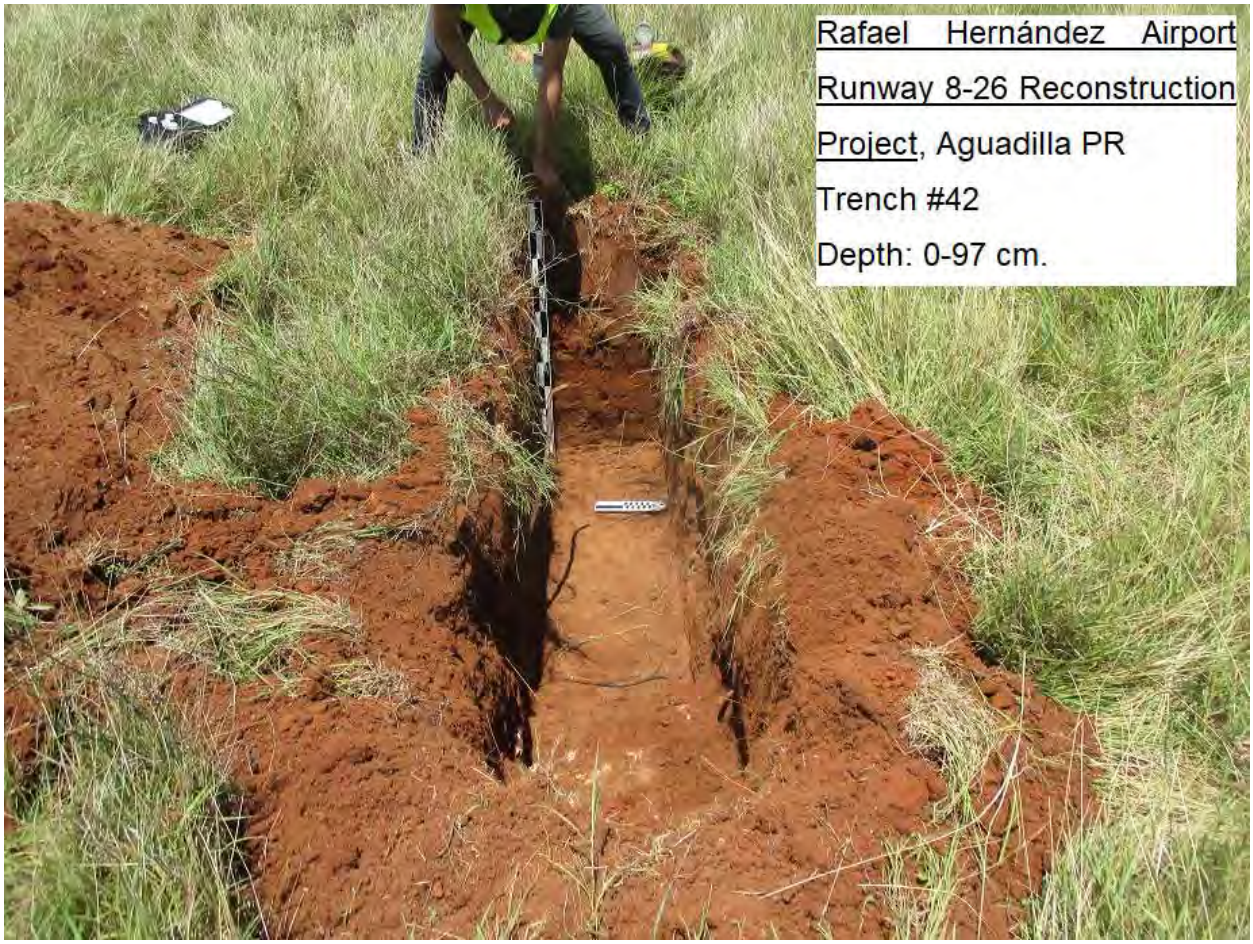
(August, 2018)

Cement Block (August, 2018)

Cement Block (August, 2018)

T40	0-37 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	37-68 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T41	0-50 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	50-73 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T42	0-67 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	67-97 cm	**Positive**	Clay, Limestone Rock Cement Block	7.5YR 3/6

Cement block with a rod at 74cm depth



Cement Block with a Rod (August, 2018)

Cement Block with a Rod (August, 2018)

Cement Block with a Rod (August, 2018)

T43	0-35 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	35-77 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T44	0-46 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	46-85 cm	Negative	Clay, Limestone Rock	7.5YR 3/6

(August, 2018)

T45	0-42 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	42-67 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T46	0-49 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	49-60 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
	60-82 cm	Negative	Clay, Limestone Rock	2.5YR 4/6
T47	0-49 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	49-60 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
	60-82 cm	Negative	Clay, Limestone Rock	2.5YR 4/6
T48	0-51 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	51-85 cm	Negative	Clay, Limestone Rock	7.5YR 3/6

(August, 2018)

T49	0-46 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	46-71 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T50	0-47 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	47-73 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T51	0-29 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	29-62 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T52	0-38 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	39-74 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T53	0-53 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	53-82 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T54	0-25 cm.	Negative	Clay. Yellowish Brown, weed	2.5YR 4/6
	25-51 cm	Negative	Clay, Limestone Rock	7.5YR 3/4
	5184 cm	Negative	Clay, Limestone Rock	7.5YR 3/6

T55	0-33 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	33-75 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T56	0-35 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	35-82 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T57			This trench doesn't do it. Road	
T58	0-34 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	34-80 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T59	0-30 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	30-83 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T60	0-22 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	22-70 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T61	0-36 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	36-73 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T62	0-30 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	30-70 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T63	0-36 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	36-81 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T64	0-29 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	29-81 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T65	0-38 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	38-79 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T66	Taxiway Area (security section)			
T67	Taxiway Area			
T68	Taxiway Area			
T69	0-32 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	32-61 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
	61-71 cm	Negative	Clay, Limestone Rock	2.5YR 4/6

(August, 2018)

T70	0-41 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	41-73 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T71	0-28 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	28-72 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T72	0-36 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	36-81 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T73	0-23 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	23-69 cm	Negative	Clay, Limestone Rock	7.5YR 3/6

T74 Can't do it. Cement on top


(August, 2018)

T75	0-37 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	37-80 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T76	0-29 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	29-68 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T77	0-75 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	75-82 cm	Negative	Clay, Limestone Rock	7.5YR 3/6

(August, 2018)

T78	0-21 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	21-75 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T79	0-63 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	63-76 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T80	0-72 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/6
T81	0-76 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/6
T82	0-27 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	27-73 cm	Negative	Clay, Limestone Rock	7.5YR 3/6

T83	0-44 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	44-74 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T84	0-21 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	21-75 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T85	0-76 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/6
T86	0-29 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	29-72 cm	Negative	Clay, Limestone Rock	7.5YR 3/6

(September, 2018)

T87	0-87 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/6
T88	0-19 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	19-84 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T89	0-14 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	14-73 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T90	0-27 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	27-75 cm	Negative	Clay, Limestone Rock	7.5YR 3/6

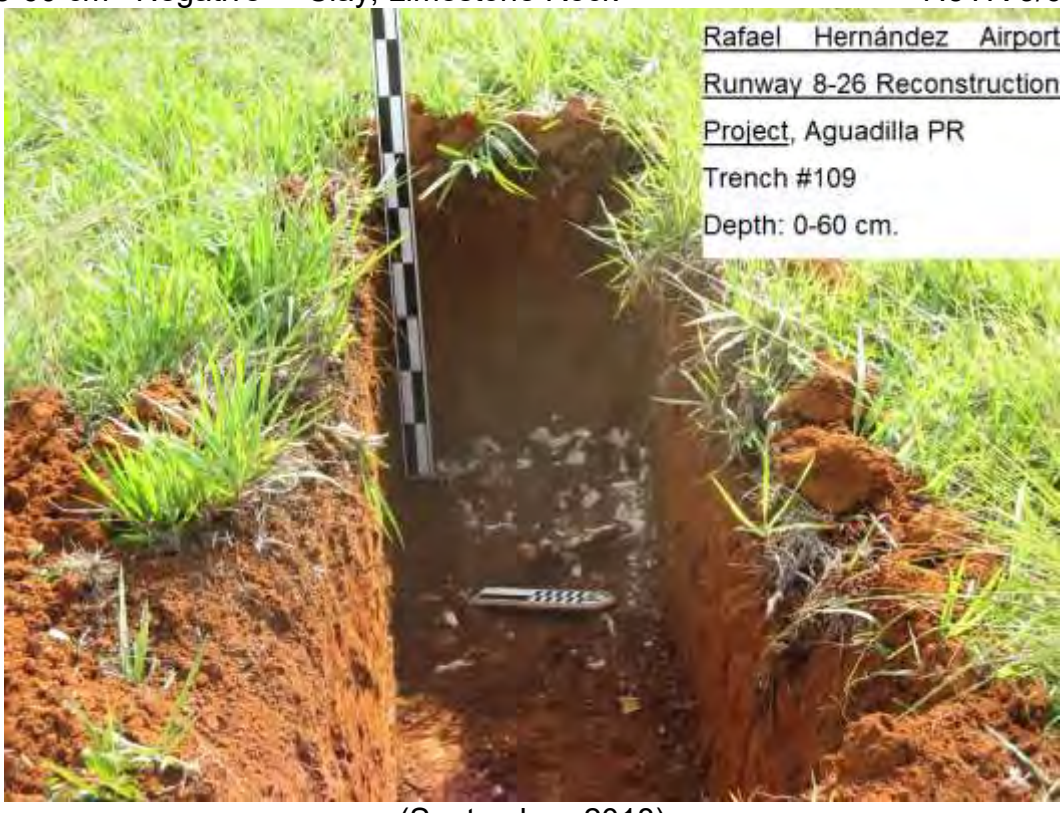
(September, 2018)

T91	0-15 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	15-81 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T92	0-67 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	67-86 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T93	0-13 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	13-79 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T94	0-10 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	10-73 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T95	0-13 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	13-77 cm	Negative	Clay, Limestone Rock	7.5YR 3/6

(September, 2018)

T96	0-09 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	09-64 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T97	0-31 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	31-75 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T98	0-15 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	15-69 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T99	0-19 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	19-81 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T100	0-26 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	26-92 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T101	0-31 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	31-74 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T102	0-20 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	20-41 cm	Negative	Clay, Limestone Rock	2.5YR 3/6
	41-84 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T103	0-26 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	26-43 cm	Negative	Clay, Limestone Rock	2.5YR 3/6

	43-96 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T104	0-14 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	14-55 cm	Negative	Clay, Limestone Rock	2.5YR 3/6
	51-83 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T105	0-17 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	17-75 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T106	0-81 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/6
T107	0-09 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	09-87 cm	Negative	Clay, Limestone Rock	7.5YR 2/6
	51-83 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T108	0-17 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	17-86 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T109	0-18 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	18-60 cm	Negative	Clay, Limestone Rock	7.5YR 3/6



(September, 2018)

T110	0-22 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	22-89 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T111	0-30 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4

	30-92 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T112	0-25 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	25-73 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T113	0-22 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	22-79 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T114	0-30 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	30-86 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T115	0-33 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	33-80 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T116	0-25 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	25-89 cm	Negative	Clay, Limestone Rock	7.5YR 3/6
T117	0-22 cm.	Negative	Clay. Yellowish Brown, weed	7.5YR 3/4
	22-60 cm	Negative	Clay, Limestone Rock	2.5YR 3/6
	60-88 cm	Negative	Clay, Limestone Rock	7.5YR 3/6

Trenches Results

In the Rafael Hernández Airport Runway 8-26 Reconstruction Project a total of one hundred seventeen (117) trenches were planned, all located between Alpha Runway and taxiway Charlie. During the excavation process the majority of the trench's locations were performed. The site has a compacted soil, composed of clay, surface vegetation and some scattered stones. The trenches were established and performed in the direction from west to east along where the new runway was performed according the Alternative 2. The excavation process was carried out by performing the trenches with a set distance of thirty (30) meters apart.

In most boreholes a compact clay surface of dark brown color was found (7.5 YR 3/4), while in the subsoil an extremely compact reddish-brown layer, (7.5YR 3/6). While performing these trenches in the survey a lot of limestones rocks were visible and finding during the excavations.

During the excavation progress, some trenches found remains of human impact. The trench #29, were found a little water channel that cross the excavation from west to east. This water channel, has twenty-five centimeters wide and a depth of twenty

centimeters. The length is indefinite because continues along the extension of the trench. This element it's the most important evidenced in this survey.

Other elements were a wall fabricated in cement found in the trench #35 and a cement block with a rod in the trench #42.

Regarding to the cement block evidenced in the trench # 35, this could be a base to hold a tensioner. Bearing in mind that in the upper part of this base there is a hook.

All trenches ended with a depth ranging between fifty-four (54) centimeter and ninety-six (96) centimeters.

One of the most important things in this study was the identification of the old elements discovered in 2015 in trenches # 93 and # 107. However, during the field work, the archaeologist Eduardo Questell and myself excavated deeper than in the previous stage. Evidence that the elements identified, were in fact natural calcareous outcrops.

Under these outcrops, was found compact clay identical to those evidenced in the adjoining trenches.

We want to stipulate, that the elements discovered in the excavation stage in 2015, are not elements that had human intervention, therefore, they are not historical resources, as had been stipulated in the previous study.

Although we determined, that in the project area, historical resources could be evidenced, due to the location of this project, the construction of the naval base and the old location of the San Antonio community.

Criteria for Evaluation at National Register of Historic Places

The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

A. That are associated with events that have made a significant contribution to the broad patterns of our history; or

B. That are associated with the lives of significant persons in our past; or

APPENDIX C: SHOVEL TEST PIT STRATIGRAPHIC SECTIONS

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STP #	Strat	Depth (cm)	Munsell #	Munsell Color	Texture	Artifacts	Comments
C1	I	0-18	2.5YR 4/4	Reddish Brown	Sandy Clay/ Loam	none	Fill Soil
	II	18-40	2.5YR 5/6	Red	Sandy Clay/ Loam	none	Fill Soil
	III	40-79	2.5YR 4/4	Reddish Brown	Sandy Clay/ Loam	none	Fill Soil
	IV	79-94	7.5YR 4/1	Dark Gray	Sandy Clay	none	Disturbed with gravel
C2	I	0-24	2.5YR 5/6	Reddish Brown	Sandy Loam	none	Fill Soil
		24-35	2.5YR 5/8	Red	Sandy Clay	none	Clay impasse
C3	I	0-34	7.5YR 4/4	Reddish Brown	Sandy Clay/ Loam	none	Fill- end of runway
	II	34-44	7.5YR 3/4	Dark Reddish Brown	Sandy Clay	none	Rocky impasse
C4	I	0-28	7.5YR 4/4	Reddish Brown	Sandy Clay/Loam	none	Fill Soil
	II	28-38	2.5 YR 5/4	Reddish Brown	Sandy Clay	none	Fill Soil
C5	I	0-34	7.5YR 4/4	Reddish Brown	Sandy Clay/ Loam	none	Fill Soil
	II	34-48	7.5YR 4/3	Reddish Brown	Sandy Loam	none	Fill Soil
	III	48-68	2.5YR 4/5	Red	Sandy Clay	none	Clay impasse
D1	I	0-22	5YR 3/4	Dark Reddish Brown	SA CL/LO	none	Fill Soil
	II	22-32	2.5YR 3/6	Dark Red	SA CL/LO	none	Fill Soil
	III	32-43	2.5YR 3/6	Dark Red	SA CL	none	Fill Soil
	IV	43-53	7.5YR 4/1	Dark Gray	SA CL	none	Clay increasing
	V	53-66			SA CL	none	Imp. Clay
D2	I	0-23	2.5YR 4/4	Reddish Brown	Sandy Clay	none	Fill with limestone rubble
	II	23-40	2.5YR 3/4	Dark Reddish Brown	Sandy Clay	none	Rocky impasse
D3	I	0-18	2.5YR 4/4	Reddish Brown	Sandy Clay	none	Fill with limestone rubble
	II	18-35	2.5YR 3/4	Dark Reddish Brown	Sandy Clay	none	Rocky impasse
M1	I	0-12	10YR 3/4; 10YR 5/4	Darky Yellowish Brown; Yellowish Brown	Silty Sandy Loam	none	Compact, mottled fill with limestone rock
	II	Dec-35	10YR 3/4	Yellowish Brown	Silty Sandy Loam	none	Rocky impasse

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APPENDIX D: QUALIFICATIONS OF INVESTIGATORS

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Daniel Cassedy, PhD, is a Registered Professional Archaeologist who has over 35 years of experience as a supervisory archaeologist specializing in cultural resource management in eastern North America. He provides project management and technical direction on projects conducted in compliance with Section 106 of the National Historic Preservation Act. Dr. Cassedy is a Principal Archaeologist based in the Morrisville, NC office. He has extensive experience in all phases of archaeological surveys and excavations nationwide, and specializes in regulatory agency coordination, public outreach, and cultural resource management studies. He has been employed by AECOM for over 16 years. Notable projects include the Evaluation and Documentation of Navy Atlantic Fleet Photographic Laboratory at NAS Jacksonville; Environmental and Functional Program Reviews at Multiple NASA centers; Archaeological and Historical Services for Robbins Air Force Base, Warner Robbins, Georgia; and Phase II Archaeological Investigations for the US Army Redstone Arsenal, Huntsville, Alabama.

Mark Martinkovic, M.A., is a Registered Professional Archaeologist with over 15 years of experience in the Cultural Resource Management (CRM) industry and exceeds the Secretary of the Interior's Professional Qualification Standards (36 CFR Part 61). Mr. Martinkovic is a Senior Archaeologist based in the Tallahassee, FL office. He has experience in the design, management, and technical execution of historic and archaeological investigations throughout the eastern US, primarily on the Gulf Coast. Since June 2006 he has been employed by AECOM and worked on Department of Transportation and private sector energy projects and also as a Historic Preservation Specialist (archaeologist) for FEMA in various roles on the Gulf Coast. Most recently he has successfully completed the Phase I investigation of 30 miles of proposed pipeline in South Carolina according to state and FERC guidelines. Mr. Martinkovic has also participated in surveys and studies of proposed energy corridors in Florida, primarily assessments of transmission line corridors and power station sites. He also has extensive experience in monitoring and overseeing the excavation of large-scale utility projects, including the installation of a sewer system on the Beauvoir Plantation in Biloxi, MS (2010) and the installation of a combined sewer and natural gas system in historic downtown Pensacola (2000).

Marvin Brown, M.A., has over 35 years of experience in historic and architectural studies, environmental compliance procedures, and project management. This experience includes performing historic architectural surveys in support of state and federal projects in compliance with Section 106 and other statutes and regulations; determination of effects and development of mitigation measures, including Memoranda of Agreement, Programmatic Agreements, Historic Preservation Plans, HABS/HAER-level recordation, and Section 4(f) documentation; environmental documentation including Environmental Impact Statements, Environmental Assessments, and Categorical Exclusions for airport, highway, and other projects; recordation of historic bridges; emergency and long-term response for FEMA projects; and drafting Multiple Property Documentation forms and National Register nominations for individual properties and historic districts. He has completed numerous projects in Florida associated with airports and other resources.

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APPENDIX H

Noise Analysis Technical Report

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Rafael Hernandez Airport
Runway 8-26 Reconstruction
Environmental Assessment

Noise Technical Report

Prepared for:

Puerto Rico Port Authority
and
Federal Aviation Administration

Prepared by:

AECOM

November 2019

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ACRONYMS AND ABBREVIATIONS

AEDT	Aviation Environmental Design Tool
AEM	Area Equivalent Method
ATCT	Air Traffic Control Tower
BQN	Rafael Hernandez Airport
CFR	Code of Federal Regulation
dB	Decibel
dBA	A-Weighted Decibel
DNL	Day-Night Average Sound Level
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FICON	Federal Interagency Committee on Noise
FICUN	Federal Interagency Committee on Urban Noise
GA	General Aviation
HUD	Department of Housing and Urban Development
Hz	Hertz
L_{eq}	Equivalent Sound Level
L_{max}	Maximum Sound Level
SEL	Sound Exposure Level
SPL	Sound Pressure Level

CHAPTER 1 INTRODUCTION

This *Noise Technical Report* details the assessment scope, calculation methodology, input data and other technical information used in the analysis of noise impacts associated with the proposed Runway 8-26 Reconstruction at the Rafael Hernandez Airport (i.e., BQN, or the Airport), hereinafter referred to as the Proposed Project.

1.1. AIRCRAFT NOISE DESCRIPTORS

A variety of noise metrics are used to assess airport noise impacts in different ways. Noise metrics are used to describe individual noise events (such as a single operation of an aircraft taking off overhead) or groups of events (such as the cumulative effect of numerous aircraft operations, the collection of which creates a general noise environment or overall exposure level). Both types of descriptors are helpful in explaining how people tend to respond to a given noise condition. Descriptions of these metrics are provided below.

Decibel, dB – Sound is a complex physical phenomenon consisting of complex minute vibrations traveling through a medium, such as air. These vibrations are sensed by the human ear as sound pressure. Because of the vast range of sound pressure or intensity detectable by the human ear, sound pressure level (SPL) is represented on a logarithmic scale known as decibels (dB). A sound level of 0 dB is approximately the threshold of human hearing and is barely audible under extremely quiet (laboratory-type) listening conditions. A SPL of 120 dB begins to be felt inside the ear as discomfort and pain at approximately 140 dB. Most environmental sounds have SPLs ranging from 30 to 100 dB.

Because dB are logarithmic, they cannot be added or subtracted directly like other (linear) numbers. For example, if two sound sources each produce 100 dB, when they are operated together they will produce 103 dB, not 200 dB. Four 100 dB sources operating together again double the sound energy, resulting in a total SPL of 106 dB, and so on. In addition, if one source is much louder than another, the two sources operating together will produce the same SPL as if the louder source were operating alone. For example, a 100 dB source plus an 80 dB source produce 100 dB when operating together. The louder source masks the quieter one.

Two useful rules to remember when comparing SPLs are: (1) most people perceive a 6 to 10 dB increase in SPL between two noise events to be about a doubling of loudness, and (2) changes in SPL of less than about 3 dB between two events are not easily detected outside of a laboratory.

A-Weighted Decibel, dBA – Frequency, or pitch, is a basic physical characteristic of sound and is expressed in units of cycles per second or hertz (Hz). The normal frequency range of hearing for most people extends from about 20 to 15,000 Hz. Because the human ear is more sensitive to middle and high frequencies (i.e., 1000 to 4000 Hz), a frequency weighting called “A” weighting is applied to the measurement of sound. The internationally standardized "A" filter approximates the sensitivity of the human ear and helps in assessing the perceived loudness of various sounds.

In this document all sound levels are A-weighted sound levels and the adjective "A-weighted" has been omitted.

Figure 1.1-1 charts common indoor and outdoor sound levels. A quiet rural area at nighttime may be 30 A-weighted decibels (dBA) or lower while the operator of a typical gas lawn mower may experience a level of 90 dBA. Similarly, the level in a library may be 30 dBA or lower while the listener at a rock band concert may experience levels near 110 dBA.

Maximum A-Weighted Noise Level, L_{max} – Sound levels vary with time. For example, the sound increases as an aircraft approaches, then falls and blends into the ambient or background as the aircraft recedes into the distance. Because of this variation, it is often convenient to describe a particular noise "event" by its highest or maximum sound level (L_{max}). Note L_{max} describes only one dimension of an event; it provides no information on the cumulative noise exposure generated by a sound source. In fact, two events with identical L_{max} may produce very different total exposures. One may be of very short duration, while the other may be much longer.

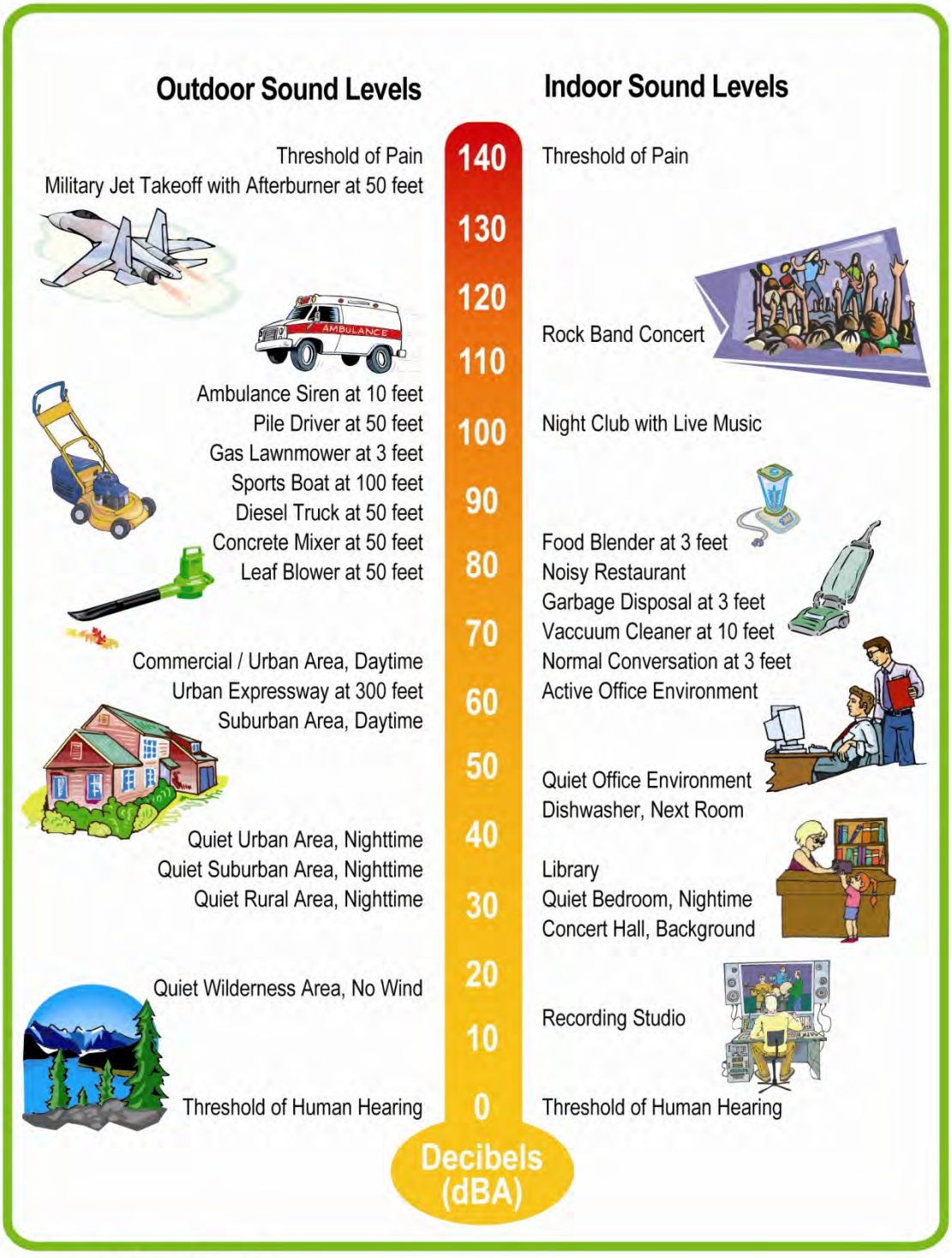
Sound Exposure Level, SEL – The most common measure of noise exposure for a single aircraft flyover is the sound exposure level (SEL). SEL is a summation of the A-weighted sound energy at a particular location over the true duration of a noise event normalized to a fictional duration of one second. The true duration is defined as the amount of time the noise event exceeds background levels. For events lasting more than one second, SEL does not directly represent the sound level heard at any given time, but rather provides a measure of the net impact of the entire acoustic event.

The normalization to the fictional duration of one second enables the comparison of noise events with differing true duration and/or maximum level. Because the SEL is normalized to one second, it will almost always be larger in magnitude than the L_{max} for the event. In fact, for most aircraft events, the SEL is about 7 to 12 dB higher than the L_{max}. Additionally, since it is a cumulative measure, a higher SEL can result from either a louder or longer event, or some combination.

As SEL combines an event's overall sound level along with its duration, SEL provides a comprehensive way to describe noise events for use in modeling and comparing noise environments. Computer noise models, such as the one employed for this document, base their computations on these SELs.

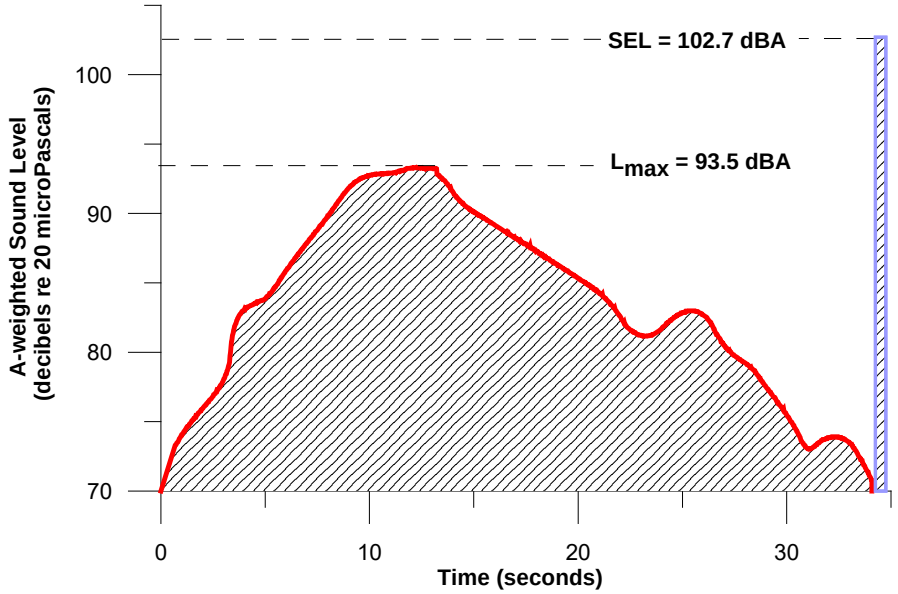
Figure 1.1-2 shows an event's "time history," the variation of sound level with time. For typical sound events experienced by a fixed listener, like a person experiencing an aircraft flying by, the sound level rises as the source (or aircraft) approaches the listener, peaks and then diminishes as the aircraft flies away from the listener. The area under the time history curve represents the overall sound energy of the noise event. The L_{max} for the event shown in the figure was 93.5 dBA. Compressing the event's total sound energy into one second to compute its SEL yields 102.7 dBA.

Figure 1.1-1 Common Outdoor and Indoor Sound Levels



Source: URS Corporation, 2008

Figure 1.1-2 Comparison of Maximum Sound Level (L_{MAX}) and Sound Exposure Level (SEL)



Source: URS Corporation, 2007.

Equivalent Sound Level, L_{eq} – Equivalent sound level (L_{eq}) is a measure of the exposure resulting from the accumulation of A-weighted sound levels over a particular period of interest (e.g., an hour, an 8-hour school day, nighttime, or a full 24-hour day). However, because the length of the period can be different depending on the time frame of interest, the applicable period should always be identified or clearly understood when discussing the metric. Such durations are often identified through a subscript, for example $L_{eq(8)}$ or $L_{eq(24)}$.

Conceptually, L_{eq} may be thought of as a constant sound level over the period of interest that contains as much sound energy as the actual time-varying sound level with its normal "peaks" and "dips." In the context of noise from typical aircraft flight events and as noted earlier for SEL, L_{eq} does not represent the sound level heard at any particular time, but rather represents the total sound exposure for the period of interest. Also, it should be noted that the "average" sound level suggested by L_{eq} is not an arithmetic value, but a logarithmic, or "energy-averaged," sound level. Thus, loud events tend to dominate the noise environment described by the L_{eq} metric.

Day-Night Average Sound Level, DNL - Time-averaged sound levels are measurements of sound levels averaged over a specified length of time. These levels provide a measure of the average sound energy during the measurement period. For the evaluation of community noise effects, and particularly aircraft noise effects, the Day-Night Average Sound Level (DNL). This metrics are similar to the Leq except that it compensates for the widely assumed increase in people's sensitivity to noise during nighttime hours. Each aircraft operation occurring between 10:00 p.m. and 7:00 a.m. is treated as if it were 10 operations. Logarithmically, this multiplier is the equivalent of adding 10 dB to the noise level of each nighttime operation. These noise level penalties are intended to correspond to the drop in background noise level which studies have

found takes place from daytime to nighttime in a typical community. The nighttime decrease in ambient sound levels—from both outdoor and indoor sources—is commonly considered to be the principal explanation for people's heightened sensitivity to noises during these periods.

DNL is the primary noise descriptor of this study. DNL is a 24-hour time-weighted-average noise metric expressed in dBA which accounts for the noise levels (in terms of SEL) of all individual aircraft events, the number of times those events occur, and the time of day at which they occur. Values of DNL can be measured with standard monitoring equipment or predicted with computer models. This document utilizes estimates of DNL with a Federal Aviation Administration (FAA)-approved computer-based noise model.

Typical DNL values for a variety of noise environments are shown in **Figure 1.1-3**. DNL values can be approximately 85 dBA outdoors under a flight path within a mile of a major airport and 40 dBA or less outdoors in a rural residential area.

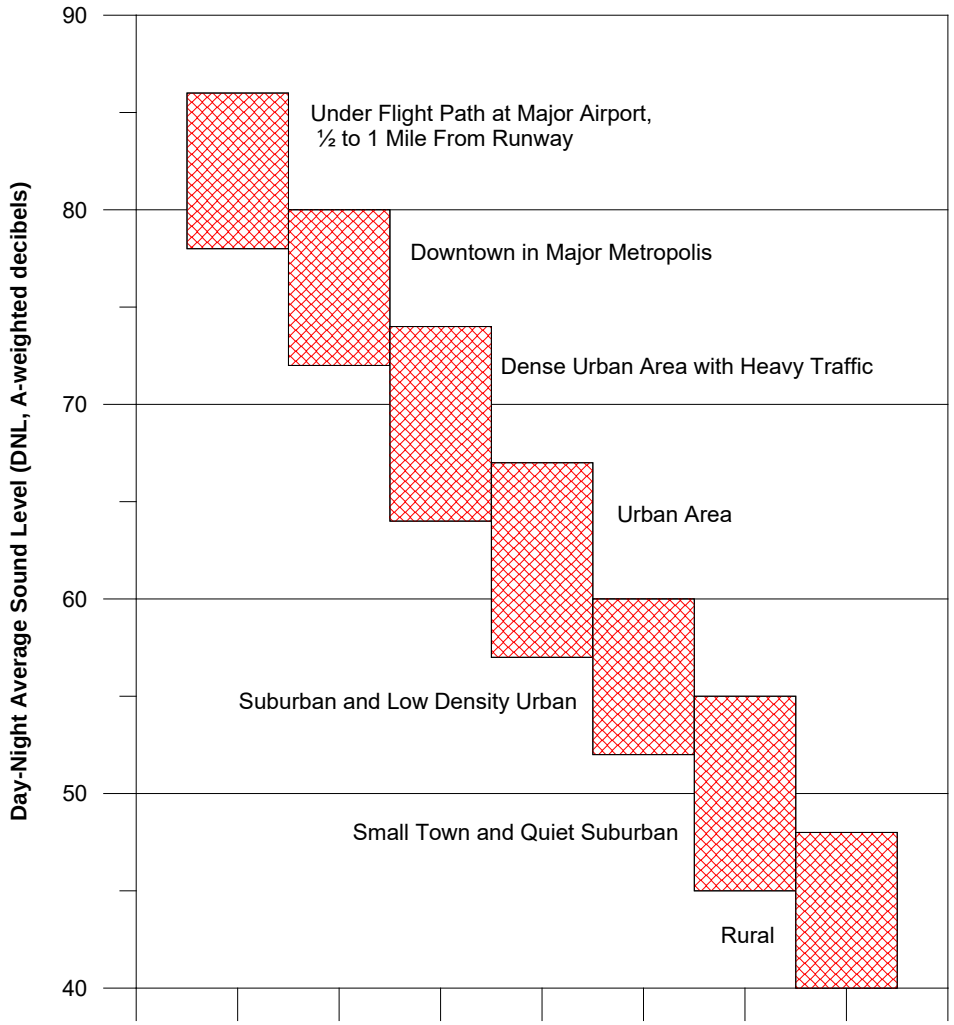
Due to the DNL descriptor's close correlation with the degree of community annoyance from aircraft noise, DNL have been formally adopted by most Federal agencies for measuring and evaluating aircraft noise for land use planning and noise impact assessment. Federal committees such as the Federal Interagency Committee on Urban Noise (FICUN) and the Federal Interagency Committee on Noise (FICON) which include the Environmental Protection Agency (EPA), FAA, Department of Defense, Department of Housing and Urban Development (HUD), and Veterans Administration, found DNL to be the best metric for land use planning. They also found no new cumulative sound descriptors or metrics of sufficient scientific standing to substitute for DNL. Other cumulative metrics could be used only to supplement, not replace DNL. Furthermore, FAA Order 1050.1F for environmental impact studies, requires DNL be used in describing cumulative noise exposure and in identifying aircraft noise/land use compatibility issues (EPA, 1974; FICUN, 1980; FICON, 1992; 14 CFR part 150, 2007; FAA, 2006).

1.2. EFFECTS OF AIRCRAFT NOISE ON PEOPLE

This section addresses three ways humans can be affected by aircraft noise: annoyance, speech interference and sleep disturbance.

Annoyance – The primary potential effect of aircraft noise on exposed communities is one of annoyance. Noise annoyance is defined by the Environmental Protection Agency as any negative subjective reaction on the part of an individual or group (EPA, 1974). Scientific studies and a large number of social/attitudinal surveys have been conducted to appraise people's annoyance to all types of environmental noise, especially aircraft events. These studies and surveys have found the DNL to be the best measure of this annoyance (EPA, 1974; FICUN, 1980; FICON, 1992; ANSI, 2007; ANSI, 2003; Schultz, 1978; Fidell, et. al., 1991).

Figure 1.1-3 Typical Range of Outdoor Community Day-Night Average Sound Levels



Source: FICON, 1992

The relationship between annoyance and DNL determined by the scientific community and endorsed by many Federal agencies, including the FAA, is shown in **Figure 1.2-1**. For a DNL of 65 dBA, approximately 13 percent of the exposed population would be highly-annoyed. The figure also shows at very low values of DNL, such as 45 dB or less, one percent or less of the exposed population would be highly annoyed. At very high values of DNL, such as 90 dBA, more than 80 percent of the exposed population would be highly annoyed.

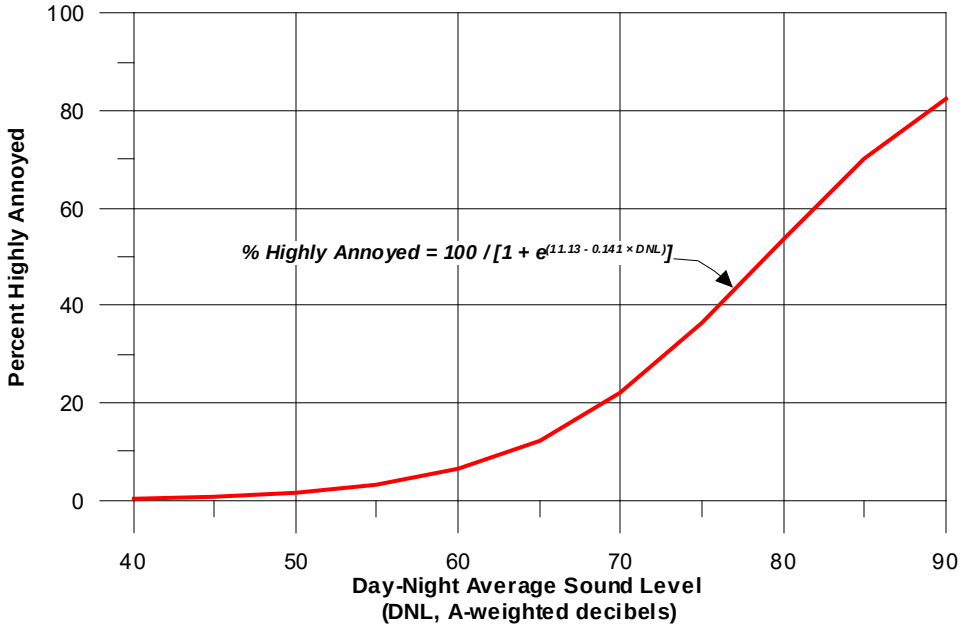
It is often suggested a lower DNL, such as 60 or 55 dB, be adopted as the threshold of community noise annoyance for FAA environmental analysis documents. While there is no technical reason why a lower level cannot be measured or calculated for comparison purposes, a DNL of 65 dB:

- Provides a valid basis for comparing and assessing community noise effects.
- Represents a noise exposure level normally dominated by aircraft noise and not other

community or nearby highway noise sources.

- Reflects the FAA's threshold for grant-in-aid funding of airport noise mitigation projects.
- HUD also established a DNL standard of 65 dBA for eligibility for Federally-guaranteed home loans.

Figure 1.2-1 Relationship between Annoyance and Day-Night Average Sound Level



Source: FICON, 1992

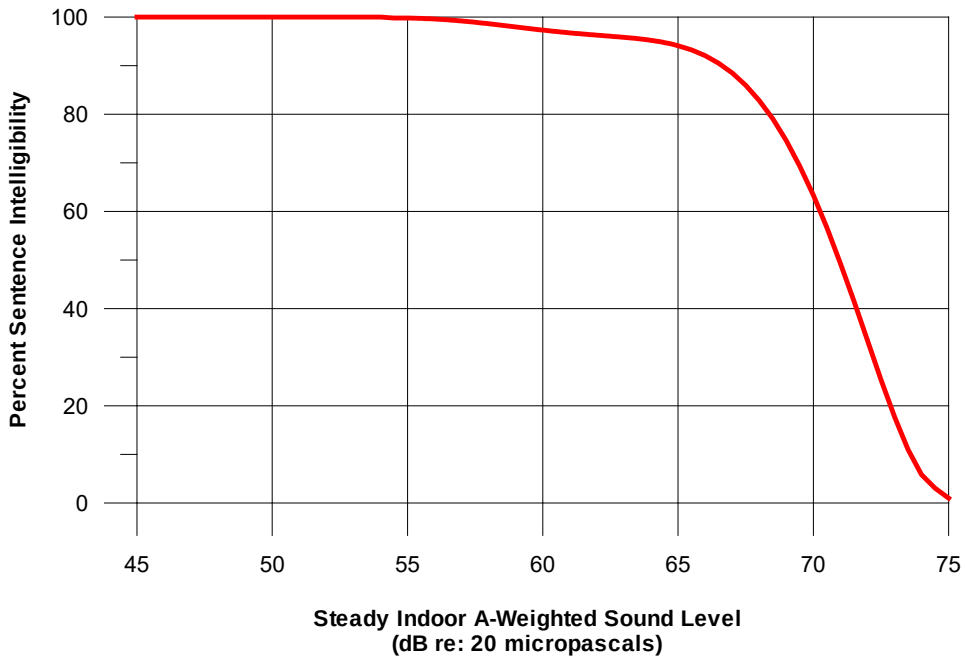
Speech Interference – A primary effect of aircraft noise is its tendency to drown out or "mask" speech, making it difficult to carry on a normal conversation. As an aircraft approaches and its sound level increases, speech becomes harder to hear. As the ambient level increases, the talker must raise his/her voice, or the individuals must get closer together to continue talking.

For typical communication distances of three or four feet (one to 1.5 meters), acceptable outdoor conversations can be carried on in a normal voice as long as the ambient noise outdoors is less than about 65 dBA (FICON, 1992). If the noise exceeds this level, intelligibility would be lost unless vocal effort was increased or communication distance was decreased.

Indoor speech interference can be expressed as a percentage of sentence intelligibility between two average adults with normal hearing speaking fluently in relaxed conversation approximately one meter apart in a typical living room or bedroom (EPA, 1974). As shown in **Figure 1.2-2**, the percentage of sentence intelligibility is a non-linear function of the (steady) indoor ambient or background sound level (24-hour energy-average $L_{eq(24)}$). Steady ambient indoor sound levels of up to 45 dBA $L_{eq(24)}$ are expected to allow 100 percent intelligibility of sentences. The curve shows 99 percent sentence intelligibility for $L_{eq(24)}$ at or below 54 dBA and less than 10 percent

intelligibility for $L_{eq(24)}$ greater than 73 dBA. In the same document from which **Figure 1.2-2** was taken, the EPA established an indoor criterion of 45 dBA DNL as requisite to protect against speech interference indoors (EPA, 1974).

Figure 1.2-2 Percent Sentence Intelligibility for Indoor Speech



Source: EPA, 1974

1.3. NOISE ANALYSIS

1.3.1. EXISTING CONDITION NOISE MODELING ASSUMPTIONS

Airport Environmental Design Tool (AEDT)

The FAA has required the use of the Aviation Environmental Design Tool (AEDT) since May 29, 2015 for determining the predicted noise impact in the vicinity of airports. Statutory requirements for AEDT use are defined in FAA Order 1050.1F, Environmental Impacts: Policies and Procedures; Order 5050.4B, NEPA Implementing Instructions for Airport Actions; and Title 14 Code of Federal Regulations (CFR) part 150, Airport Noise Compatibility Planning. AEDT Version 2D, released September 27, 2017, was the version used for this document (https://aedt.faa.gov/2d_information.aspx).

The AEDT incorporates the number of annual average daily daytime and nighttime flight and run-up operations, flight paths, and flight profiles of the aircraft along with its extensive internal database of aircraft noise and performance information, to calculate the DNL at many points on the ground around an airport. From a grid of points, the AEDT contouring program draws contours of equal DNL to be superimposed onto land use maps. For this document, DNL contours of 65, 70, and 75 dBA were developed. DNL contours are a graphical representation of how the noise

from the airport's average annual daily aircraft operations is distributed over the surrounding area. The AEDT can calculate sound levels at any specified point so that noise exposure at representative locations around an airport can be obtained.

The results of the AEDT analysis provide a relative measure of noise levels around airfield facilities. When the calculations are made in a consistent manner, the AEDT is most accurate for comparing before and after noise effects resulting from forecast changes or alternative noise control actions. It allows noise levels to be predicted for such Proposed Projects without the actual implementation and noise monitoring of those actions.

Title 14 CFR part 150, Appendix A, provides Federal compatible land use guidelines for several land uses as a function of DNL values. Compatible or non-compatible land use is determined by comparing the predicted or measured DNL values at a site to the established thresholds.

Examples of detailed local acoustical variables include:

- Temperature profiles;
- Wind gradients;
- Humidity effects;
- Ground absorption;
- Individual aircraft directivity patterns; and
- Sound diffraction caused by terrain, buildings, barriers, etc.

The results of the AEDT analysis provide a relative measure of noise levels around airfield facilities. When the calculations are made in a consistent manner, the AEDT is most accurate for comparing before and after noise effects resulting from forecast changes or alternative noise control actions. It allows noise levels to be predicted for such proposed projects without the actual implementation and noise monitoring of those actions.

Modeled Aircraft Operations

This section describes in detail the sources and derivation of the AEDT input data for the existing conditions including airport layout, weather, flight operations, runway use, flight tracks, track use, and flight profiles.

Airport Layout

There is one runway at BQN. Runway 8-26 is 11,700 feet long by 200 feet wide with 50-foot shoulders. The center section of the runway between 2,000 feet and 8,000 feet is comprised of six to eight inches of Portland Cement Concrete (PCC), with Asphalt Concrete (AC) overlay with thicknesses varying between three and six inches. The runway is serviced primarily by two partial parallel taxiways, Taxiway A and Taxiway M, as well as a traverse diagonal Taxiway C, which ties in with Taxiways E and G providing access to the southwestern apron area. Parking aprons include a commercial apron, cargo apron, business/GA apron, a government/municipal apron, and an "other/no-use" apron.

Flight Operations

As shown in **Table 1.3-1**, AEDT-modeled annual operations for the Existing Conditions totaled 40,451 operations, an average of approximately 111 daily operations Nighttime operations accounted for approximately 16% percent of the total operations at BQN.

Table 1.3-1 Existing Condition Average Annual Daily Aircraft Operations

ANP ID	Operations		
	Day	Night	Total
7478	0.211482	0.098104	0.309586
737400	0.002691	-	0.002691
737700	-	0.052096	0.052096
737800	0.017913	1.721775	1.739688
747200	0.001944	0.003549	0.005493
747400	0.677598	0.179848	0.857446
767300	0.001342	0.001349	0.002691
767JT9	0.013693	-	0.013693
A300-622R	0.002748	0.002749	0.005497
A310-304	0.023812	0.22547	0.249282
A319-131	0.053696	0.11339	0.167086
A320-232	3.33262	4.776948	8.109568
B429	0.02347	0.006622	0.030092
BEC58P	1.460358	0.005431	1.465789
C130E	2.188287	0.617202	2.805489
CIT3	0.024692	-	0.024692
CL600	0.150692	-	0.150692
CNA172	5.363998	0.189402	5.5534
CNA182	1.194489	-	1.194489
CNA206	2.314213	0.154276	2.468489
CNA208	5.525708	0.230478	5.756186
CNA441	0.344435	0.006258	0.350693
CNA500	0.073992	-	0.073992

ANP ID	Operations		
	Day	Night	Total
CNA510	0.057496	-	0.057496
CNA560XL	0.032896	-	0.032896
CNA680	0.021894	-	0.021894
CNA750	0.013693	-	0.013693
CVR580	1.659521	0.03905	1.698571
DC1010	1.249549	0.314818	1.564367
DC3	0.038386	-	0.038386
DHC6	4.339783	0.021808	4.361591
DHC8	0.002691	-	0.002691
DO328	1.476461	0.003034	1.479495
ECLIPSE500	0.005497	-	0.005497
EMB120	2.421325	0.006064	2.427389
EMB145	0.021893	-	0.021893
EMB190	0.008191	-	0.008191
F10062	0.005463	0.010932	0.016395
FAL20	0.024694	-	0.024694
GASEPF	1.804174	0.047912	1.852086
GASEPV	18.472441	1.272748	19.74519
GIV	0.066743	0.004447	0.07119
GV	0.005497	-	0.005497
HS748A	0.005497	-	0.005497
IA1125	0.015994	0.003196	0.01919
LEAR35	0.473668	0.003025	0.476693
MD11GE	2.596481	0.98708	3.583561
MD83	0.005497	-	0.005497
MU3001	0.119873	0.008918	0.128791
PA28	3.904095	-	3.904095
PA30	0.493193	-	0.493193
PA31	0.164397	-	0.164397
PA42	0.008191	-	0.008191
R44	0.072694	0.020496	0.09319
SA365N	24.457834	6.898358	31.35619
SD330	4.63116	0.018126	4.649286
SF340	0.927382	0.171201	1.098583
Grand Total	**92.608117**	**18.21616**	**110.8243**

Notes: ANP = Aircraft Noise Profile
Day = 7:00 a.m. to 9:59 p.m.; Night = 10:00 p.m. to 6:59 a.m.
Numbers may not add due to rounding.
Sources: AEDT 2D; AECOM, 2019.

Runway Use

A summary of the modeled annual average daily utilization of BQN's runways is presented in **Tables 1.3-2** and **1.3-3** for arrivals and departures respectively. This data was provided by the FAA Air Traffic Control Tower (ATCT).

Table 1.3-2 Existing Condition Arrival Operations Runway Utilization

Runway	% of Total
8	69%
26	4%
H08	26%
H26	2%
Total	100%

Source: FAA ATCT 2018.

Table 1.3-3 Existing Condition Departure Operations Runway Utilization

Runway	% of Total
8	67%
26	4%
H08	27%
H26	2%
Total	100%

Source: FAA ATCT 2018.

Flight Tracks

Flight tracks are the aircraft's actual path through the air projected vertically onto the ground. Modeled flight tracks reflect a reasonable representation of the actual flight track recognizing that pilot technique and weather conditions will affect the actual track of individual flights. **Figure 1.3-1** depict modeled arrival and departure tracks.

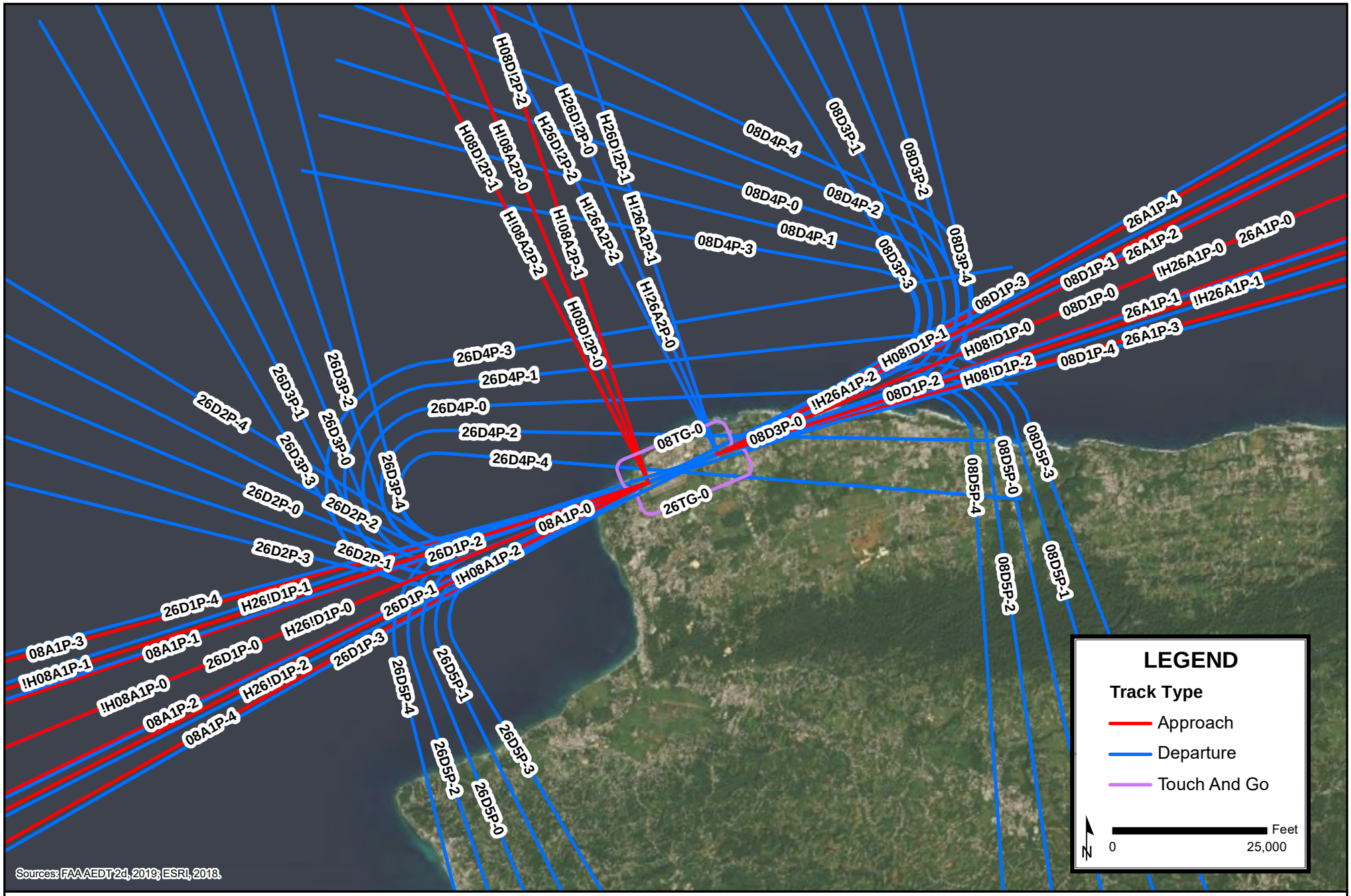
Track Use

Utilization percentages of the flight tracks and flight subtracks are tabulated in **Table 1.3-4** for arrivals and departures.

Table 1.3-4 Existing Condition Percent of Total Operations by Runway and Flight Track

Arrivals		Percent of Total Operations By Subtrack					
Runway	**Track Name**	**Subtrack 0**	**Subtrack 1**	**Subtrack 2**	**Subtrack 3**	**Subtrack 4**	**Total**
8	08A1P	12.5%	7.9%	7.9%	2.0%	2.0%	32.4%
	08TG	3.1%	0.0%	0.0%	0.0%	0.0%	3.1%
26	26A1P	0.7%	0.4%	0.4%	0.1%	0.1%	1.7%
	26TG	0.3%	0.0%	0.0%	0.0%	0.0%	0.3%
H08	!H08A1P	5.4%	1.2%	1.2%	0.0%	0.0%	7.9%
	H!08A2P	3.7%	0.9%	0.9%	0.0%	0.0%	5.4%
H26	!H26A1P	0.3%	0.1%	0.1%	0.0%	0.0%	0.4%
	H!26A2P	0.4%	0.1%	0.1%	0.0%	0.0%	0.5%
						Total	51.7%
Departures		**Percent of Total Operations By Subtrack**					
Runway	**Track Name**	**Subtrack 0**	**Subtrack 1**	**Subtrack 2**	**Subtrack 3**	**Subtrack 4**	**Total**
8	08D1P	5.2%	3.3%	3.3%	0.9%	0.9%	13.5%
	08D3P	3.9%	2.5%	2.5%	0.6%	0.6%	10.1%
	08D4P	2.7%	1.7%	1.7%	0.4%	0.4%	6.9%
	08D5P	0.7%	0.5%	0.5%	0.1%	0.1%	1.9%
26	26D1P	0.1%	0.0%	0.0%	0.0%	0.0%	0.2%
	26D2P	0.1%	0.0%	0.0%	0.0%	0.0%	0.2%
	26D3P	0.2%	0.1%	0.1%	0.0%	0.0%	0.5%
	26D4P	0.2%	0.1%	0.1%	0.0%	0.0%	0.6%
	26D5P	0.1%	0.1%	0.1%	0.0%	0.0%	0.2%
H08	H08!D1P	5.4%	1.2%	1.2%	0.0%	0.0%	7.9%
	H08D!2P	3.7%	0.9%	0.9%	0.0%	0.0%	5.4%
H26	H26!D1P	0.3%	0.1%	0.1%	0.0%	0.0%	0.4%
	H26D!2P	0.4%	0.1%	0.1%	0.0%	0.0%	0.5%
						Total	48.3%

Source: FAA ATCT 2018.



RAFAEL HERNANDEZ AIRPORT

RUNWAY 8-26 RECONSTRUCTION
ENVIRONMENTAL ASSESSMENT

FLIGHT TRACKS

FIGURE
1.3-1

Path: S:\Projects\P\Puerto Rico 2018\60579568_BQNEARW826\Environmental\900-Work\920 GIS\mxd\191125_Figure X-X-X_Flight Tracks_rev0.mxd, Date Saved: 11/26/2019 10:08:10 AM

Flight Profiles

Flight profiles model the vertical paths of aircraft during departure and arrival to determine the altitude, speed, and engine thrust or power of an aircraft at any point along a flight track. AEDT uses this information to calculate noise exposure on the ground. Profiles are unique to each aircraft type and vary with temperature, barometric pressure, headwind, and aircraft weight. Standard AEDT default profiles were used for all aircraft operations.

FAA Part 150 Compatible Land Use Criteria

Title 14 CFR part 150, Appendix A, Table 1 (Title 14 CFR part 150, 2007), provides Federal compatible land use guidelines for several land uses as a function of DNL values. Compatible or non-compatible land use is determined by comparing the predicted or measured values at a site to the values listed in **Table 1.3-5**.

Table 1.3-5 Land Use Compatibility with Yearly Day-Night Average Sound Levels

	Yearly Day-Night Average Sound Level (DNL)					
	Below 65 Decibels	**65-70 Decibels**	**70-75 Decibels**	**75-80 Decibels**	**80-85 Decibels**	**Over 85 Decibels**
Residential						
Residential (Other than mobile homes & transient lodges)	Y	N[1]	N[1]	N	N	N
Mobile Home Parks	Y	N	N	N	N	N
Transient Lodging	Y	N[1]	N[1]	N[1]	N	N
Public Use						
Schools	Y	N[1]	N[1]	N	N	N
Hospitals, Nursing Homes	Y	25	30	N	N	N
Churches, Auditoriums, Concert Halls	Y	25	30	N	N	N
Governmental Services	Y	Y	25	30	N	N
Transportation	Y	Y	Y[2]	Y[3]	Y[4]	Y[4]
Parking	Y	Y	Y[2]	Y[3]	Y[4]	N
Commercial Use						
Offices, Business & Professional	Y	Y	25	30	N	N
Wholesale & Retail Building Materials, Hardware & Farm Equipment	Y	Y	Y[2]	Y[3]	Y[4]	N
Retail Trade - General	Y	Y	25	30	N	N
Utilities	Y	Y	Y[2]	Y[3]	Y[4]	N
Communications	Y	Y	25	30	N	N
Manufacturing & Production						
Manufacturing, General	Y	Y	Y[2]	Y[3]	Y[4]	N
Photographic and Optical	Y	Y	25	30	N	N
Agriculture (Except Livestock) & Forestry	Y	Y[6]	Y[7]	Y[8]	Y[8]	Y[8]
Livestock Farming & Breeding	Y	Y[6]	Y[7]	N	N	N
Mining & Fishing, Resource Production & Extraction	Y	Y	Y	Y	Y	Y
Recreational						

Outdoor Sports Arenas, Spectator Sports	Y	Y[5]	Y[5]	N	N	N
Outdoor Music Shells, Amphitheaters	Y	N	N	N	N	N
Nature Exhibits & Zoos	Y	Y	N	N	N	N
Amusement, Parks, Resorts, Camps	Y	Y	Y	N	N	N
Golf Courses, Riding Stables, Water Recreation	Y	Y	25	30	N	N

NOTE: The responsibility for determining the acceptable and permissible land uses and the relationship between specific properties remains with the local authorities. FAA determinations under Part 150 are not intended to substitute federally determined land use for those determined to be appropriate by local authorities in response to locally determined needs and values in achieving noise-compatible land uses.

Y (Yes) Land Use and related structures are compatible without restrictions.

N (No) Land Use and related structures are not compatible and should be prohibited.

NLR Noise Level Reduction (outdoor to indoor) are to be achieved through incorporation of noise attenuation into the design and construction of structure.

25, 30, or 35 Land use and related structures are generally compatible; measures to achieve NLR of 25, 30, or 35 dB must be incorporated in design and construction of structure.

[1] Where the community determines that residential or school uses must be allowed, measures to achieve outdoor to indoor NLR of at least 25 dB and 30 dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide a NLR of 20 dB, thus, the reduction requirements are often stated as 5, 10 or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year round. However, the use of NLR criteria will not eliminate outdoor noise problems.

[2] Measures to achieve NLR of 25 dB must be incorporated into the design and construction of portions of the buildings where the public is received, office areas, noise-sensitive areas, or where the normal noise level is low.

[3] Measures to achieve NLR of 30 dB must be incorporated into the design and construction of portions of the buildings where the public is received, office areas, noise-sensitive areas, or where the normal noise level is low.

[4] Measures to achieve NLR of 35 dB must be incorporated into the design and construction of portions of the buildings where the public is received, office areas, noise-sensitive areas, or where the normal noise level is low.

[5] Land use compatibility provided special sound reinforcement systems are installed.

[6] Residential buildings require an NLR of 25 dB.

[7] Residential buildings require an NLR of 30 dB.

[8] Residential buildings not permitted.

Noncompatible land use

Source: Title 14 CFR part 150, 2007.

1.3.2. FUTURE CONDITIONS NOISE MODELING

Proposed Action Alternative 2B consists of shifting Runway 8-26 862 feet east of current alignment, applying a displaced threshold of 325 feet on Runway 8 and 130 feet on Runway 26, and utilizing declared distances. Proposed Action Alternative 2D consists of shifting Runway 8-26 1,187 feet east of current alignment, applying a displaced threshold of 452 feet on Runway 8, and utilizing declared distances. Because of the change in runway orientation and endpoint locations, both action alternatives would be expected to change the location of the DNL 65 dB noise contour on and surrounding BQN compared to the No-Action Alternative. Additionally, AEDT noise modeling demonstrates that the locations of noise contours would differ between Alternatives 2B and 2D. These differences are attributed to a difference in the location of the proposed runway endpoints and thresholds and declared distances between these two alternatives.

Flight Operations

The Proposed Project would not result in an increase in aircraft operations or a change in aircraft fleet mix at BQN. Total aircraft operations are forecast to increase in future years relative to

existing conditions irrespective of implementing any of the Proposed Project alternatives. **Tables 1.3-6 and 1.3-7** show the anticipated average annual day and night operations for CY 2024 and 2029, respectively, which would be identical under Alternative 2B, Alternative 2D, and the No-Action Alternative

Table 1.3-6 2024 Average Annual Daily Aircraft Operations

ANP ID	2024 Operations		
	Day	Night	Total
7478	0.235810	0.109390	0.345200
737400	0.002700	-	0.002700
737700	-	0.057500	0.057500
737800	0.019972	1.919728	1.939700
747200	0.001946	0.003554	0.005500
747400	0.755638	0.200562	0.956200
767300	0.001346	0.001354	0.002700
767JT9	0.013700	-	0.013700
A300-622R	0.002749	0.002751	0.005500
A310-304	0.026698	0.252802	0.279500
A319-131	0.059871	0.126429	0.186300
A320-232	3.715432	5.325668	9.041100
B429	0.027766	0.007834	0.035600
BEC58P	1.626850	0.006050	1.632900
C130E	2.438286	0.687714	3.126000
CIT3	0.027400	-	0.027400
CL600	0.167100	-	0.167100
CNA172	5.980625	0.211175	6.191800
CNA182	1.331500	-	1.331500
CNA206	2.578786	0.171914	2.750700
CNA208	6.159487	0.256913	6.416400
CNA441	0.384808	0.006992	0.391800
CNA500	0.082200	-	0.082200
CNA510	0.063000	-	0.063000
CNA560XL	0.038400	-	0.038400
CNA680	0.021900	-	0.021900
CNA750	0.013700	-	0.013700
CVR580	1.849675	0.043525	1.893200
DC1010	1.391834	0.350666	1.742500
DC3	0.043800	-	0.043800
DHC6	4.835998	0.024302	4.860300
DHC8	0.002700	-	0.002700
DO328	1.645918	0.003382	1.649300
ECLIPSE500	0.005500	-	0.005500
EMB120	2.697345	0.006755	2.704100

ANP ID	2024 Operations		
	Day	Night	Total
EMB145	0.021900	-	0.021900
EMB190	0.008200	-	0.008200
F10062	0.005465	0.010935	0.016400
FAL20	0.030100	-	0.030100
GASEPF	2.012359	0.053441	2.065800
GASEPV	20.589581	1.418619	22.008200
GIV	0.074534	0.004966	0.079500
GV	0.005500	-	0.005500
HS748A	0.005500	-	0.005500
IA1125	0.016002	0.003198	0.019200
LEAR35	0.528127	0.003373	0.531500
MD11GE	2.892272	1.099528	3.991800
MD83	0.005500	-	0.005500
MU3001	0.132633	0.009867	0.142500
PA28	4.353400	-	4.353400
PA30	0.550700	-	0.550700
PA31	0.183600	-	0.183600
PA42	0.008200	-	0.008200
R44	0.081204	0.022896	0.104100
SA365N	27.261551	7.689149	34.950700
SD330	5.160602	0.020198	5.180800
SF340	1.036124	0.191276	1.227400
Grand Total	**103.213499**	**20.304401**	**123.517900**

Notes: ANP = Aircraft Noise Profile
Day = 7:00 a.m. to 9:59 p.m.; Night = 10:00 p.m. to 6:59 a.m.
Numbers may not add due to rounding.
Sources: AEDT 2D; AECOM, 2019.

Table 1.3-7 2029 Average Annual Daily Aircraft Operations

ANP ID	2029 Operations		
	Day	Night	Total
7478	0.245377	0.113827	0.359204
737400	0.002810	-	0.002810
737700	-	0.059833	0.059833
737800	0.020783	1.997607	2.018390
747200	0.002025	0.003698	0.005723
747400	0.786293	0.208698	0.994991
767300	0.001401	0.001408	0.002810
767JT9	0.014256	-	0.014256
A300-622R	0.002861	0.002862	0.005723
A310-304	0.027782	0.263057	0.290839
A319-131	0.062300	0.131558	0.193858

ANP ID	2029 Operations		
	Day	Night	Total
A320-232	3.866160	5.541719	9.407879
B429	0.028892	0.008152	0.037044
BEC58P	1.692848	0.006296	1.699143
C130E	2.537202	0.715613	3.252815
CIT3	0.028512	-	0.028512
CL600	0.173879	-	0.173879
CNA172	6.223247	0.219742	6.442989
CNA182	1.385516	-	1.385516
CNA206	2.683402	0.178888	2.862290
CNA208	6.409365	0.267335	6.676700
CNA441	0.400419	0.007275	0.407695
CNA500	0.085535	-	0.085535
CNA510	0.065556	-	0.065556
CNA560XL	0.039958	-	0.039958
CNA680	0.022788	-	0.022788
CNA750	0.014256	-	0.014256
CVR580	1.924713	0.045290	1.970003
DC1010	1.448298	0.364892	1.813190
DC3	0.045577	-	0.045577
DHC6	5.032185	0.025287	5.057472
DHC8	0.002810	-	0.002810
DO328	1.712689	0.003519	1.716209
ECLIPSE500	0.005723	-	0.005723
EMB120	2.806770	0.007029	2.813800
EMB145	0.022788	-	0.022788
EMB190	0.008533	-	0.008533
F10062	0.005686	0.011379	0.017065
FAL20	0.031321	-	0.031321
GASEPF	2.093997	0.055609	2.149605
GASEPV	21.424858	1.476169	22.901027
GIV	0.077558	0.005168	0.082725
GV	0.005723	-	0.005723
HS748A	0.005723	-	0.005723
IA1125	0.016652	0.003327	0.019979
LEAR35	0.549552	0.003510	0.553062
MD11GE	3.009605	1.144134	4.153739
MD83	0.005723	-	0.005723
MU3001	0.138013	0.010268	0.148281
PA28	4.530008	-	4.530008
PA30	0.573041	-	0.573041
PA31	0.191048	-	0.191048

ANP ID	2029 Operations		
	Day	Night	Total
PA42	0.008533	-	0.008533
R44	0.084499	0.023824	0.108323
SA365N	28.367496	8.001082	36.368578
SD330	5.369957	0.021018	5.390974
SF340	1.078158	0.199035	1.277193
Grand Total	**107.400659**	**21.128108**	**128.528767**

Notes: ANP = Aircraft Noise Profile
Day = 7:00 a.m. to 9:59 p.m.; Night = 10:00 p.m. to 6:59 a.m.
Numbers may not add due to rounding.
Sources: AEDT 2D; AECOM, 2019.

Runway Use

Runway utilization for the Proposed Project Alternatives would remain unchanged from the existing condition, as depicted in **Tables 1.3-2 and 1.3-3**.

Flight Tracks

Flight tracks for the Proposed Project Alternatives would remain unchanged from the existing condition.

Track Use

Flight track and subtrack utilization for the Proposed Project Alternatives would remain unchanged from the existing condition, as depicted in **Table 1.3-4**.

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APPENDIX I

Traffic Analysis Technical Report

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APPENDIX I.1

2019 Traffic Analysis Technical Report

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Rafael Hernandez Airport
Runway 8-26 Reconstruction
Environmental Assessment

Construction Traffic Impacts Analysis
Technical Report

Prepared for:

Puerto Rico Port Authority
and
Federal Aviation Administration

Prepared by:

AECOM

November 2019

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ACRONYMS AND ABBREVIATIONS

BQN	Rafael Hernandez Airport
LOS	Level of Service
mph	miles per hour
TMC	Turning Movement Counts

CHAPTER 1 INTRODUCTION

This *Construction Traffic Impacts Analysis Technical Report* details the assessment scope, calculation methodology, and other technical information used in the analysis of construction-related traffic impacts associated with the proposed Runway 8-26 Reconstruction at the Rafael Hernandez Airport (i.e., BQN, or the Airport), hereinafter referred to as the Proposed Project.

1.1. ANAYSIS METHODOLOGY

1.1.1. EXISTING TRAFFIC CONDITIONS

A July 2018 study, conducted by Marlin Engineering (included in this appendix), analyzed existing traffic conditions on roadways surrounding BQN. Twelve-Hour Turning Movement Counts (TMC) from 6 AM to 6 PM, on a typical weekday (Tuesday, Wednesday, or Thursday) were collected at ten study intersections. The analysis was conducted by identifying the maximum one-hour (peak-hour) traffic volume from the collected TMC for the entire set of ten intersections, rather than for individual intersections. The volumes indicate that the AM peak-hour for the surrounding roadway network was from 7:15 AM to 8:15 AM, and the PM peak-hour was from 2:15 PM to 3:15 PM.

The existing operation conditions of studied intersections for the AM and PM peak-hour were evaluated using Synchro 9, which utilizes analysis methodologies contained in the 2010 Highway Capacity Manual[1]. Existing peak hour turning movement volumes, existing traffic signal timings, and generic intersection geometries were utilized in the analyses to estimate existing delay and level of service (LOS) for each of the study's intersections (one signalized and nine unsignalized).

LOS is a qualitative measure used to describe the quality of motor vehicle traffic service. LOS is used to analyze roadways and intersections by categorizing traffic flow and assigning quality levels of traffic based on performance measures such as vehicle speed, density, congestion, and other factors. LOS for intersections is determined differently for signalized and unsignalized approaches.

As stated in the 2010 Highway Capacity Manual:

> *"Signalized intersection LOS is defined in terms of a weighted average control delay for the entire intersection. Control delay quantifies the increase in travel time that a vehicle experiences due to the traffic signal control as well as provides a surrogate measure for driver discomfort and fuel consumption. Signalized intersection LOS is stated in terms of average control delay per vehicle (in seconds) during a specified time period (e.g., weekday PM peak hour).*

[1] Transportation Research Board, 2010. *2010 Highway Capacity Manual* (HCM2010), Fifth Edition. Transportation Research Board, National Academies of Sciences, Engineering, and Medicine.

Unsignalized intersection LOS criteria can be further reduced into three intersection types: all-way stop, two-way stop, and roundabout control. All-way stop and roundabout control intersection LOS is expressed in terms of the weighted average control delay of the overall intersection or by approach.

Two-way stop-controlled intersection LOS is defined in terms of the average control delay for each minor-street movement (or shared movement) as well as major-street left-turns. This approach is because major-street through vehicles are assumed to experience zero delay, a weighted average of all movements results in very low overall average delay, and this calculated low delay could mask deficiencies of minor movements." (Transportation Research Board, 2010)

Tables 1.1-1 and **1.1-2** detail LOS criteria for signalized and unsignalized intersections, respectively.

Table 1.1-1 Level of Service Criteria for Signalized Intersections

LOS	Average Intersection Delay	General Description
A	Less than or equal to 10 seconds	Free flow
B	Greater than 10 to 20 seconds	Stable flow (slight delays)
C	Greater than 20 to 35 seconds	Stable flow (acceptable delays)
D	Greater than 35 to 55 seconds	Approaching unstable flow (tolerable delays)
E	Greater than 55 to 80 seconds	Unstable flow (intolerable delays)
F	Greater than 80 seconds	Forced flow (congested; queues failing to clear)

Source: Transportation Research Board, 2010

Table 1.1-2 Level of Service Criteria for Unsignalized Intersections

LOS	Average Control Delay
A	Less than or equal to 10 seconds
B	Greater than 10 to 15 seconds
C	Greater than 15 to 25 seconds
D	Greater than 25 to 35 seconds
E	Greater than 35 to 50 seconds
F	Greater than 50 seconds

Source: Transportation Research Board, 2010

A subsequent traffic analysis was performed by AECOM in 2019 to establish more detailed existing roadway network traffic conditions. For this analysis, Synchro 9 was used as previously discussed, with the addition of intersection-specific geometry and connecting roadway link properties. The resulting network analysis established existing peak-hour travel speeds and travel times using different intersection approaches (clockwise and counter-clockwise) between the studied intersections, considering the specific intersection geometries and intersection approaches. Speed and travel time between intersections are a function of open roadway speed, segment length, and notably of the level of congestion for each specific intersection approach. Existing conditions for the studied segments are shown in **Tables 1.1-3** and **1.1-4**.

Table 1.1-3 Existing Peak-Hour Conditions for Clockwise Approaches

Intersection			Volume (Total Vehicles)	Speed (mph)	Link Distance (feet)	Time (seconds)
From	To	Approach				
PR 107 at PR 4467 (signalized)	PR 107 at Engineer Orlando Alarcon Avenue/Hangar Road	Northbound	1,317	20	5,500	188
PR 107 at Engineer Orlando Alarcon Avenue/Hangar Road	Engineer Orlando Alarcon Avenue/Hangar Road at Airport Entrance/Exit	Eastbound	527	25	3,934	107
Engineer Orlando Alarcon Avenue/Hangar Road at Airport Entrance/Exit	Engineer Orlando Alarcon Avenue/Hangar Road at Airport Entrance	Eastbound	536	22	164	5
Engineer Orlando Alarcon Avenue/Hangar Road at Airport Entrance	Guard Road at Crown Road	Eastbound	342	18	1,572	60
Guard Road at Crown Road	PR 110 at Wing Road	Eastbound	412	13	1,683	88
PR 110 at Wing Road	PR 110 at PR 4466	Eastbound	468	33	11,995	248
PR 110 at PR 4466	PR 110 at PR 459 Interchange-north of PR 110 overpass	Southbound	2	32	10,535	224
PR 110 at PR 459 Interchange-north of PR 110 overpass	PR 110 at PR 459 Interchange-south of PR 110 overpass	Westbound	597	22	198	6
PR 110 at PR 459 Interchange-south of PR 110 overpass	PR 467 at PR 459	Westbound	801	29	7,076	166
PR 467 at PR 459	PR 107 at PR 4467 (signalized)	Westbound	285	22	11,102	344

Note: mph = miles per hour
Source: AECOM, 2019

Table 1.1-4 Existing Peak Hour Conditions for Counter-Clockwise Approaches

Intersection			Volume (Total Vehicles)	Speed (mph)	Link Distance (feet)	Time (seconds)
From	To	Approach				
PR 107 at PR 4467 (signalized)	PR 467 at PR 459	Eastbound	348	2	11,102	3,785
PR 467 at PR 459	PR 110 at PR 459 Interchange-south of PR 110 overpass	Eastbound	670	32	7,076	151
PR 110 at PR 459 Interchange-south of PR 110 overpass	PR 110 at PR 459 Interchange-north of PR 110 overpass	Eastbound	667	10	198	14
PR 110 at PR 459 Interchange-north of PR 110 overpass	PR 110 at PR 4466	Northbound	696	36	10,535	200
PR 110 at PR 4466	PR 110 at Wing Road	Westbound	987	21	11,995	389
PR 110 at Wing Road	Guard Road at Crown Road	Westbound	410	12	1,683	96
Guard Road at Crown Road	Engineer Orlando Alarcon Avenue/Hangar Road at Airport Entrance	Westbound	337	27	1,572	40
Engineer Orlando Alarcon Avenue/Hangar Road at Airport Entrance	Engineer Orlando Alarcon Avenue/Hangar Road at Airport Entrance/Exit	Westbound	343	23	164	5
Engineer Orlando Alarcon Avenue/Hangar Road at Airport Entrance/Exit	PR 107 at Engineer Orlando Alarcon Ave./Hangar Road	Westbound	224	9	3,934	298
PR 107 at Engineer Orlando Alarcon Avenue/Hangar Road	PR 107 at PR 4467 (signalized)	Southbound	745	29	5,500	129

Source: AECOM, 2019

1.1.2. CONSTRUCTION PHASE TRAFFIC CONDITIONS

In 2018, Marlin Engineering conducted a future conditions analysis to assess traffic conditions during the year of construction, using the same process discussed in **Section 1.1.2** above and detailed in their study report included in this appendix. Construction contractors were interviewed regarding expected construction traffic volumes for the Proposed Project. The contractor's representative indicated that approximately six construction trucks (used for activities such as material delivery or debris hauling) would enter or leave the site each hour. Additionally, a

maximum of 150 construction employees would be traveling to the site and impacting local traffic daily. Many of the employee commute trips would be expected to occur either before the AM peak-hour or after the PM peak-hour.

AECOM conducted an additional construction year traffic analysis with Synchro 9, again using intersection-specific geometry and connecting roadway link data to develop two future scenarios for the roadway network adjacent to BQN. A “build” scenario was developed for the construction activity year, which included the addition of construction-related traffic, and a “no-build” scenario with the construction-related traffic removed.

Construction-related traffic impacts to vehicle delay at the study area intersections was determined by subtracting the future year “no-build” scenario delay time (seconds per vehicle) from the future year “build” scenario delay time for each intersection directional approach. This difference in delay time represents the additional time an average vehicle would be expected to wait at a given intersection approach during the construction phase of the Proposed Project. The resulting LOS was determined by adding the construction-related delay for each intersection to the future year delay time developed by Marlin Engineering, and then applying the LOS criteria depicted in **Tables 1.1-1** and **1.1-2**. In many cases, intersection approaches analyzed in Marlin Engineering’s study have multiple controlled lanes for multiple direction-of-travel options. The change in average delay time developed by AECOM was applied to each of the controlled lanes and movement options at such intersection approaches. “No-build” and “build” scenario delay times for each studied intersection approach are shown in **Tables 1.1-5** and **1.1-6**.

Table 1.1-5 Construction Year Peak-Hour Intersection Delays for Clockwise Approaches

Intersection			Average Road Segment Travel Time (seconds/vehicle)		Construction Traffic Delay (Seconds/ Vehicle)
From	To	Approach	No-Build Scenario	Build Scenario	
PR 107 at PR 4467 (signalized)	PR 107 at Engineer Orlando Alarcon Avenue/Hangar Road	Northbound	187	197	10
PR 107 at Engineer Orlando Alarcon Avenue/Hangar Road	Engineer Orlando Alarcon Avenue/Hangar Road at Airport Entrance/Exit	Eastbound	107	107	--
Engineer Orlando Alarcon Avenue/Hangar Road at Airport Entrance/Exit	Engineer Orlando Alarcon Avenue/Hangar Road at Airport Entrance	Eastbound	5	5	--
Engineer Orlando Alarcon Avenue/Hangar Road at Airport Entrance	Guard Road at Crown Road	Eastbound	60	60	--
Guard Road at Crown Road	PR 110 at Wing Road	Eastbound	88	88	--
PR 110 at Wing Road	PR 110 at PR 4466	Eastbound	248	248	--
PR 110 at PR 4466	PR 110 at PR 459 Interchange-north of PR 110 overpass	Southbound	232	232	--
PR 110 at PR 459 Interchange-north of PR 110 overpass	PR 110 at PR 459 Interchange-south of PR 110 overpass	Westbound	6	6	--
PR 110 at PR 459 Interchange-south of PR 110 overpass	PR 467 at PR 459	Westbound	172	172	--
PR 467 at PR 459	PR 107 at PR 4467 (signalized)	Westbound	360	360	--

Source: AECOM, 2019

Table 1.1-6 Construction Year Peak Hour Intersection Delays for Counter-Clockwise Approaches

Intersection			Average Delay (seconds/vehicle)		Construction Traffic Delay (Seconds/ Vehicle)
From	To	Approach	No-Build Scenario	Build Scenario	
PR 107 at PR 4467 (signalized)	PR 467 at PR 459	Eastbound	3,785	3,785	--
PR 467 at PR 459	PR 110 at PR 459 Interchange-south of PR 110 overpass	Eastbound	151	151	--
PR 110 at PR 459 Interchange-south of PR 110 overpass	PR 110 at PR 459 Interchange-north of PR 110 overpass	Eastbound	11	12	1
PR 110 at PR 459 Interchange-north of PR 110 overpass	PR 110 at PR 4466	Northbound	200	200	--
PR 110 at PR 4466	PR 110 at Wing Road	Westbound	389	389	--
PR 110 at Wing Road	Guard Road at Crown Road	Westbound	96	105	9
Guard Road at Crown Road	Engineer Orlando Alarcon Avenue/Hangar Road at Airport Entrance	Westbound	40	40	--
Engineer Orlando Alarcon Avenue/Hangar Road at Airport Entrance	Engineer Orlando Alarcon Avenue/Hangar Road at Airport Entrance/Exit	Westbound	5	5	--
Engineer Orlando Alarcon Avenue/Hangar Road at Airport Entrance/Exit	PR 107 at Engineer Orlando Alarcon Avenue/Hangar Road	Westbound	298	298	--
PR 107 at Engineer Orlando Alarcon Avenue/Hangar Road	PR 107 at PR 4467 (signalized)	Southbound	129	129	--

Source: AECOM, 2019

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APPENDIX I.2

2018 Puerto Rico Airport Construction Traffic Study

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CONSTRUCTION TRAFFIC IMPACT ON SURROUNDING ROADWAYS STUDY

RAFAEL HERNANDEZ AIRPORT (BQN)
RUNWAY RECONSTRUCTION PROJECT

AGUADILLA, PUERTO RICO

JULY 2018 | DRAFT

PREPARED BY

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EXECUTIVE SUMMARY

Marlin Engineering, Inc (MEI) has been retained to conduct a traffic impact analysis of construction traffic impacts on the roadway network surrounding Rafael Hernandez Airport, at Aguadilla, Puerto Rico during a proposed runway reconstruction project. The project entails the total reconstruction of Runway 8-26, along with reconfiguring a taxiway which parallels the runway to serve as a temporary runway while Runway 8-26 is being reconstructed. The anticipated start time of the project is February 2020, with completion anticipated by December 2020. The proposed reconstruction may have some potential constraints and impacts to the local commute which can impact the quality of life of the communities surrounding the airport.

During the AM and PM peak hours, both in the existing conditions and during the construction project (if nothing was done to improve operational conditions at these intersections between the writing of this study in July 2018 and the start of the runway construction project in February 2020), the following approaches on the surrounding roadway network have a LOS of F and excessive delays:

AM Peak Hour:

- **PR 467 at PR 459** — **Eastbound STOP-controlled approach**
- **PR 110 at PR 459 North** — **Eastbound to northbound left-turn**
- PR 110 at PR 459 North — Westbound to southbound left-turn
- **PR 110 at PR 4466** — **Westbound STOP-controlled approach**
- PR 107 at Engineer Alarcon — Westbound STOP-controlled approach

PM Peak Hour:

- **PR 467 at PR 459** — **Eastbound STOP-controlled approach**
- PR 110 at PR 459 North — Eastbound to northbound left-turn
- PR 110 at PR 4466 — Westbound STOP-controlled approach
- PR 107 at Engineer Alarcon — Westbound STOP-controlled approach

It is recommended that the Puerto Rico Department of Transportation and Public Works (DTOP), which maintains "PR" routes of which all of these intersections are a part of, verify operational conditions (perform qualitative analysis) of these intersections on-site during peak periods. The DTOP should consider analyzing whether operations at these intersections could be improved by converting them to all-way STOP-control, or whether traffic signals are warranted.

If no operational improvements are made at the intersections listed above before the start of runway reconstruction, anticipated in February 2020:

When the contractor is hauling materials to/from the airport construction site to/from the locations of the bituminous concrete plant, landfill, and borrow site during the AM and PM peaks:

Contractor should use PR-107 south, then turn east onto PR-2, then follow PR-2 to PR-110 north to travel from the airport construction site to the locations of the bituminous concrete plant, landfill, and borrow site along PR-110 southeast of the airport.

Contractor should use PR-110 south, the turn west onto PR-2, then follow PR-2 to PR-107 north to travel from the locations of the bituminous concrete plant, landfill, and borrow site along PR-110 southeast of the airport to the airport construction site.

Finally, it should be noted that the contractor must be responsible for any damage caused by the construction vehicles on the roadways during the construction period.

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Appendix

1.0 INTRODUCTION

Marlin Engineering, Inc (MEI) has been retained to conduct a traffic impact analysis of construction traffic impacts on the roadway network surrounding Rafael Hernandez Airport, at Aguadilla, Puerto Rico during a proposed runway reconstruction project. The project entails the total reconstruction of Runway 8-26, along with reconfiguring a taxiway which parallels the runway to serve as a temporary runway while Runway 8-26 is being reconstructed. The anticipated start time of the project is February 2020, with completion anticipated by December 2020. The proposed reconstruction may have some potential constraints and impacts to the local commute which can impact the quality of life of the communities surrounding the airport.

During this period, there will be a minimal increase in traffic volumes around the vicinity of the BQN airport consisting of construction vehicles and employees going in and out to the construction site. Thus, to evaluate the overall impact of the reconstruction on the adjacent roadway network, a traffic impact analysis report was conducted.

The airport is located at the very northwest corner of the island of Puerto Rico. The airport is a joint civil-military airport and is the second largest international airport on the island. The airport has only one (1) runway. The proposed project will reconstruct the runway, in part to accommodate expansion of a nearby Federal Express (FedEx) cargo facility.

Figure 1 is a location map of the airport, which also shows the surrounding roadway network.

2.0 CONSTRUCTION ACCESS

The contractor's representative, Victor Morales, PE, Project Manager, AECOM, was contacted and the following information was provided:

- The earthwork borrow site and nearest landfill is located on PR-110, approximately eight (8) to ten (10) miles away from the site.
- There will be approximately six (6) trips per hour (in and out) for construction vehicles such as dump trucks or cement trucks with maximum construction traffic occurring during 7AM to 9AM in the morning and 4PM to 6PM in the evening.
- The bituminous concrete (asphalt) plant is expected to be located approximately four (4) miles away from the site, and the Portland cement concrete (PCC) plant is anticipated to be located not less than two (2) miles away from the site, or located in the south area of the airport property.

- Also, it is also expected to have as many as 150 employees working on the construction site from 6AM to 5PM on a typical workday.

Access to the proposed reconstruction site is proposed via one of the two pre-determined access points shown in **Figure 2**. The access point 1 is marked as the best preferred point of access to the site and is located on the west side of BQN airport on PR-107. Access point 2 is marked as the second-best point of access and it is located on the south side of BQN airport.

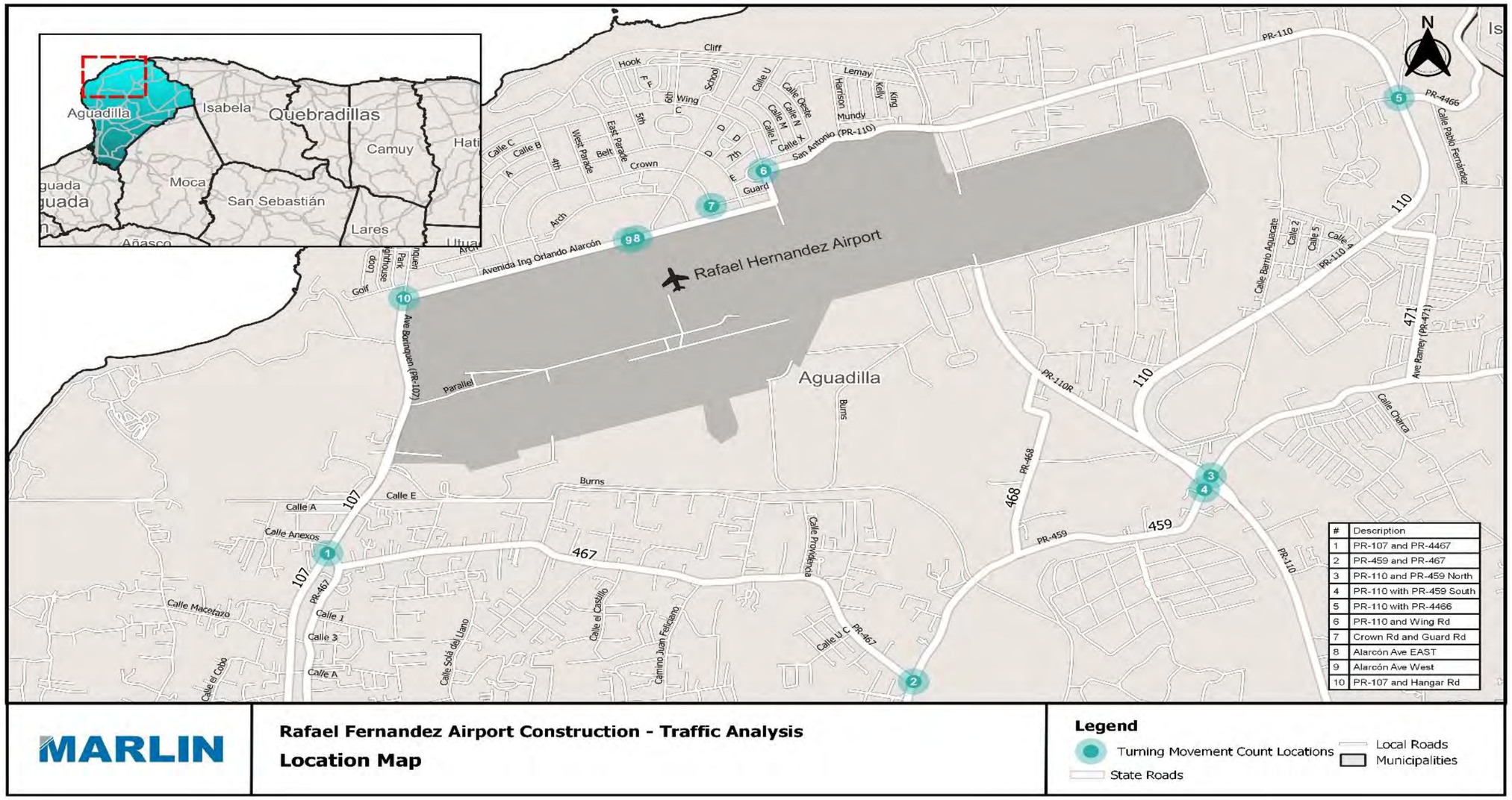

Figure 1. Study Location Map

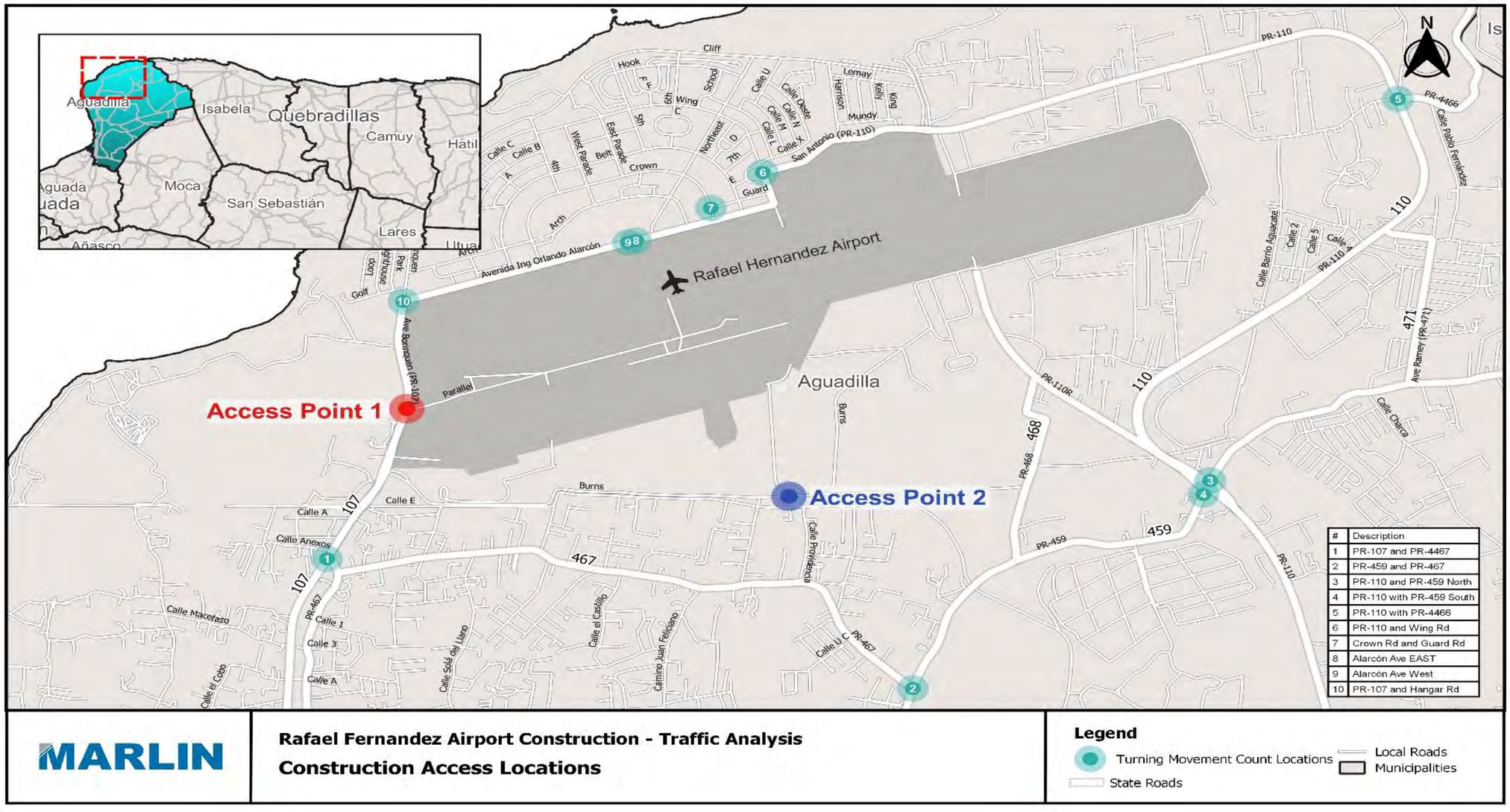

Figure 2. Construction Access Locations

3.0 STUDY AREA

The study area was determined based on engineering judgement in selecting the ten (10) heaviest utilized roadway intersections on the roadways surrounding the airport for analysis. Of the ten (10) intersections selected, one (1) is controlled by traffic signals, and the remaining nine (9) are unsignalized intersections controlled by STOP-signs. The study intersections are as follows:

- 1) PR 107 at PR 4467 (signalized)
- 2) PR 467 at PR 459
- 3) PR 110 at PR 459 Interchange- PR 459 ramp terminal intersection north of PR 110 overpass
- 4) PR 110 at PR 459 Interchange- PR 459 ramp terminal intersection south of PR 110 overpass
- 5) PR 110 at PR 4466
- 6) PR 110 at Wing Road
- 7) Guard Road at Crown Road
- 8) Engineer Orlando Alarcon Avenue/Hangar Road at Airport Entrance (immediately west of airport terminal)
- 9) Engineer Orlando Alarcon Avenue/Hangar Road at Airport Entrance/Exit (approximately 145 feet west of airport terminal)
- 10) PR 107 at Engineer Orlando Alarcon Avenue/Hangar Road

These intersections are shown in the location map illustrated in **Figure 1.**

4.0 EXISTING CONDITIONS

For purposes of this study, 12-Hour Turning Movement Counts (TMC) from 6am-6pm, on a typical weekday (Tuesday, Wednesday, or Thursday) were collected at the ten (10) study intersections. The analysis was conducted by identifying the maximum one-hour (peak-hour) traffic volume from the collected TMC for the entire set of ten (10) intersections (not individually). Thus, the volumes indicate that AM peak-hour for the surrounding roadway network was from 7:15am to 8:15am, and the PM peak-hour was from 2:15pm to 3:15pm. **Figure 3** summarizes the existing AM and PM peak-hour turning movement counts volumes at the study intersections. Printouts of the turning movement counts are provided in the **Appendix**.

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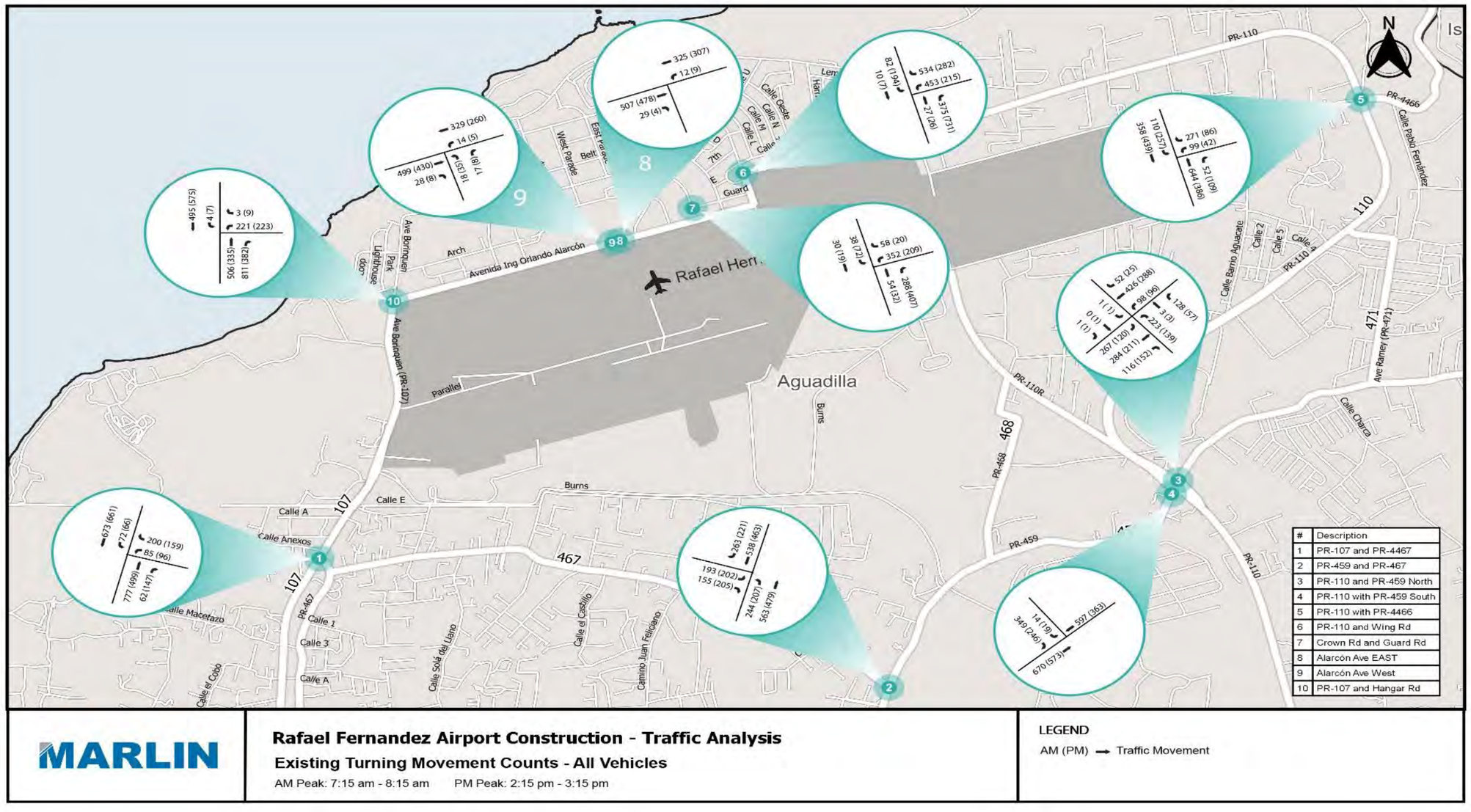

Figure 3. Existing Turning Movement Counts

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Level of service, or LOS, is a qualitative measure used to relate the quality of motor vehicle traffic service. LOS is used to analyze roadways and intersections by categorizing traffic flow and assigning quality levels of traffic based on performance measure like vehicle speed, density, congestion, and other factors.

As per the *Highway Capacity Manual 2010* (Transporation Research Board, 2010):

"Signalized intersection level of service (LOS) is defined in terms of a weighted average control delay for the entire intersection. Control delay quantifies the increase in travel time that a vehicle experiences due to the traffic signal control as well as provides a surrogate measure for driver discomfort and fuel consumption. Signalized intersection LOS is stated in terms of average control delay per vehicle (in seconds) during a specified time period (e.g., weekday PM peak hour).

Level of Service Criteria for Signalized Intersections

LOS	Average Intersection Delay	General Description
A	Less than or equal to 10 seconds	Free flow
B	Greater than 10 to 20 seconds	Stable flow (slight delays)
C	Greater than 20 to 35 seconds	Stable flow (acceptable delays)
D	Greater than 35 to 55 seconds	Approaching unstable flow (tolerable delays)
E	Greater than 55 to 80 seconds	Unstable flow (intolerable delays)
F	Greater than 80 seconds	Forced flow (congested; queues failing to clear)

Unsignalized intersection LOS criteria can be further reduced into three intersection types: all-way stop, two-way stop, and roundabout control. All-way stop and roundabout control intersection LOS is expressed in terms of the weighted average control delay of the overall intersection or by approach. Two-way stop-controlled intersection LOS is defined in terms of the average control delay for each minor-street movement (or shared movement) as well as major-street left-turns. This approach is because major-street through vehicles are assumed to experience zero delay, a weighted average of all movements results in very low overall average delay, and this calculated low delay could mask deficiencies of minor movements.

Level of Service Criteria for Unsignalized Intersections

LOS	Average Control Delay
A	Less than or equal to 10 seconds
B	Greater than 10 to 15 seconds
C	Greater than 15 to 25 seconds
D	Greater than 25 to 35 seconds
E	Greater than 35 to 50 seconds
F	Greater than 50 seconds"

Note that the delays per LOS "grade" are lower for unsignalized intersections than signalized intersections. This is due to motorist expectation- when at a signalized intersection, motorists instinctively understand that they are at an intersection with supposedly higher traffic volumes which would justify it being signalized and they are conditioned to expect delays to be higher than they would expect to encounter at an usually smaller unsignalized intersection.

For purposes of this study, control delays of LOS F on individual approaches at the unsignalized intersections were determined to indicate unacceptable/failing conditions.

The AM & PM peak-hour existing operating conditions of the study area intersections were evaluated using Synchro 9, which utilizes analysis methodologies contained in the 2010 Highway Capacity Manual. Existing peak hour turning movement volumes, existing roadway geometry, and traffic signal timings (signal optimization using Synchro 9), were utilized in the analyses. Based on the Synchro analyses, the existing overall level of service (LOS) and average delay for the study's one (1) signalized and nine (9) unsignalized intersections are as follows. The signalized intersection delay is shown as the average delay for all of the approaches of the intersection combined. The delays for the unsignalized intersections are shown as control delay per approach. Synchro printouts for the existing conditions are included in **Appendix A.**

Table 1. Existing traffic conditions at the study intersections during AM peak-hour (7:15am to 8:15am)

Intersection (Signalized)	Overall LOS	Intersection Delay (sec/veh)
PR 107 at PR 4467	B	12.4
Intersection (Unsignalized)	**Approach LOS**	**Control Delay (sec/veh)**
PR 467 at PR 459 (STOP-control for PR 467)	NB Left- B	12.0
	EB Left- F	1489.5
	EB Right- C	18.8
	SB Through- free-flow	-
	SB Right- free-flow	-
	NB Through- free-flow	-
PR 110 at PR 459 North (STOP-control for PR 110)	NB Left- A	9.7
	EB Left- F	1907.1
	WB Left- F	55.8
	SB Left- A	8.5
	SB Through- free-flow	-
	SB Right- free-flow	-

	NB Through- free-flow	-
	NB Right- free-flow	-
PR 110 at PR 459 South (STOP-control for PR 110)	EB Left- E	38.6
	SB Through- free-flow	-
	NB Through- free-flow	-
PR 110 at PR 4466 (STOP-control for PR 4466)	WB Left- F	354.4
	SB Left- A	9.9
	SB Through- free-flow	-
	NB Through- free-flow	-
	NB Right- free-flow	-
PR 110 at Wing Road (STOP-control for PR 110)	WB Left- C	19.6
	WB Right- B	12.6
	SB Left- A	7.4
	SB Through- free-flow	-
	NB Through- free-flow	-
Guard Road at Crown Road (STOP-control for Guard Road)	WB Left- C	20.8
	SB Left- A	8.1
	SB Through- free-flow	-
	NB Through- free-flow	-
	NB Right- free-flow	-
Engineer Orlando Alarcon Avenue/Hangar Road at Airport Entrance (immediately west of terminal)	WB- A	0.4
	EB- free-flow	-
Engineer Orlando Alarcon Avenue/Hangar Road at Airport Entrance/Exit (approx. 145 feet west of terminal) (STOP-control for airport exit)	WB Left- A	8.6
	NB Left- C	16.0
	WB Through- free-flow	-
	EB Through- free-flow	-
	EB Right- free-flow	-
PR 107 at Engineer Orlando Alarcon Avenue/Hangar Road (STOP-control for Hangar Road)	WB Left- F	107.5
	SB Left- A	8.5
	SB Through- free-flow	-
	NB Through- free-flow	-
	NB Right- free-flow	-

Table 2. Existing traffic conditions at the study intersections during PM peak-hour (2:15pm to 3:15pm)

Intersection (Signalized)	Overall LOS	Intersection Delay (sec/veh)
PR 107 at PR 4467	B	10.8

Intersection (Unsignalized)	Approach LOS	Control Delay (sec/veh)
PR 467 at PR 459 (STOP-control for PR 467)	NB Left- B	10.6
	EB Left- F	794.8
	EB Right- C	18.6
	SB Through- free-flow	-
	SB Right- free-flow	-
	NB Through- free-flow	-
PR 110 at PR 459 North (STOP-control for PR 110)	NB Left- A	8.3
	EB Left- F	115.0
	WB Left- C	23.9
	SB Left- A	8.4
	SB Through- free-flow	-
	SB Right- free-flow	-
	NB Through- free-flow	-
	NB Right- free-flow	-
PR 110 at PR 459 South (STOP-control for PR 110)	EB Left- B	13.5
	SB Through- free-flow	-
	NB Through- free-flow	-
PR 110 at PR 4466 (STOP-control for PR 4466)	WB Left- F	60.1
	SB Left- A	9.7
	SB Through- free-flow	-
	NB Through- free-flow	-
	NB Right- free-flow	-
PR 110 at Wing Road (STOP-control for PR 110)	WB Left- C	19.0
	WB Right- A	9.8
	SB Left- A	7.6
	SB Through- free-flow	-
	NB Through- free-flow	-
Guard Road at Crown Road (STOP-control for Guard Road)	WB Left- C	16.7
	SB Left- A	8.6
	SB Through- free-flow	-
	NB Through- free-flow	-
	NB Right- free-flow	-

Engineer Orlando Alarcon Avenue/Hangar Road at Airport Entrance (immediately west of terminal)	WB- A EB- free-flow	0.3 -
Engineer Orlando Alarcon Avenue/Hangar Road at Airport Entrance/Exit (approx. 145 feet west of terminal)	WB Left- A NB Left- C WB Through- free-flow EB Through- free-flow EB Right- free-flow	8.3 15.2 - - -
PR 107 at Engineer Orlando Alarcon Avenue/Hangar Road (STOP-control for Hangar Road)	WB Left- F SB Left- A SB Through- free-flow NB Through- free-flow NB Right- free-flow	77.0 8.0 - - -

The existing conditions analysis indicates that the signalized intersection at PR 107 and PR 4467 operates acceptably during both the AM and PM peak hours. All of the unsignalized intersections operate acceptably during the AM and PM peak hours, except for the particular approaches on them listed below:

AM Peak Hour:

- **PR 467 at PR 459** **Eastbound STOP-controlled approach**
- **PR 110 at PR 459 North** **Eastbound to northbound left-turn**
- PR 110 at PR 459 North Westbound to southbound left-turn
- **PR 110 at PR 4466** **Westbound STOP-controlled approach**
- PR 107 at Engineer Alarcon Westbound STOP-controlled approach

PM Peak Hour:

- **PR 467 at PR 459** **Eastbound STOP-controlled approach**
- PR 110 at PR 459 North Eastbound to northbound left-turn
- PR 110 at PR 4466 Westbound STOP-controlled approach
- PR 107 at Engineer Alarcon Westbound STOP-controlled approach

The approaches which are bolded were shown in Synchro to be experiencing extremely excessive delays. **It is recommended that the Puerto Rico Department of Transportation and Public Works (DTOP), which maintains "PR" routes of which all of these intersections are a part of, verify operational conditions (perform qualitative analysis) of these intersections on-site during peak periods. The DTOP should consider analyzing whether operations at these intersections could be improved by converting them to all-way STOP-control, or whether traffic signals are warranted.**

5.0 FUTURE BACKGROUND TRAFFIC DURING CONSTRUCTION PROJECT

Future background traffic is the non-project-related traffic projected to utilize the study intersections. For the purposes of this analysis, the future background traffic was anticipated to be calculated by factoring an annual growth rate to the existing AM & PM peak-hour volumes to factor the volumes up to year 2020, the year the reconstruction is proposed to take place. The annual growth rates were based on historical trends obtained from the survey taken by World Bank. The trends indicate a continuous decrease in the growth rate from year 2006 to 2016. Thus, for this analysis, no growth rate was used to factor the existing traffic volumes in obtaining the future background traffic volume and existing volumes were used for analysis.

6.0 TRIP DISTRIBUTION

To avoid construction traffic (such as dump trucks, cement mixer trucks, etc.) worsening operational conditions any at the approaches of the unsignalized study intersections which have a LOS of F with excessive delays while the runway reconstruction project is taking place, MEI recommends the following:

When the contractor is hauling materials to/from the airport construction site to/from the locations of the bituminous concrete plant, landfill, and borrow site during the AM and PM peaks:

Contractor should use PR-107 south, then turn east onto PR-2, then follow PR-2 to PR-110 north to travel from the airport construction site to the locations of the bituminous concrete plant, landfill, and borrow site along PR-110 southeast of the airport.

Contractor should use PR-110 south, the turn west onto PR-2, then follow PR-2 to PR-107 north to travel from the locations of the bituminous concrete plant, landfill, and borrow site along PR-110 southeast of the airport to the airport construction site.

This route is shown in **Figure 4.** PR-2 is a major, east-west four (4)-lane divided roadway. While this route increases travel distances, it avoids the critical approaches with LOS of F and excessive delays described in Section 4. Contractor truck traffic trying to navigate these approaches would worsen operational conditions, and would cause delays to the Contractor in time and wasted fuel.

Based on the information provided by the contractor's representative, the construction traffic (such as dump trucks, cement mixer trucks, etc.) vehicles were distributed such that six (6) trips were considered in each direction to and from the work site in the AM and PM peak-hour based on the point of access to the construction site. From the existing traffic conditions, the critical intersections or the intersections having LOS F were not assigned any new trips generated by the construction vehicles during AM and PM peak-hours in order to avoid more congestion. The critical approaches during the

AM and PM peak hours were at the same intersections and these intersections were PR 467 at PR 459, PR 110 at PR 459 North, PR 110 at PR 4466, and PR 107 at Engineer Orlando Alarcon Avenue/Hangar Road respectively.

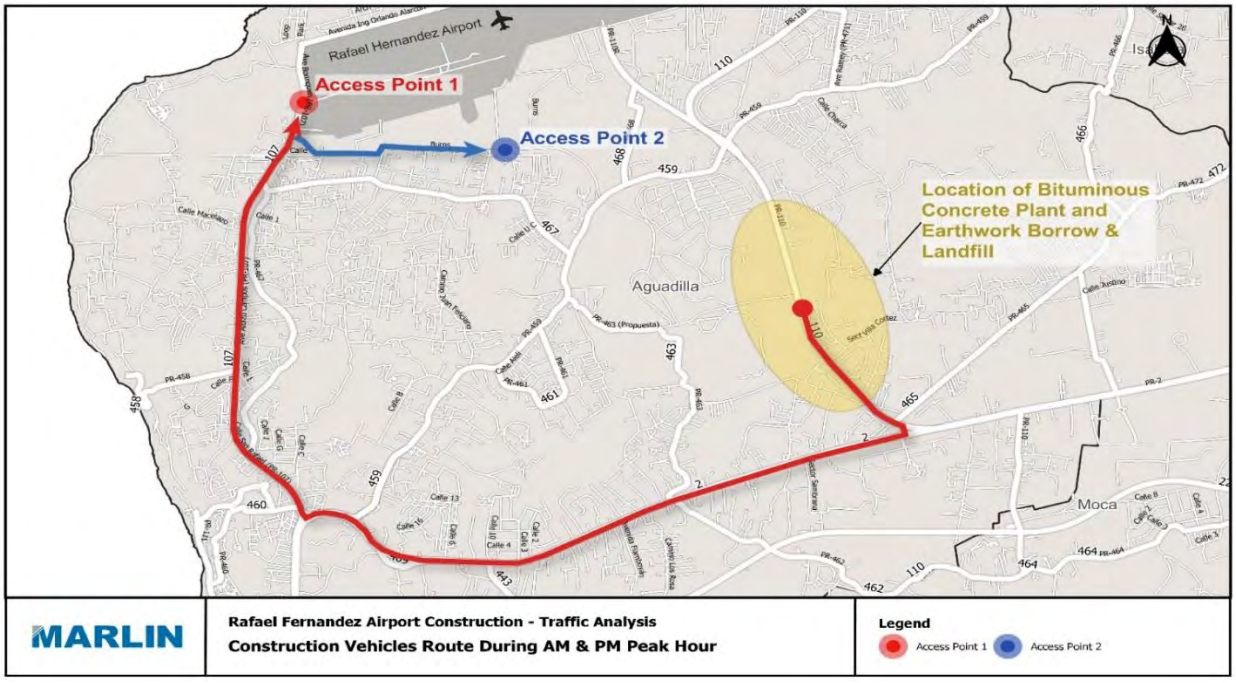

Figure 4. Recommended Construction Vehicles Route During AM & PM Peak-Hour

Further, only 25% trips generated from the employees working at the construction site during the reconstruction period were included in the analysis as it was assumed that most of the employees will arrive the construction site before the AM peak hour, or leave after the PM peak-hour. Thus, 75% of the trips generated by the employees were not used during the analysis, and only 25% were distributed onto the roadway network during the AM and PM peak-hour assuming that they will access the construction site from access point 1, which is the best preferred point of access to the site.

Lastly, the number of trips generated by heavy construction vehicles such as dump trucks, cement truck, etc. and trips from the employees were added to sum up the total number of additional trips generated during the construction period and it is shown in **Figure 5.** These trips were then added to the existing traffic volume at the study area intersections to arrive at the 2020 traffic volume during the construction period at those study area intersections and it is shown in **Figure 6.**

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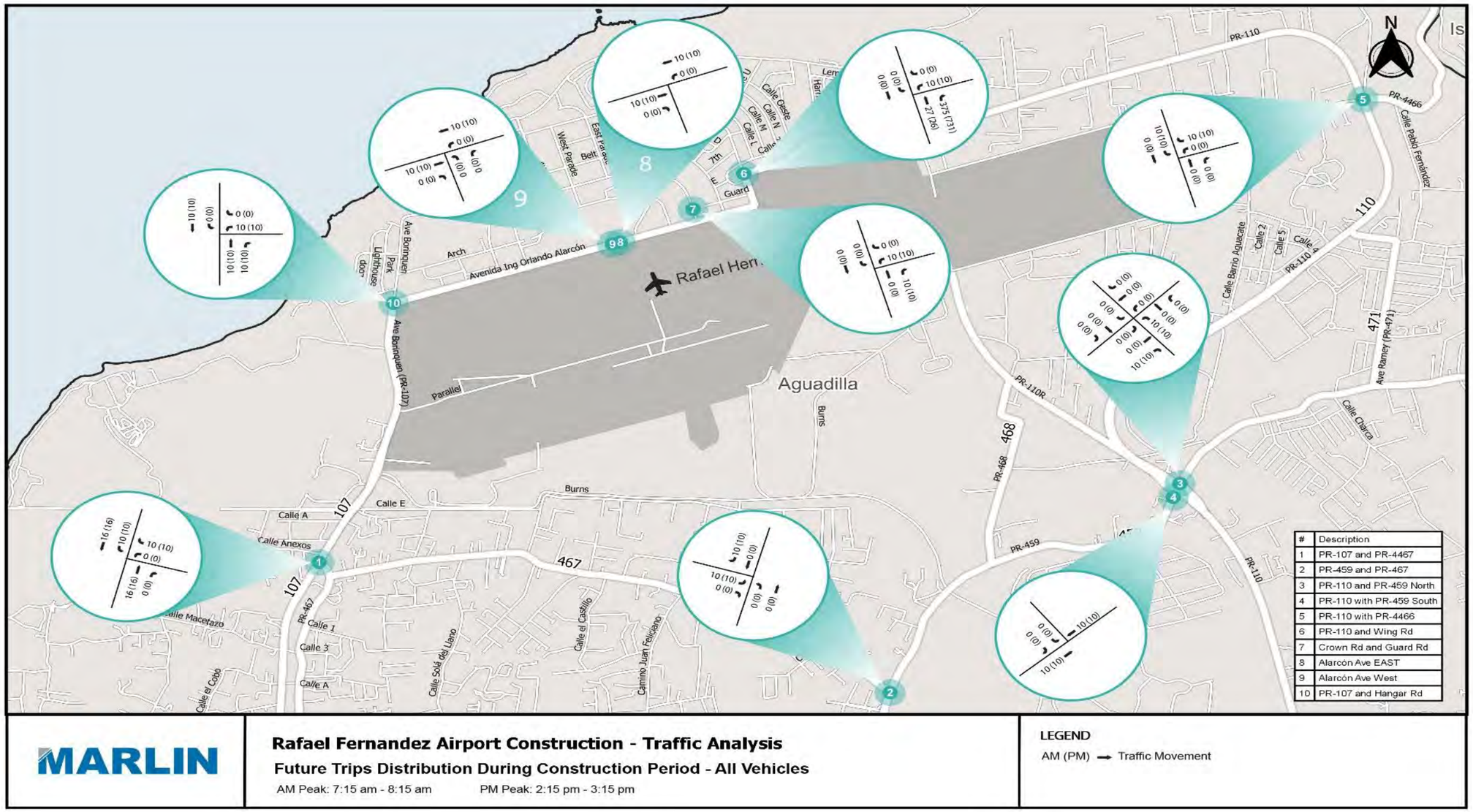

Figure 5. Future Trips Distribution During Construction Period

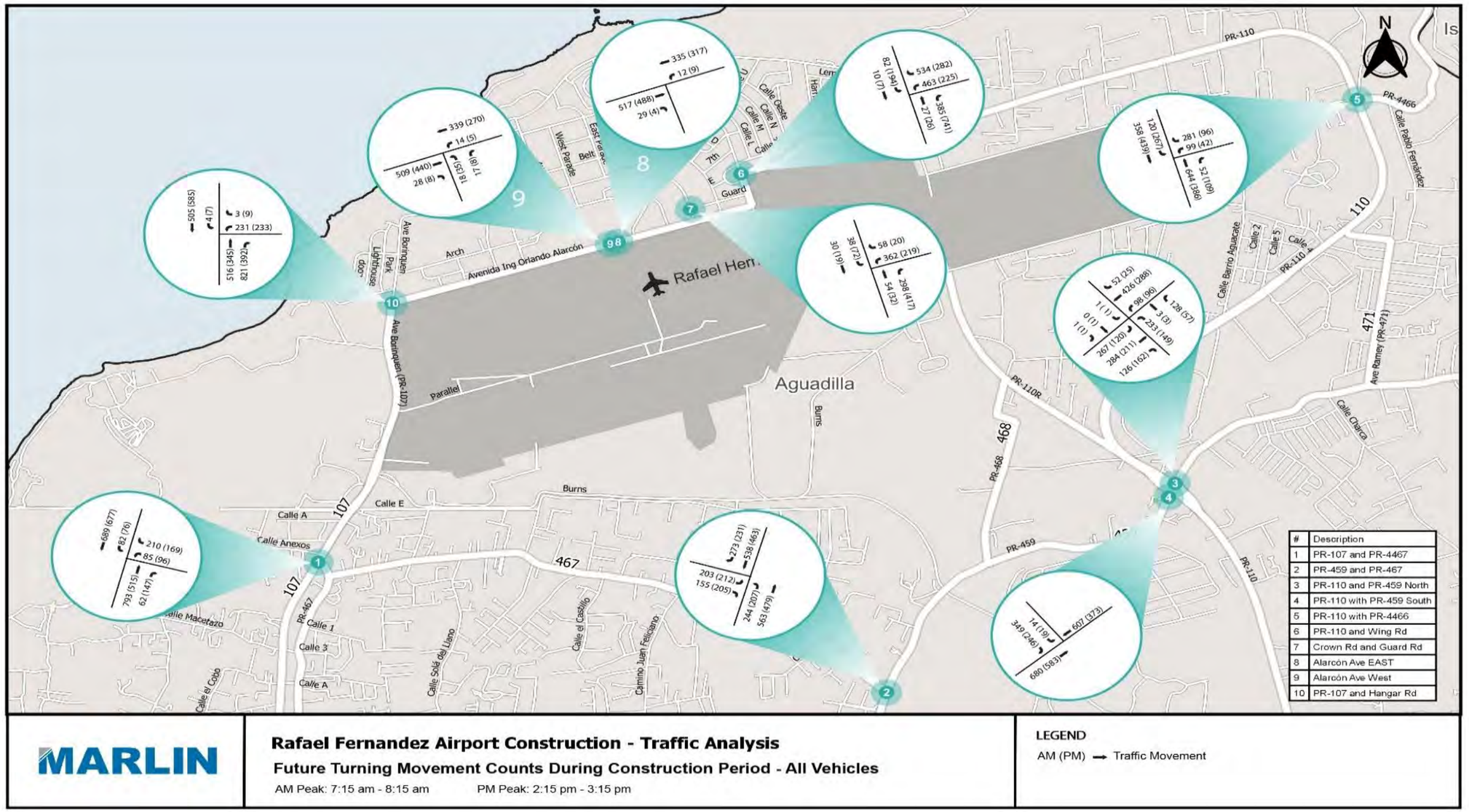

Figure 6. Future Turning Movement Counts During Construction Period

7.0 FUTURE CONDITIONS ANALYSIS DURING CONSTRUCTION

The AM & PM peak-hours operating condition for the study area intersections were analyzed in Synchro using the projected turning movements for year 2020, the year the reconstruction is proposed to take place. Based on the Synchro analyses, the projected overall level of service (LOS) and delay for the study's one (1) signalized and nine (9) unsignalized intersections are as follows:

Table 3. Future traffic conditions at the study intersections during AM peak-hour (7:15am to 8:15am)

Intersection (Signalized)	Overall LOS	Intersection Delay (sec/veh)
PR 107 at PR 4467	B	13.1

Intersection (Unsignalized)	Approach LOS	Control Delay (sec/veh)
PR 467 at PR 459	NB Left- B	12.1
(STOP-control for PR 467)	EB Left- F	1619.3
	EB Right- C	19.0
	SB Through- free-flow	-
	SB Right- free-flow	-
	NB Through- free-flow	-
PR 110 at PR 459 North	NB Left- A	9.7
(STOP-control for PR 110)	EB Left- F	2067.8
	WB Left- F	57.3
	SB Left- A	8.5
	SB Through- free-flow	-
	SB Right- free-flow	-
	NB Through- free-flow	-
	NB Right- free-flow	-
PR 110 at PR 459 South	EB Left- E	40.5
(STOP-control for PR 110)	SB Through- free-flow	-
	NB Through- free-flow	-
PR 110 at PR 4466	WB Left- F	386.9
(STOP-control for PR 4466)	SB Left- A	10.0
	SB Through- free-flow	-
	NB Through- free-flow	-
	NB Right- free-flow	-
PR 110 at Wing Road	WB Left- C	21.6
(STOP-control for PR 110)	WB Right- B	12.6
	SB Left- A	7.4
	SB Through- free-flow	-
	NB Through- free-flow	-

Guard Road at Crown Road (STOP-control for Guard Road)	WB Left- C SB Left- A SB Through- free-flow NB Through- free-flow NB Right- free-flow	24.9 8.1 - - -
Engineer Orlando Alarcon Avenue/Hangar Road at Airport Entrance (immediately west of terminal)	WB- A EB- free-flow	0.4 -
Engineer Orlando Alarcon Avenue/Hangar Road at Airport Entrance/Exit (approx. 145 feet west of terminal)	WB Left- A NB Left- C WB Through- free-flow EB Through- free-flow EB Right- free-flow	8.7 16.4 - - -
PR 107 at Engineer Orlando Alarcon Avenue/Hangar Road (STOP-control for Hangar Road)	WB Left- F SB Left- A SB Through- free-flow NB Through- free-flow NB Right- free-flow	132.3 8.5 - - -

Table 4. Future traffic conditions at the study intersections during PM peak-hour (2:15pm to 3:15pm)

Intersection (Signalized)	Overall LOS	Intersection Delay (sec/veh)
PR 107 at PR 4467	B	15.4

Intersection (Unsignalized)	Approach LOS	Control Delay (sec/veh)
PR 467 at PR 459 (STOP-control for PR 467)	NB Left- B EB Left- F EB Right- C SB Through- free-flow SB Right- free-flow NB Through- free-flow	10.7 864.4 18.8 - - -
PR 110 at PR 459 North (STOP-control for PR 110)	NB Left- A EB Left- F WB Left- C SB Left- A SB Through- free-flow SB Right- free-flow NB Through- free-flow NB Right- free-flow	8.3 149.9 24.2 8.4 - - - -

PR 110 at PR 459 South (STOP-control for PR 110)	EB Left- B SB Through- free-flow NB Through- free-flow	13.7 - -
PR 110 at PR 4466 (STOP-control for PR 4466)	WB Left- F SB Left- A SB Through- free-flow NB Through- free-flow NB Right- free-flow	65.2 9.8 - - -
PR 110 at Wing Road (STOP-control for PR 110)	WB Left- C WB Right- A SB Left- A SB Through- free-flow NB Through- free-flow	19.6 9.8 7.6 - -
Guard Road at Crown Road (STOP-control for Guard Road)	WB Left- C SB Left- A SB Through- free-flow NB Through- free-flow NB Right- free-flow	17.2 8.6 - - -
Engineer Orlando Alarcon Avenue/Hangar Road at Airport Entrance (immediately west of terminal)	WB- A EB- free-flow	0.3 -
Engineer Orlando Alarcon Avenue/Hangar Road at Airport Entrance/Exit (approx. 145 feet west of terminal)	WB Left- A NB Left- C WB Through- free-flow EB Through- free-flow EB Right- free-flow	8.3 15.5 - - -
PR 107 at Engineer Orlando Alarcon Avenue/Hangar Road (STOP-control for Hangar Road)	WB Left- F SB Left- A SB Through- free-flow NB Through- free-flow NB Right- free-flow	94.8 8.0 - - -

The analysis indicates that the signalized intersection at PR 107 and PR 4467 operates acceptably during both the AM and PM peak hours while the construction is taking place. All of the unsignalized intersections operate acceptably during the AM and PM peak hours, except for the particular approaches on them listed below:

AM Peak Hour:

- **PR 467 at PR 459** **Eastbound STOP-controlled approach**
- **PR 110 at PR 459 North** **Eastbound to northbound left-turn**
- PR 110 at PR 459 North Westbound to southbound left-turn
- **PR 110 at PR 4466** **Westbound STOP-controlled approach**

- PR 107 at Engineer Alarcon Westbound STOP-controlled approach

PM Peak Hour:

- **PR 467 at PR 459 Eastbound STOP-controlled approach**
- PR 110 at PR 459 North Eastbound to northbound left-turn
- PR 110 at PR 4466 Westbound STOP-controlled approach
- PR 107 at Engineer Alarcon Westbound STOP-controlled approach

These are the same intersections and critical approaches listed in the existing conditions section. The construction traffic itself will not appreciably worsen operational conditions simply due to the volumes being light overall. This project will not generate appreciable amounts of construction traffic being that it is a reconstruction of a single airport runway.

8.0 CONCLUSIONS

Marlin Engineering, Inc (MEI) has been retained to conduct a traffic impact analysis of construction traffic impacts on the roadway network surrounding Rafael Hernandez Airport, at Aguadilla, Puerto Rico during a proposed runway reconstruction project. The project entails the total reconstruction of Runway 8-26, along with reconfiguring a taxiway which parallels the runway to serve as a temporary runway while Runway 8-26 is being reconstructed. The anticipated start time of the project is February 2020, with completion anticipated by December 2020. The proposed reconstruction may have some potential constraints and impacts to the local commute which can impact the quality of life of the communities surrounding the airport.

During this period, there will be a minimal increase in traffic volumes around the vicinity of the BQN airport consisting of construction vehicles and employees going in and out to the construction site. Thus, to evaluate the overall impact of the reconstruction on the adjacent roadway network, a traffic impact analysis report was conducted.

The contractor's representative stated that they expect only six (6) construction trucks, such as dump trucks, cement mixer trucks, etc. to enter and exit the airport runway reconstruction site per hour at the times of highest construction activity. This is equivalent to a truck entering or leaving the site every five (5) minutes. This volume is not enough to affect operational conditions on the surrounding roadway network.

In addition, the contractor's representative stated that there would be a maximum of 150 employees at the work site. However, it is anticipated that approximately 75% of the employees would arrive to the work site before the AM peak hour of the surrounding roadway network, and leave the work site after the PM peak hour of the surrounding roadway network. Thus, impact of employees driving to/from the work site will be of little affect onto the surrounding roadway network during peak periods as well. Also, the employees would naturally determine through trial and error, or local knowledge, the best way to access the work site from whatever direction they are coming from when they head to the work site, or heading home after the work day.

During the AM and PM peak hours, both in the existing conditions and during the construction project (if nothing was done to improve conditions between the writing of this study in July 2018 and the start of the runway construction project in February 2020), the following approaches on the surrounding roadway network have a LOS of F and excessive delays:

AM Peak Hour:

- **PR 467 at PR 459** **Eastbound STOP-controlled approach**
- **PR 110 at PR 459 North** **Eastbound to northbound left-turn**
- PR 110 at PR 459 North Westbound to southbound left-turn
- **PR 110 at PR 4466** **Westbound STOP-controlled approach**
- PR 107 at Engineer Alarcon Westbound STOP-controlled approach

PM Peak Hour:

- **PR 467 at PR 459** **Eastbound STOP-controlled approach**
- PR 110 at PR 459 North Eastbound to northbound left-turn
- PR 110 at PR 4466 Westbound STOP-controlled approach
- PR 107 at Engineer Alarcon Westbound STOP-controlled approach

It is recommended that the Puerto Rico Department of Transportation and Public Works (DTOP), which maintains "PR" routes of which all of these intersections are a part of, verify operational conditions (perform qualitative analysis) of these intersections on-site during peak periods. The DTOP should consider analyzing whether operations at these intersections could be improved by converting them to all-way STOP-control, or whether traffic signals are warranted.

If no operational improvements are made at the intersections listed above before the start of runway reconstruction, anticipated in February 2020:

When the contractor is hauling materials to/from the airport construction site to/from the locations of the bituminous concrete plant, landfill, and borrow site during the AM and PM peaks:

Contractor should use PR-107 south, then turn east onto PR-2, then follow PR-2 to PR-110 north to travel from the airport construction site to the locations of the bituminous concrete plant, landfill, and borrow site along PR-110 southeast of the airport.

Contractor should use PR-110 south, the turn west onto PR-2, then follow PR-2 to PR-107 north to travel from the locations of the bituminous concrete plant, landfill, and borrow site along PR-110 southeast of the airport to the airport construction site.

Finally, it should be noted that the contractor must be responsible for any damage caused by the construction vehicles on the roadways during the construction period.

Appendix

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Appendix A. Existing Turning Movement Counts

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File Name:	PR-107 at PR-4467 – All vehicles
Start Date:	5/8/2018
Start Time:	6:00:00 AM
Site Code:	00000123

	Frontage Road				PR-107																	
	SB				SB				WB					NB					EB			
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Frontage Rd Right	PR-107 Right	Thru	Left	Peds	Right	Frontage Rd Thru	PR-107 Thru	Left	Peds	Right	Thru	Left	Peds
06:00	0	0	0	0	2	56	4	1	0	8	3	8	1	5	0	40	1	0	4	1	0	0
06:15	0	0	0	0	0	41	3	0	0	16	0	1	0	8	0	77	0	3	3	0	0	0
06:30	0	2	0	0	0	71	6	0	4	16	0	11	1	13	0	135	0	0	3	1	0	0
06:45	0	3	0	0	0	81	9	0	3	19	0	12	0	10	0	178	2	0	6	3	0	5
07:00	0	0	2	0	0	102	10	0	3	34	2	10	0	8	0	191	1	0	5	4	0	1
07:15	0	3	4	0	0	125	11	1	7	37	1	15	1	10	0	219	3	0	6	4	0	2
07:30	0	3	5	0	0	179	26	0	10	53	6	26	0	14	0	186	1	0	19	11	0	8
07:45	0	1	5	0	0	215	20	1	9	39	4	23	0	22	1	216	6	1	11	15	0	2
08:00	0	5	9	0	0	154	15	0	13	32	8	21	0	14	1	156	7	0	13	10	0	0
08:15	1	2	2	0	0	153	19	0	18	31	5	25	4	18	0	193	4	0	9	4	0	5
08:30	0	1	1	0	0	121	14	0	13	33	7	16	1	13	0	188	7	0	5	1	0	1
08:45	0	1	1	0	0	142	11	0	3	25	2	19	4	17	1	172	4	1	9	1	0	0
09:00	0	0	0	0	0	140	9	0	4	20	1	12	2	15	1	161	3	0	5	1	0	0
09:15	1	0	1	0	0	131	12	0	5	15	2	16	3	16	0	170	2	0	6	2	0	0
09:30	0	1	0	0	1	133	14	0	6	16	1	13	1	14	0	152	0	0	7	1	0	1
09:45	0	0	1	0	0	125	10	0	2	10	2	14	1	20	0	144	1	1	10	3	0	0
10:00	0	2	1	0	0	158	11	0	1	17	1	15	0	15	1	135	2	0	9	2	0	0
10:15	1	2	0	0	1	164	18	0	0	21	2	11	1	14	1	130	4	0	10	2	0	1
10:30	1	0	0	0	0	161	13	1	0	22	3	12	1	11	0	130	3	0	5	4	0	0
10:45	0	1	0	0	0	166	10	0	1	14	4	9	0	9	0	120	2	0	6	1	0	0
11:00	1	3	4	0	0	168	17	0	1	18	2	17	1	15	0	131	5	1	9	3	0	1
11:15	0	0	8	0	1	159	14	1	0	18	5	14	0	20	2	148	5	0	7	2	0	1
11:30	1	4	2	0	0	160	20	1	0	33	4	17	0	16	2	163	5	0	15	5	0	2
11:45	0	0	4	0	0	183	19	0	1	25	5	28	0	19	0	176	3	0	11	4	0	1
12:00	1	1	3	0	0	182	19	0	1	33	7	17	4	17	0	186	6	0	9	8	0	2
12:15	1	1	9	0	0	154	13	0	0	33	11	25	0	15	1	166	6	0	11	5	0	0
12:30	1	0	7	0	0	147	15	0	2	33	9	21	0	14	0	167	5	1	9	6	0	0
12:45	0	5	9	0	0	155	24	0	0	41	5	16	1	16	0	178	1	0	15	9	0	1
13:00	0	0	0	0	0	151	22	0	0	38	3	13	0	13	1	125	1	0	9	4	0	0
13:15	1	0	3	0	0	142	21	0	0	36	4	10	1	14	0	174	2	0	10	3	0	1

13:30	1	3	2	0	0	146	20	1	2	25	6	11	1	12	0	169	5	0	5	2	0	0
13:45	0	2	0	0	0	164	30	1	2	29	5	20	2	10	0	166	6	0	7	2	0	0
14:00	0	0	2	0	1	160	28	0	3	30	3	21	0	28	2	110	1	1	4	1	0	0
14:15	1	2	0	0	0	170	14	0	0	31	8	25	2	31	0	106	2	0	5	1	0	2
14:30	0	1	2	0	0	171	16	1	4	35	10	24	2	33	0	121	7	1	3	0	0	2
14:45	1	1	2	0	0	152	17	2	1	41	7	22	0	39	1	134	4	0	4	1	0	0
15:00	0	4	6	0	0	168	19	0	10	37	6	25	2	44	1	136	12	0	8	1	0	3
15:15	1	3	3	0	0	175	18	0	3	27	11	16	1	18	0	145	4	1	6	8	0	0
15:30	0	1	1	0	0	181	24	1	8	38	6	17	2	19	0	124	10	0	10	6	0	0
15:45	0	1	2	0	0	189	17	0	5	15	0	17	4	25	0	115	9	0	13	6	0	0
16:00	0	1	0	0	0	152	23	1	5	20	4	8	0	16	0	137	7	0	10	6	0	0
16:15	0	3	3	0	0	142	17	0	3	11	2	16	0	32	0	140	8	0	5	2	0	0
16:30	1	1	6	0	0	165	15	0	7	24	2	19	0	27	0	112	2	0	5	3	0	0
16:45	1	2	5	0	0	152	21	0	2	27	2	20	0	23	1	123	9	0	4	2	0	0
17:00	1	1	1	0	0	145	23	0	2	16	5	18	0	22	0	124	9	0	19	3	0	0
17:15	0	0	1	0	0	159	10	0	3	23	7	12	0	26	0	136	11	0	9	5	0	0
17:30	0	0	0	0	0	174	22	0	7	24	2	20	0	30	0	133	4	0	13	6	0	0
17:45	0	4	4	0	0	130	14	0	7	21	4	17	0	17	0	142	4	0	6	0	0	6

File Name:	PR-107 at PR-4467 – Heavy vehicles																					
Start Date:	5/8/2018																					
Start Time:	6:00:00 AM																					
Site Code:	00000123																					
	Frontage Road				PR-107																	
	SB				SB				WB					NB					EB			
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Frontage Rd Right	PR-107 Right	Thru	Left	Peds	Right	Frontage Rd Thru	PR-107 Thru	Left	Peds	Right	Thru	Left	Peds
06:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0
06:15	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
06:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0
06:45	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0
07:00	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	3	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
07:30	0	0	0	0	0	2	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0

07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	2	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	0	0	0	0	0	0
08:45	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0
09:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:30	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
09:45	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
10:00	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
10:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00	0	0	0	0	0	6	0	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0
11:15	0	0	0	0	0	2	1	0	0	1	0	1	0	0	0	1	0	0	0	0	0	0
11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
12:15	0	0	1	0	0	1	1	0	0	0	0	1	0	0	0	2	0	0	0	0	0	0
12:30	0	0	0	0	0	2	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0
12:45	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
13:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
14:00	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
14:15	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
14:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0
15:15	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:30	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	1	0	0	0	0	0	0
15:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0
16:45	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

File Name:	PR-459 at PR-467 – All Vehicles	
Start Date:	5/8/2018	
Start Time:	6:00:00 AM	
Site Code:	00000123	

	SB				WB				NB				EB			
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
06:00	8	29	0	0	0	0	0	0	0	27	1	0	7	0	9	0
06:15	10	49	0	0	0	0	0	0	0	59	9	1	16	0	10	1
06:30	19	58	0	0	0	0	0	0	0	57	12	0	24	0	17	0
06:45	27	81	0	0	0	0	0	0	0	87	15	1	14	0	20	0
07:00	48	82	0	0	0	0	0	0	0	105	27	0	29	0	41	0
07:15	56	143	0	0	0	0	0	0	0	148	55	0	27	0	46	0
07:30	82	122	0	0	0	0	0	0	0	143	67	0	47	0	31	0
07:45	68	127	0	0	0	0	0	0	0	148	77	0	46	0	60	0
08:00	57	146	0	0	0	0	0	0	0	124	45	0	35	0	56	0
08:15	26	108	0	0	0	0	0	0	0	114	23	0	56	0	78	0
08:30	32	129	0	0	0	0	0	0	0	109	19	0	32	0	27	0
08:45	30	119	0	0	0	0	0	0	0	105	32	0	37	0	46	0
09:00	28	109	0	0	0	0	0	0	0	95	28	0	33	0	33	1
09:15	25	110	0	0	0	0	0	0	0	101	26	0	30	0	31	0
09:30	30	95	0	0	0	0	0	0	0	120	25	0	31	0	30	0
09:45	27	98	0	0	0	0	0	0	0	101	22	0	40	0	28	0
10:00	24	89	0	0	0	0	0	0	0	95	20	0	25	0	29	0
10:15	19	81	0	0	0	0	0	0	0	87	31	0	26	0	27	0
10:30	18	79	0	0	0	0	0	0	0	88	36	0	18	0	22	1
10:45	22	96	0	0	0	0	0	0	0	70	27	0	16	0	21	0
11:00	26	100	0	0	0	0	0	0	0	76	33	0	24	0	26	0
11:15	25	99	0	0	0	0	0	0	0	102	32	0	24	0	33	0
11:30	28	87	0	0	0	0	0	0	0	113	24	0	29	0	29	0
11:45	27	90	0	0	0	0	0	0	0	127	32	0	36	0	37	0
12:00	40	110	0	0	0	0	0	0	0	132	49	0	24	0	29	0
12:15	33	130	0	0	0	0	0	0	0	113	32	0	18	0	35	0
12:30	30	116	0	0	0	0	0	0	0	129	30	0	33	0	24	1
12:45	37	119	0	0	0	0	0	0	0	107	46	0	30	0	41	0
13:00	30	104	0	0	0	0	0	0	0	100	40	0	25	0	35	0
13:15	31	109	0	0	0	0	0	0	0	96	36	0	22	0	36	1
13:30	32	111	0	0	0	0	0	0	0	99	39	0	41	0	41	0
13:45	58	125	0	0	0	0	0	0	0	101	41	0	45	0	45	0
14:00	51	121	0	0	0	0	0	0	0	110	45	0	36	0	44	0
14:15	49	130	0	0	0	0	0	0	0	120	50	0	37	0	50	1

14:30	46	98	0	0	0	0	0	0	0	114	55	0	54	0	52	0
14:45	61	99	0	0	0	0	0	0	0	129	52	0	55	0	51	0
15:00	65	136	0	0	0	0	0	0	0	116	50	0	59	0	49	0
15:15	57	100	0	0	0	0	0	1	0	121	46	0	45	0	50	0
15:30	40	130	0	0	0	0	0	0	0	142	26	0	36	0	41	0
15:45	35	129	0	0	0	0	0	0	0	113	29	0	48	0	43	0
16:00	32	105	0	0	0	0	0	0	0	109	36	0	24	0	41	0
16:15	41	112	0	0	0	0	0	0	0	116	35	0	30	0	25	0
16:30	40	114	0	0	0	0	0	0	0	104	30	0	28	0	35	0
16:45	58	127	0	0	0	0	0	0	0	117	26	0	37	0	42	0
17:00	54	126	0	0	0	0	0	0	0	136	49	0	27	0	31	0
17:15	33	140	0	0	0	0	0	0	0	111	32	0	34	0	37	0
17:30	40	147	0	0	0	0	0	0	0	104	38	0	31	0	36	0
17:45	35	87	0	0	0	0	0	0	0	136	37	0	27	0	25	0

File Name:	PR-459 at PR-467 – Heavy Vehicles
Start Date:	5/8/2018
Start Time:	6:00:00 AM
Site Code:	00000123

	SB				WB				NB				EB			
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
06:00	0	0	0	0	0	0	0	0	0	1	2	0	2	0	0	0
06:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30	0	3	0	0	0	0	0	0	0	2	0	0	2	0	1	0
06:45	1	3	0	0	0	0	0	0	0	2	0	0	1	0	1	0
07:00	1	1	0	0	0	0	0	0	0	4	0	0	0	0	1	0
07:15	0	1	0	0	0	0	0	0	0	3	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
07:45	0	2	0	0	0	0	0	0	0	3	1	0	0	0	1	0
08:00	0	3	0	0	0	0	0	0	0	1	0	0	0	0	0	0
08:15	0	1	0	0	0	0	0	0	0	2	0	0	1	0	0	0
08:30	1	0	0	0	0	0	0	0	0	4	1	0	1	0	1	0

08:45	0	3	0	0	0	0	0	0	0	3	2	0	1	0	2	0
09:00	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
09:15	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0
09:30	1	2	0	0	0	0	0	0	0	2	1	0	1	0	0	0
09:45	0	0	0	0	0	0	0	0	0	1	1	0	1	0	2	0
10:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0
10:15	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
10:30	0	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0
10:45	0	2	0	0	0	0	0	0	0	3	1	0	0	0	0	0
11:00	0	0	0	0	0	0	0	0	0	2	0	0	2	0	2	0
11:15	1	2	0	0	0	0	0	0	0	3	0	0	0	0	0	0
11:30	0	2	0	0	0	0	0	0	0	7	1	0	1	0	1	0
11:45	1	2	0	0	0	0	0	0	0	5	0	0	0	0	2	0
12:00	0	2	0	0	0	0	0	0	0	6	0	0	0	0	0	0
12:15	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
12:30	0	2	0	0	0	0	0	0	0	3	0	0	1	0	0	0
12:45	0	5	0	0	0	0	0	0	0	3	1	0	0	0	2	0
13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30	1	2	0	0	0	0	0	0	0	4	1	0	1	0	0	0
13:45	0	1	0	0	0	0	0	0	0	2	2	0	1	0	2	0
14:00	1	0	0	0	0	0	0	0	0	3	1	0	0	0	2	0
14:15	0	4	0	0	0	0	0	0	0	1	1	0	1	0	1	0
14:30	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0
14:45	0	1	0	0	0	0	0	0	0	2	0	0	0	0	1	0
15:00	1	1	0	0	0	0	0	0	0	2	1	0	3	0	0	0
15:15	0	2	0	0	0	0	0	0	0	4	1	0	0	0	0	0
15:30	0	6	0	0	0	0	0	0	0	2	1	0	1	0	1	0
15:45	0	2	0	0	0	0	0	0	0	5	1	0	1	0	0	0
16:00	0	4	0	0	0	0	0	0	0	1	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
16:30	1	1	0	0	0	0	0	0	0	3	0	0	0	0	0	0
16:45	0	2	0	0	0	0	0	0	0	2	0	0	1	0	0	0
17:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0
17:15	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0
17:30	1	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0
17:45	0	3	0	0	0	0	0	0	0	2	0	0	0	0	0	0

File Name:	PR-110 at PR-459 North – All Vehicles	
Start Date:	5/8/2018	
Start Time:	6:00:00 AM	
Site Code:	00000123	

	SB				WB				NB				EB			
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
06:00	0	11	2	0	1	0	3	2	6	9	10	0	1	0	0	1
06:15	4	24	5	0	4	0	13	0	14	16	31	0	0	0	0	0
06:30	6	32	9	0	6	0	21	0	13	20	39	0	0	0	0	0
06:45	8	45	9	0	16	0	34	0	19	30	41	0	0	0	0	0
07:00	6	50	3	0	17	0	43	0	25	38	38	0	0	0	0	0
07:15	3	87	17	0	14	0	58	0	27	55	56	1	0	0	1	0
07:30	23	118	20	0	32	2	61	0	30	83	57	1	1	0	0	0
07:45	15	113	29	0	64	1	67	1	23	69	68	0	0	0	0	0
08:00	11	108	32	0	18	0	37	0	36	77	86	0	0	0	0	1
08:15	13	54	16	0	13	1	21	0	50	62	85	0	0	1	1	0
08:30	12	63	18	0	15	0	26	0	34	46	99	0	1	0	0	0
08:45	14	36	15	0	16	1	30	0	29	37	53	0	2	0	0	0
09:00	12	30	11	0	10	0	20	0	20	32	50	0	0	0	0	0
09:15	10	29	10	0	11	1	21	1	25	30	51	1	0	1	0	0
09:30	8	26	9	0	18	1	16	1	21	28	52	0	0	0	0	0
09:45	9	40	10	0	16	0	19	0	19	25	28	0	0	0	0	0
10:00	7	41	12	0	17	0	14	0	30	40	36	0	0	0	0	0
10:15	10	35	16	0	16	1	20	1	31	41	34	0	1	0	1	0
10:30	11	33	8	0	9	0	11	0	28	36	33	0	0	1	0	0
10:45	4	45	9	0	10	1	13	1	36	32	20	0	0	0	0	0
11:00	3	49	9	1	17	0	13	0	33	42	28	1	0	0	0	0
11:15	11	40	9	0	11	0	18	0	29	44	47	0	0	0	0	0
11:30	8	28	10	0	20	0	25	0	27	46	44	0	0	0	0	0
11:45	11	45	20	0	29	1	20	0	42	70	56	0	1	0	0	0
12:00	13	70	26	0	12	0	17	0	34	79	37	0	0	0	1	0
12:15	11	65	15	0	16	0	28	0	29	70	54	0	0	0	0	0
12:30	6	50	19	0	16	1	20	0	27	57	48	0	0	1	0	0
12:45	5	48	13	0	11	3	32	0	34	61	47	1	0	0	0	0
13:00	3	42	12	0	12	0	30	0	29	50	44	0	0	0	0	0
13:15	5	43	10	0	16	2	25	0	25	55	46	0	0	0	0	0
13:30	7	57	20	0	17	2	27	0	21	46	30	0	0	0	0	0
13:45	9	64	21	0	15	1	34	0	33	61	39	1	1	0	0	0
14:00	5	66	30	0	14	1	33	2	30	60	34	0	0	1	0	0
14:15	6	70	25	0	16	1	41	0	40	70	33	1	0	0	0	0
14:30	4	28	17	0	18	0	28	1	42	39	29	0	0	1	1	0
14:45	6	84	19	0	10	1	30	0	33	33	20	0	0	0	0	0
15:00	9	106	35	0	13	1	40	1	37	69	38	0	1	0	0	0

15:15	6	54	13	0	16	2	29	1	66	73	59	0	0	0	1	0
15:30	8	38	16	0	17	0	35	0	51	88	47	1	0	0	0	0
15:45	11	47	13	0	18	0	32	0	54	72	41	0	0	1	0	0
16:00	4	38	15	0	12	0	31	0	55	50	49	0	0	0	0	0
16:15	5	43	19	0	9	1	31	0	42	63	39	0	0	0	0	0
16:30	8	25	12	0	14	0	32	0	35	58	42	0	0	0	0	0
16:45	11	23	14	0	14	1	39	0	51	68	39	0	0	0	0	0
17:00	11	42	7	0	10	0	34	0	39	58	43	0	0	0	0	0
17:15	3	36	8	0	20	0	35	0	53	59	59	0	0	0	1	0
17:30	5	37	12	0	20	0	34	0	46	63	50	0	0	0	0	0
17:45	8	34	16	0	12	1	28	0	34	58	50	0	0	0	0	0

File Name:	PR-110 at PR-459 North – Heavy Vehicles
Start Date:	5/8/2018
Start Time:	6:00:00 AM
Site Code:	00000123

	SB				WB				NB				EB			
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
06:00	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
06:15	0	1	0	0	0	0	1	1	1	0	0	0	0	0	0	0
06:30	0	0	0	0	0	0	1	0	0	2	2	0	0	0	0	0
06:45	0	3	0	0	1	0	0	0	0	0	1	0	0	0	0	0
07:00	0	2	0	0	1	0	2	0	2	2	1	0	0	0	0	0
07:15	0	1	0	0	1	0	0	0	0	1	0	0	0	0	0	0
07:30	0	1	0	0	0	0	1	0	0	0	1	0	0	0	0	0
07:45	0	1	0	0	0	0	0	0	0	1	1	0	0	0	0	0
08:00	2	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	2	1	1	0	0	0	0	0
08:30	0	1	0	0	1	0	1	0	0	2	0	0	0	0	0	0
08:45	0	1	1	0	0	0	1	0	1	2	3	0	0	0	0	0
09:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

09:15	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
09:30	2	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0
09:45	1	1	0	0	0	0	1	0	1	0	2	0	0	0	0	0
10:00	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
10:15	0	0	0	0	0	0	1	0	1	0	1	0	0	0	0	0
10:30	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0
10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00	0	0	1	0	2	0	1	0	2	0	1	0	0	0	0	0
11:15	0	0	0	0	1	0	1	0	1	1	2	0	0	0	0	0
11:30	0	1	0	0	0	0	1	0	0	2	3	0	0	0	0	0
11:45	1	1	1	0	2	0	0	0	1	0	1	0	0	0	0	0
12:00	1	0	0	0	0	0	1	0	5	1	4	0	0	0	0	0
12:15	0	1	0	0	0	0	0	0	1	0	3	0	0	0	0	0
12:30	1	0	1	0	0	0	1	0	0	0	2	0	0	0	0	0
12:45	0	1	0	0	0	0	0	0	2	0	1	0	0	0	0	0
13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15	1	1	0	0	0	0	1	0	0	1	1	0	0	0	0	0
13:30	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
13:45	0	0	1	0	1	0	1	0	2	0	1	0	0	0	0	0
14:00	2	1	0	0	0	0	1	0	1	1	0	0	0	0	0	0
14:15	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
14:30	0	0	0	0	1	0	1	0	1	1	0	0	0	0	0	0
14:45	2	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0
15:00	0	0	0	0	0	0	0	0	2	1	1	0	0	0	0	0
15:15	0	0	1	0	0	0	1	0	1	2	2	0	0	0	0	0
15:30	1	1	0	0	1	0	0	0	0	1	3	0	0	0	0	0
15:45	1	1	1	0	0	0	1	0	0	1	1	0	0	0	0	0
16:00	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
16:15	0	0	0	0	0	0	1	0	4	0	1	0	0	0	0	0
16:30	0	0	0	0	0	0	2	0	1	0	1	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	1	0	1	0	1	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0
17:45	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0

File Name:	PR-110 at PR-459 South – All Vehicles
Start Date:	5/8/2018
Start Time:	6:00:00 AM
Site Code:	00000123

	SB				WB				NB				EB			
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
06:00	0	9	0	1	0	0	0	0	0	23	0	0	10	0	1	0
06:15	0	38	0	0	0	0	0	0	0	59	0	0	24	0	0	0
06:30	0	50	0	0	0	0	0	0	0	66	0	0	39	0	1	0
06:45	0	76	0	0	0	0	0	0	0	94	0	0	45	0	2	0
07:00	0	101	0	0	0	0	0	0	0	103	0	0	68	0	0	0
07:15	0	142	0	0	0	0	0	0	0	148	0	0	97	0	3	0
07:30	0	160	0	0	0	0	0	0	0	186	0	0	97	0	7	1
07:45	0	175	0	0	0	0	0	0	0	149	0	0	96	0	2	0
08:00	0	120	0	0	0	0	0	0	0	187	0	0	59	0	2	0
08:15	0	76	0	0	0	0	0	0	0	206	0	0	52	0	6	0
08:30	0	92	0	0	0	0	0	0	0	162	1	1	76	0	7	0
08:45	0	69	0	0	0	0	0	0	0	118	0	0	64	0	5	1
09:00	0	55	0	0	0	0	0	0	0	110	0	0	55	0	3	0
09:15	0	60	0	0	0	0	0	0	0	101	0	0	50	0	2	0
09:30	0	61	0	0	0	0	0	0	0	102	0	0	47	0	1	0
09:45	0	59	0	0	0	0	0	0	0	99	0	1	41	0	4	0
10:00	0	57	0	0	0	0	0	0	0	96	0	0	39	0	3	1
10:15	0	52	0	0	0	0	0	0	0	97	0	0	63	0	2	0
10:30	0	45	0	0	0	0	0	0	0	104	0	0	46	0	1	0
10:45	0	49	0	0	0	0	0	0	0	110	0	0	44	0	2	0
11:00	0	57	0	0	0	0	0	0	0	103	0	0	51	0	3	1
11:15	0	58	0	1	0	0	0	0	3	120	0	0	60	0	5	0
11:30	0	51	0	0	0	0	0	0	0	125	0	0	53	0	3	1
11:45	1	67	0	0	0	0	0	0	0	159	0	0	72	0	11	0
12:00	0	90	0	0	0	0	0	0	0	137	0	0	77	0	14	0
12:15	0	94	0	0	0	0	0	0	0	141	0	0	57	0	7	1
12:30	0	64	0	0	0	0	0	0	0	127	0	0	67	0	6	0
12:45	0	74	0	0	0	0	0	0	0	160	0	0	68	0	7	1
13:00	0	69	0	0	0	0	0	0	0	135	0	0	58	0	5	0
13:15	0	72	0	0	0	0	0	0	0	152	0	0	51	0	4	0
13:30	0	75	0	0	0	0	0	0	0	156	0	1	45	0	2	0
13:45	0	95	0	0	0	0	0	0	0	141	0	0	42	0	3	0
14:00	0	80	0	0	0	0	0	0	0	142	0	0	66	0	5	1
14:15	0	66	0	0	0	0	0	0	0	132	0	1	61	0	7	0

14:30	0	65	0	0	0	0	0	0	0	139	0	0	55	0	4	0
14:45	0	85	0	0	0	0	0	0	0	152	0	0	57	0	2	1
15:00	0	147	0	0	0	0	0	0	0	150	0	0	73	0	6	0
15:15	0	82	0	0	0	0	0	0	0	196	0	0	57	0	5	0
15:30	0	74	0	0	0	0	0	0	0	177	0	0	70	0	7	0
15:45	0	81	0	0	0	0	0	0	0	163	0	0	65	0	7	0
16:00	0	75	0	0	0	0	0	0	0	145	0	0	86	0	7	0
16:15	0	70	0	0	0	0	0	0	0	145	0	0	79	0	3	0
16:30	0	46	0	0	0	0	0	0	0	142	0	0	110	0	6	0
16:45	0	58	0	0	0	0	0	0	0	163	0	0	113	0	6	0
17:00	0	76	0	0	0	0	0	0	0	138	0	0	113	0	7	0
17:15	0	81	0	0	0	0	0	0	0	161	0	0	109	0	9	0
17:30	0	57	0	0	0	0	0	0	0	145	0	0	76	0	8	0
17:45	0	54	0	0	0	0	0	0	0	122	0	0	62	0	11	0

File Name:	PR-110 at PR-459 South – Heavy Vehicles
Start Date:	5/8/2018
Start Time:	6:00:00 AM
Site Code:	00000123

	SB				WB				NB				EB			
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
06:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15	0	1	0	0	0	0	0	0	0	1	0	0	2	0	0	0
06:30	0	1	0	0	0	0	0	0	0	3	0	0	2	0	1	0
06:45	0	3	0	0	0	0	0	0	0	1	0	0	1	0	0	0
07:00	0	4	0	0	0	0	0	0	0	5	0	0	0	0	0	0
07:15	0	1	0	0	0	0	0	0	0	1	0	0	1	0	0	0
07:30	0	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0
07:45	0	1	0	0	0	0	0	0	0	2	0	0	1	0	1	0
08:00	0	2	0	0	0	0	0	0	0	1	0	0	1	0	1	0
08:15	0	1	0	0	0	0	0	0	0	3	0	0	1	0	0	0
08:30	0	2	0	0	0	0	0	0	0	4	0	0	1	0	0	0

08:45	0	2	0	0	0	0	0	0	0	6	0	0	1	0	1	0
09:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:15	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:30	0	0	0	0	0	0	0	0	0	2	0	0	1	0	1	0
09:45	0	1	0	0	0	0	0	0	0	2	0	0	1	0	0	0
10:00	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0
10:15	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0
10:30	0	2	0	0	0	0	0	0	0	1	0	0	1	0	0	0
10:45	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0
11:00	0	2	0	0	0	0	0	0	0	2	0	0	1	0	0	0
11:15	0	0	0	0	0	0	0	0	0	4	0	0	1	0	0	0
11:30	0	2	0	0	0	0	0	0	0	5	0	0	2	0	0	0
11:45	0	1	0	0	0	0	0	0	0	3	0	0	1	0	1	0
12:00	0	1	0	0	0	0	0	0	0	10	0	0	2	0	0	0
12:15	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0
12:30	0	1	0	0	0	0	0	0	0	2	0	0	2	0	0	0
12:45	0	2	0	0	0	0	0	0	0	4	0	0	2	0	1	0
13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0
13:30	0	1	0	0	0	0	0	0	0	2	0	0	1	0	0	0
13:45	0	1	0	0	0	0	0	0	0	3	0	0	2	0	1	0
14:00	0	1	0	0	0	0	0	0	0	3	0	0	1	0	0	0
14:15	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0
14:30	0	2	0	0	0	0	0	0	0	1	0	0	1	0	0	0
14:45	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0
15:00	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0
15:15	0	1	0	0	0	0	0	0	0	5	0	0	2	0	0	0
15:30	0	1	0	0	0	0	0	0	0	4	0	0	1	0	0	0
15:45	0	3	0	0	0	0	0	0	0	4	0	0	1	0	0	0
16:00	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
16:15	0	1	0	0	0	0	0	0	0	6	0	0	0	0	0	0
16:30	0	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0
17:00	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0
17:45	0	3	0	0	0	0	0	0	0	2	0	0	2	0	0	0

File Name:	PR-110 at PR-4466 – All Vehicles
Start Date:	5/9/2018
Start Time:	6:00:00 AM
Site Code:	00000123

	SB				WB				NB				EB			
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
06:00	0	22	6	0	12	1	14	0	5	20	0	0	0	0	1	0
06:15	1	19	10	0	23	0	9	0	5	40	2	0	1	0	2	0
06:30	0	25	8	0	42	0	10	0	9	87	3	0	4	0	0	0
06:45	1	48	10	0	56	2	23	0	8	136	2	0	2	0	0	0
07:00	0	49	8	0	66	4	16	0	6	106	3	0	3	1	0	0
07:15	1	66	17	0	70	1	20	0	7	159	1	0	5	0	0	0
07:30	0	88	35	0	75	0	28	0	14	179	5	0	4	2	0	0
07:45	0	96	26	0	82	0	24	0	14	180	1	0	5	0	1	0
08:00	2	108	32	0	44	0	27	0	17	126	3	0	1	1	0	0
08:15	0	94	24	0	43	0	31	0	18	110	1	0	5	0	0	0
08:30	0	111	21	0	40	0	27	0	14	109	2	1	0	1	1	0
08:45	2	79	20	0	50	2	24	0	15	113	3	0	6	0	0	0
09:00	1	65	18	0	45	0	20	0	11	102	0	0	1	1	0	0
09:15	1	59	19	0	42	0	19	0	12	103	1	0	0	0	0	0
09:30	2	64	21	0	20	1	16	0	14	110	0	0	2	1	1	0
09:45	0	44	36	0	22	0	10	0	10	98	0	0	0	1	0	0
10:00	0	84	33	0	21	2	11	0	9	95	2	0	3	0	2	0
10:15	1	81	30	0	19	1	9	0	8	80	1	0	2	0	0	0
10:30	1	90	24	0	16	0	4	0	7	86	0	0	0	0	0	0
10:45	0	77	25	0	27	1	8	0	14	77	0	0	0	1	1	0
11:00	1	94	37	0	21	0	13	0	18	87	1	0	1	0	0	0
11:15	1	72	33	0	26	0	8	0	16	88	2	0	1	0	1	0
11:30	3	105	31	0	29	1	9	0	13	100	3	0	4	0	0	0
11:45	5	121	33	0	27	1	16	0	21	104	5	0	3	1	1	0
12:00	4	123	46	0	27	0	14	0	15	108	6	0	3	1	2	0
12:15	0	101	27	0	27	1	3	0	20	81	1	0	3	2	1	0
12:30	1	105	27	0	24	1	17	0	15	113	3	0	3	0	3	0
12:45	1	96	31	0	42	0	18	0	22	100	3	0	7	0	1	0
13:00	1	90	30	0	32	0	9	0	20	95	0	0	2	0	0	0
13:15	1	85	25	0	33	0	10	0	21	96	2	0	1	2	0	0
13:30	0	68	21	0	35	0	8	0	25	101	2	0	2	1	0	0
13:45	0	101	54	0	20	1	14	0	26	78	0	0	0	0	2	0
14:00	1	100	55	0	21	0	12	0	30	87	0	0	0	0	0	0
14:15	0	96	60	0	19	1	8	0	28	88	2	0	2	2	1	0
14:30	0	98	61	0	20	2	9	0	21	85	3	0	3	0	1	0
14:45	1	121	70	0	24	0	7	0	29	101	0	0	4	0	1	0

15:00	2	124	66	0	23	0	18	0	31	112	1	0	2	0	1	0
15:15	0	129	71	0	25	1	21	0	20	82	2	0	2	1	0	0
15:30	0	139	84	0	26	0	18	0	36	70	1	0	1	2	1	0
15:45	0	102	66	0	14	0	10	0	33	73	2	0	2	0	0	0
16:00	0	122	56	0	25	1	15	0	27	83	4	0	1	0	1	0
16:15	1	115	62	0	31	0	14	0	26	86	1	0	1	4	0	0
16:30	0	132	61	0	34	2	17	0	32	64	1	0	1	2	1	0
16:45	1	122	68	0	28	0	12	0	26	97	0	0	0	1	0	0
17:00	0	113	65	0	24	0	11	0	43	113	2	0	0	1	0	0
17:15	3	107	50	2	26	1	17	0	35	91	3	0	2	0	1	0
17:30	4	90	45	0	30	0	14	0	24	77	2	2	1	0	0	0
17:45	1	77	48	0	33	0	14	0	31	81	2	0	2	0	0	0

File Name:	PR-110 at PR-4466 – Heavy Vehicles
Start Date:	5/9/2018
Start Time:	6:00:00 AM
Site Code:	00000123

	SB				WB				NB				EB			
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
06:00	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
06:15	0	0	0	0	1	0	1	0	0	2	0	0	0	0	0	0
06:30	0	1	0	0	0	0	1	0	0	2	0	0	0	0	0	0
06:45	0	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0
07:00	0	0	0	0	0	0	1	0	0	5	0	0	0	0	0	0
07:15	0	2	0	0	0	0	1	0	0	3	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	1	3	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
08:00	0	2	2	0	1	0	0	0	0	2	0	0	0	0	0	0
08:15	0	4	1	0	0	0	1	0	1	5	0	0	0	0	0	0
08:30	0	5	0	0	0	0	0	0	1	0	0	0	0	0	0	0
08:45	0	1	1	0	0	0	1	0	1	2	1	0	0	0	0	0
09:00	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
09:15	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:30	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0

09:45	0	3	0	0	0	0	0	0	0	1	1	0	0	0	0	0
10:00	0	2	1	0	0	0	1	0	1	0	0	0	0	0	0	0
10:15	0	3	0	0	0	0	0	0	0	1	0	0	0	0	0	0
10:30	0	4	0	0	0	0	0	0	0	2	1	0	0	0	0	0
10:45	0	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00	0	2	0	0	0	0	0	0	1	4	0	0	1	0	0	0
11:15	0	1	0	0	1	0	1	0	0	4	0	0	0	0	0	0
11:30	1	5	0	0	1	0	0	0	0	3	1	0	0	0	0	0
11:45	0	4	0	0	0	0	0	0	1	3	0	0	2	0	0	0
12:00	0	5	1	0	0	0	0	0	0	2	0	0	0	0	0	0
12:15	0	5	0	0	0	0	0	0	2	2	0	0	0	0	0	0
12:30	0	2	2	0	2	0	1	0	0	2	0	0	0	0	0	0
12:45	0	4	1	0	1	0	0	0	0	4	0	0	0	0	0	0
13:00	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15	0	2	0	0	1	0	0	0	1	0	0	0	0	0	0	0
13:30	0	2	1	0	0	0	1	0	0	2	0	0	0	0	0	0
13:45	0	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0
14:00	0	1	1	0	1	0	1	0	1	2	2	0	0	0	0	0
14:15	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:30	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0
14:45	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:00	0	2	1	0	1	0	2	0	2	2	1	0	0	0	0	0
15:15	0	3	1	0	0	0	0	0	1	2	0	0	0	0	0	0
15:30	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
15:45	0	2	1	0	1	0	1	0	1	1	0	0	0	0	0	0
16:00	0	2	0	0	0	0	0	0	2	4	0	0	0	0	0	0
16:15	0	3	0	0	0	0	0	0	0	1	0	0	0	0	0	0
16:30	0	2	0	0	0	0	0	0	1	1	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
17:15	0	3	0	0	0	0	1	0	0	0	0	0	0	0	0	0
17:30	0	1	0	0	1	0	0	0	0	1	0	0	0	0	0	0
17:45	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0

File Name:	PR-110 at Wing Rd – All Vehicles
Start Date:	5/9/2018
Start Time:	6:00:00 AM
Site Code:	00000123

	SB				WB				NB				EB			
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
06:00	0	0	0	0	0	0	1	0	24	0	0	0	0	0	0	0
06:15	0	6	5	0	21	0	47	0	33	0	0	0	0	0	0	0
06:30	0	6	3	0	58	0	49	0	53	0	0	0	0	0	0	0
06:45	1	10	17	0	83	0	69	0	75	3	3	0	0	0	2	0
07:00	1	8	19	1	88	1	85	0	68	9	2	0	1	0	1	0
07:15	1	3	8	0	121	2	106	0	64	4	3	0	1	1	1	0
07:30	3	4	26	0	142	2	129	0	86	6	1	0	4	3	1	0
07:45	0	3	16	0	133	4	130	0	107	10	0	0	1	0	1	0
08:00	2	0	32	0	138	1	88	0	118	7	2	0	0	0	0	0
08:15	0	1	22	0	94	2	81	0	88	6	3	0	1	3	1	1
08:30	1	4	27	0	93	3	61	0	102	4	2	1	1	1	1	0
08:45	0	4	18	0	142	1	47	0	75	6	3	1	2	1	4	0
09:00	1	1	10	0	90	1	35	0	70	2	2	0	0	0	0	0
09:15	0	2	9	0	91	2	32	0	85	3	1	1	1	2	2	0
09:30	1	3	10	1	98	0	30	0	86	4	2	0	0	2	1	0
09:45	0	0	9	0	85	1	55	0	95	2	3	0	0	0	3	0
10:00	0	2	8	0	78	1	51	0	90	2	4	1	1	1	0	0
10:15	1	1	20	0	77	1	45	0	99	3	1	0	1	1	0	0
10:30	0	1	21	0	69	2	49	0	101	1	2	0	2	1	1	1
10:45	0	1	25	0	60	2	51	0	78	3	1	0	0	0	1	0
11:00	0	4	33	0	57	0	57	0	83	4	1	1	2	1	0	0
11:15	0	3	20	0	70	1	53	0	100	5	2	1	1	1	1	0
11:30	0	3	21	0	87	0	50	0	116	4	1	0	1	0	1	0
11:45	1	3	33	0	90	1	65	0	126	4	1	0	1	2	1	0
12:00	0	1	41	0	74	1	69	0	121	3	2	1	0	1	0	0
12:15	1	4	25	0	60	1	59	0	111	4	0	0	0	0	0	0
12:30	0	2	35	0	79	0	57	0	119	5	0	0	1	1	0	0
12:45	0	5	27	0	115	3	59	0	112	7	0	0	0	0	2	2
13:00	0	0	22	0	95	2	52	0	110	5	1	1	0	0	1	0
13:15	1	2	28	0	92	2	55	0	101	4	1	0	0	2	1	0
13:30	0	2	30	0	49	1	60	0	152	3	0	1	1	2	3	0
13:45	1	3	26	0	58	1	61	0	164	5	1	0	1	0	2	0
14:00	1	2	21	1	61	1	64	0	151	9	2	0	2	0	0	0
14:15	1	1	45	1	75	0	70	0	180	5	1	2	0	1	1	1
14:30	0	1	44	0	72	1	36	0	191	7	1	1	0	1	1	1
14:45	0	1	51	0	66	1	44	0	151	8	0	0	0	3	0	0

15:00	1	4	54	0	69	1	65	0	209	6	2	0	0	0	0	0
15:15	0	6	47	0	55	2	50	0	163	10	1	0	0	0	1	0
15:30	1	1	34	0	60	0	54	0	156	4	1	3	0	3	0	0
15:45	1	1	27	0	58	2	55	0	124	5	0	0	1	0	1	0
16:00	0	2	30	0	75	3	49	0	178	7	2	0	1	1	0	0
16:15	1	3	31	0	68	1	68	0	144	8	0	0	0	0	0	0
16:30	0	2	56	0	53	0	52	0	167	9	1	0	0	0	0	0
16:45	0	4	30	1	92	1	57	0	119	5	1	0	0	0	0	0
17:00	0	3	26	0	89	2	58	0	156	4	0	0	1	1	0	0
17:15	0	4	28	0	45	1	54	0	98	3	3	0	1	0	0	0
17:30	0	1	19	0	53	0	39	0	95	8	0	7	0	0	0	1
17:45	0	3	16	0	45	1	54	0	119	4	1	0	0	0	0	0

File Name:	PR-110 at Wing Rd – Heavy Vehicles
Start Date:	5/9/2018
Start Time:	6:00:00 AM
Site Code:	00000123

	SB				WB				NB				EB			
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
06:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30	0	0	0	0	2	0	0	0	1	0	0	0	0	0	0	0
06:45	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0
07:00	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	2	0	1	0	2	0	0	0	0	0	0	0
07:30	1	0	0	0	1	0	3	0	1	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	1	0	2	0	1	0	3	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0
09:00	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

09:30	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0
09:45	0	1	1	0	0	0	2	0	1	0	0	0	0	0	0	0
10:00	0	0	0	0	2	0	3	0	2	0	0	0	0	0	0	0
10:15	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
10:30	0	0	0	0	0	0	2	0	1	0	0	0	0	0	0	0
10:45	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
11:00	0	0	1	0	1	0	3	0	3	0	0	0	0	0	0	0
11:15	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0
11:30	0	0	0	0	2	0	3	0	0	0	0	0	0	0	0	0
11:45	1	0	0	0	0	0	2	0	5	0	0	0	0	0	0	0
12:00	0	1	1	0	1	0	0	0	2	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	1	0	6	0	0	0	0	0	0	0
12:45	0	0	1	0	1	0	5	0	1	0	0	0	0	0	0	0
13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15	0	0	1	0	1	0	4	0	0	0	0	0	0	0	0	0
13:30	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0
13:45	0	0	1	0	0	0	1	0	1	0	0	0	0	0	0	0
14:00	0	0	1	0	2	0	3	0	2	0	0	0	0	0	0	0
14:15	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
14:30	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0
14:45	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0
15:00	0	0	1	0	1	0	0	0	2	0	0	0	0	0	0	0
15:15	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0
15:30	0	0	1	0	0	0	3	0	2	0	0	0	0	0	0	0
15:45	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0
16:00	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
17:30	0	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0

File Name:	Crown Rd at Guard Rd – All Vehicles
Start Date:	5/9/2018
Start Time:	6:00:00 AM
Site Code:	00000123

	SB				WB				NB				EB			
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
06:00	0	2	1	0	3	0	25	2	21	0	0	0	0	0	0	1
06:15	0	0	2	0	6	0	25	2	28	2	0	0	0	0	0	0
06:30	0	1	1	0	9	0	37	1	44	5	0	0	0	0	0	0
06:45	0	2	3	0	17	0	50	0	75	17	0	0	0	0	0	0
07:00	0	5	8	0	16	0	71	0	46	8	0	1	0	0	0	1
07:15	0	6	10	0	10	0	96	0	60	7	0	0	0	0	0	1
07:30	0	9	6	0	15	0	113	1	62	16	0	0	0	0	0	0
07:45	0	10	13	0	22	0	80	0	74	21	0	0	0	0	0	2
08:00	0	5	9	0	11	0	63	0	92	10	0	0	0	0	0	0
08:15	0	6	3	0	9	0	59	0	67	2	0	0	0	0	0	2
08:30	0	2	3	0	3	0	48	0	60	10	0	0	0	0	0	0
08:45	0	6	10	0	12	0	35	0	44	3	0	0	0	0	0	0
09:00	0	5	5	0	4	0	30	0	40	4	0	0	0	0	0	0
09:15	0	4	6	0	9	0	31	0	38	2	0	0	0	0	0	0
09:30	0	3	8	0	10	0	28	0	39	6	0	0	0	0	0	0
09:45	0	5	7	0	8	0	25	0	58	5	0	0	0	0	0	0
10:00	0	5	6	0	7	0	30	0	51	4	0	0	0	0	0	0
10:15	0	4	9	0	5	0	45	0	55	3	0	0	0	0	0	0
10:30	0	3	10	0	2	0	44	0	60	5	0	0	0	0	0	0
10:45	0	6	11	0	3	0	52	0	61	7	0	0	0	0	0	0
11:00	0	4	10	0	3	0	56	0	60	10	0	0	0	0	0	0
11:15	0	5	7	0	2	0	48	0	63	4	0	0	0	0	0	0
11:30	0	8	10	0	3	0	50	2	61	8	0	0	0	0	0	0
11:45	0	3	13	0	6	0	61	0	69	4	0	0	0	0	0	0
12:00	0	6	18	0	7	0	61	0	68	5	0	0	0	0	0	0
12:15	0	6	11	0	8	0	52	0	68	3	0	0	0	0	0	0
12:30	0	6	13	0	6	0	42	0	66	6	0	0	0	0	0	1
12:45	0	5	16	0	7	0	58	0	72	5	0	0	0	0	0	0
13:00	0	5	12	0	4	0	52	0	77	4	0	0	0	0	0	0
13:15	0	4	13	0	5	0	51	0	58	5	0	0	0	0	0	0
13:30	0	6	10	0	6	0	60	0	54	8	0	0	0	0	0	0
13:45	0	2	8	0	10	0	62	0	49	7	0	0	0	0	0	0
14:00	0	3	9	0	4	0	59	0	95	10	0	0	0	0	0	0
14:15	0	4	10	0	6	0	47	0	101	6	0	0	0	0	0	0

14:30	0	5	18	0	5	0	44	0	88	9	0	0	0	0	0	0
14:45	0	4	20	0	3	0	56	0	102	8	0	0	0	0	0	0
15:00	0	6	24	0	6	0	62	0	116	9	0	0	0	0	0	0
15:15	0	1	18	0	1	0	55	0	117	6	0	0	0	0	0	0
15:30	0	12	28	0	4	0	54	0	89	3	0	0	0	0	0	3
15:45	0	1	11	0	4	0	44	0	76	0	0	0	0	0	0	0
16:00	0	1	28	0	1	0	55	0	86	1	0	0	0	0	0	0
16:15	0	2	20	0	3	0	67	0	90	0	0	1	0	0	0	0
16:30	0	1	25	0	1	0	55	0	77	0	0	0	0	0	0	1
16:45	0	1	7	0	3	0	58	0	88	0	0	0	0	0	0	0
17:00	0	1	12	0	2	0	65	2	88	4	0	0	0	0	0	0
17:15	0	1	6	0	3	0	55	1	60	1	0	0	0	0	0	1
17:30	0	0	10	0	2	0	44	2	72	2	0	0	0	0	0	10
17:45	0	1	8	0	1	0	59	0	75	1	0	3	0	0	0	0

File Name:	Crown Rd at Guard Rd – Heavy Vehicles
Start Date:	5/9/2018
Start Time:	6:00:00 AM
Site Code:	00000123

	SB				WB				NB				EB			
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
06:00	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
06:15	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0
06:30	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0
06:45	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
07:00	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	2	0	1	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0
09:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:30	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0

09:45	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
10:00	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0
10:15	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
10:30	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0
10:45	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
11:00	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
11:15	0	0	0	0	0	0	1	0	3	0	0	0	0	0	0	0
11:30	0	0	0	0	0	0	3	0	1	0	0	0	0	0	0	0
11:45	0	0	0	0	0	0	2	0	3	0	0	0	0	0	0	0
12:00	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	1	0	5	0	0	0	0	0	0	0
12:45	0	0	0	0	0	0	5	0	2	0	0	0	0	0	0	0
13:00	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0
13:15	0	0	0	0	0	0	1	0	4	0	0	0	0	0	0	0
13:30	0	0	0	0	0	0	2	0	1	0	0	0	0	0	0	0
13:45	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0
14:00	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
14:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:30	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
14:45	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0
15:00	0	1	1	0	0	0	1	0	1	0	0	0	0	0	0	0
15:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:30	0	1	1	0	0	0	1	0	2	0	0	0	0	0	0	0
15:45	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0
16:00	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

File Name:	Engineer Orlando Alarcon Avenue/Hangar Road at Airport Entrance (immediately west of terminal) – All Vehicles	
Start Date:	5/9/2018	
Start Time:	5:45:00 AM	
Site Code:	00000123	

	SB				WB				NB				EB			
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
05:45	0	0	0	0	0	22	0	1	0	0	0	0	1	36	0	1
06:00	0	0	0	0	0	33	0	2	0	0	0	0	2	43	0	2
06:15	0	0	0	0	0	45	2	0	0	0	0	0	5	66	0	1
06:30	0	0	0	0	0	46	1	2	0	0	0	0	1	131	0	1
06:45	0	0	0	1	0	75	0	1	0	0	0	0	5	93	0	1
07:00	0	0	0	0	0	90	1	2	0	0	0	0	5	105	0	0
07:15	0	0	0	0	0	104	7	1	0	0	0	0	5	105	1	2
07:30	0	0	0	0	0	91	3	0	0	0	0	0	4	135	0	2
07:45	0	0	0	0	0	61	0	14	0	0	0	2	7	156	0	4
08:00	0	0	0	0	0	69	2	7	0	0	0	3	13	111	0	1
08:15	0	0	0	0	0	54	4	12	0	0	0	3	10	90	0	0
08:30	0	0	0	4	0	42	2	6	0	0	0	5	13	103	1	2
08:45	0	0	0	0	0	36	2	4	0	0	0	1	7	95	0	2
09:00	0	0	0	0	0	42	1	2	0	0	0	2	8	96	0	1
09:15	0	0	0	0	0	41	2	1	0	0	0	3	10	87	0	1
09:30	0	0	0	0	0	57	3	2	0	0	0	1	9	80	0	0
09:45	0	0	0	0	0	55	4	3	0	0	0	2	4	77	0	2
10:00	0	0	0	0	0	60	2	1	0	0	0	2	2	69	0	3
10:15	0	0	0	0	0	61	1	2	0	0	0	3	3	90	0	2
10:30	0	0	0	0	0	73	2	2	0	0	0	2	5	81	0	1
10:45	0	0	0	0	0	75	2	3	0	0	0	1	2	86	0	1
11:00	0	0	0	6	0	66	0	0	0	0	0	1	4	76	0	1
11:15	0	0	0	0	0	76	2	0	0	0	0	8	1	78	0	2
11:30	0	0	0	0	0	81	2	0	0	0	0	0	2	99	0	2
11:45	0	0	0	0	0	89	4	3	0	0	0	3	2	86	1	2
12:00	0	0	0	0	0	61	6	0	0	0	0	2	4	95	0	2
12:15	0	0	0	0	0	56	6	3	0	0	0	0	2	88	0	1
12:30	0	0	0	0	0	69	3	2	0	0	0	2	3	79	0	1
12:45	0	0	0	0	0	66	1	2	0	0	0	1	2	88	0	0
13:00	0	0	0	0	0	61	2	1	0	0	0	2	3	70	0	0
13:15	0	0	0	0	0	62	1	2	0	0	0	1	4	74	0	0
13:30	0	0	0	0	0	63	3	2	0	0	0	1	5	67	0	2
13:45	0	0	0	0	0	70	2	0	0	0	0	2	1	69	0	3
14:00	0	0	0	0	0	72	2	1	0	0	0	0	0	96	0	0

14:15	0	0	0	0	0	71	3	1	0	0	0	1	2	102	0	0
14:30	0	0	0	0	0	73	1	2	0	0	0	2	1	110	0	0
14:45	0	0	0	0	0	79	3	3	0	0	0	0	0	138	0	1
15:00	0	0	0	0	0	84	2	3	0	0	0	0	1	128	0	1
15:15	0	0	0	0	0	76	1	1	0	0	0	3	0	93	0	2
15:30	0	0	0	0	0	52	1	2	0	0	0	0	0	88	0	0
15:45	0	0	0	0	0	85	1	0	0	0	0	1	1	85	0	0
16:00	0	0	0	0	0	91	1	1	0	0	0	0	0	99	0	0
16:15	0	0	0	0	0	65	0	4	0	0	0	0	1	94	0	0
16:30	0	0	0	1	0	72	2	4	0	0	0	2	0	107	0	0
16:45	0	0	0	1	0	81	0	3	0	0	0	0	4	94	0	0
17:00	0	0	0	1	0	68	0	1	0	0	0	0	0	78	0	3
17:15	0	0	0	6	0	64	2	3	0	0	0	0	0	86	0	0
17:30	0	0	0	1	0	73	0	2	0	0	0	0	0	86	0	0
17:45	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0

File Name:	Engineer Orlando Alarcon Avenue/Hangar Road at Airport Entrance (immediately west of terminal) – Heavy Vehicles
Start Date:	5/9/2018
Start Time:	5:45:00 AM
Site Code:	00000123

	SB				WB				NB				EB			
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
05:45	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0
06:00	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0
06:15	0	0	0	0	0	2	0	0	0	0	0	0	0	3	0	0
06:30	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
06:45	0	0	0	0	0	5	0	0	0	0	0	0	0	1	0	0
07:00	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0
07:15	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0
07:30	0	0	0	0	0	3	0	0	0	0	0	0	0	2	0	0
07:45	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0
08:00	0	0	0	0	0	1	0	0	0	0	0	0	1	2	0	0
08:15	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0
08:30	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0
08:45	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0

09:00	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0
09:15	0	0	0	0	0	2	0	0	0	0	0	0	0	2	0	0
09:30	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0
09:45	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0
10:00	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0
10:15	0	0	0	0	0	3	0	0	0	0	0	0	0	3	0	0
10:30	0	0	0	0	0	2	0	0	0	0	0	0	0	2	0	0
10:45	0	0	0	0	0	4	0	0	0	0	0	0	0	1	0	0
11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
11:15	0	0	0	0	0	2	0	0	0	0	0	0	0	2	0	0
11:30	0	0	0	0	0	8	0	0	0	0	0	0	0	2	0	0
11:45	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0
12:00	0	0	0	0	0	1	0	0	0	0	1	0	0	1	0	0
12:15	0	0	0	0	0	1	0	0	0	0	0	0	0	6	0	0
12:30	0	0	0	0	0	6	0	0	0	0	0	0	0	4	0	0
12:45	0	0	0	0	0	4	0	0	0	0	0	0	0	5	0	0
13:00	0	0	0	0	0	5	0	0	0	0	0	0	0	4	0	0
13:15	0	0	0	0	0	3	0	0	0	0	0	0	0	3	0	0
13:30	0	0	0	0	0	2	0	0	0	0	0	0	0	4	0	0
13:45	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0
14:00	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0
14:15	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0
14:30	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0
14:45	0	0	0	0	0	2	0	0	0	0	0	0	0	3	0	0
15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
15:15	0	0	0	0	0	3	0	0	0	0	0	0	0	2	0	0
15:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:45	0	0	0	0	0	2	0	0	0	0	0	0	0	2	0	0
16:00	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
16:30	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0
17:15	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0
17:30	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

File Name:	Engineer Orlando Alarcon Avenue/Hangar Road at Airport Entrance (approx. 145 feet west of terminal) – All Vehicles
Start Date:	5/9/2018
Start Time:	6:00:00 AM
Site Code:	00000123

	SB				WB				NB				EB			
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
06:00	0	0	0	0	0	24	1	1	9	0	6	0	2	29	0	1
06:15	0	0	0	0	0	34	0	2	1	0	3	0	4	43	0	2
06:30	0	0	0	0	0	44	0	0	4	0	9	0	0	69	0	1
06:45	0	0	0	0	0	45	4	1	2	0	2	0	2	130	0	1
07:00	0	0	0	0	0	72	7	1	4	0	5	0	2	84	0	1
07:15	0	0	0	0	0	87	2	2	5	0	6	0	9	102	0	0
07:30	0	0	0	0	0	99	4	1	2	0	2	0	8	111	0	3
07:45	0	0	0	0	0	85	4	0	5	0	9	0	8	132	0	3
08:00	0	0	0	0	0	58	4	1	5	0	1	0	3	154	1	5
08:15	0	0	0	0	0	68	4	7	15	0	6	0	3	111	0	2
08:30	0	0	0	0	3	53	1	4	2	0	10	0	2	101	0	2
08:45	0	0	0	0	0	42	1	2	6	0	17	0	8	116	0	1
09:00	0	0	0	0	0	40	2	3	2	0	8	0	2	11	0	2
09:15	0	0	0	0	0	38	1	1	3	0	9	0	3	111	0	1
09:30	0	0	0	0	0	39	2	1	2	0	10	0	2	95	0	0
09:45	0	0	0	0	0	65	3	1	3	0	11	0	1	93	0	0
10:00	0	0	0	0	0	57	1	1	4	0	8	0	4	100	0	2
10:15	0	0	0	0	0	51	1	0	2	0	5	0	2	88	0	0
10:30	0	0	0	0	0	44	2	2	4	0	6	0	2	75	0	0
10:45	0	0	0	0	0	70	2	3	2	0	2	0	3	74	0	1
11:00	0	0	0	0	0	73	1	4	8	0	3	0	1	80	0	1
11:15	0	0	0	0	0	64	2	1	9	0	6	0	2	70	0	1
11:30	0	0	0	0	0	68	1	10	1	0	8	0	3	84	0	0
11:45	0	0	0	0	0	80	3	0	5	0	6	0	8	95	0	0
12:00	0	0	0	0	0	78	1	2	6	0	6	1	2	86	0	2
12:15	0	0	0	0	0	61	3	2	6	0	5	0	4	89	0	1
12:30	0	0	0	0	0	50	4	0	3	0	2	0	6	87	0	0
12:45	0	0	0	0	0	66	2	1	6	0	3	0	5	82	0	0
13:00	0	0	0	0	0	62	2	1	5	0	2	0	4	74	0	2
13:15	0	0	0	0	0	60	1	1	4	0	3	0	3	69	0	1
13:30	0	0	0	0	0	58	0	0	6	0	4	0	2	62	0	2
13:45	0	0	0	0	0	51	3	0	2	0	9	0	2	58	0	1
14:00	0	0	0	0	0	64	2	1	3	0	4	0	1	101	0	0
14:15	0	0	0	0	0	59	3	2	1	0	7	0	0	106	0	1

14:30	0	0	0	0	0	48	1	0	2	0	6	0	2	95	0	1
14:45	0	0	0	0	0	82	0	0	0	0	10	0	3	99	0	0
15:00	0	0	0	0	0	71	1	2	5	0	12	0	3	130	1	2
15:15	0	0	0	0	0	86	0	2	0	0	4	0	0	127	0	2
15:30	0	0	0	0	0	75	1	3	1	0	4	0	1	93	0	0
15:45	0	0	0	0	0	56	0	1	2	0	0	0	2	86	0	2
16:00	0	0	0	0	0	80	1	0	9	0	13	0	1	83	0	0
16:15	0	0	0	0	0	83	1	1	5	0	1	0	0	95	0	0
16:30	0	0	0	0	0	65	2	2	4	0	0	0	0	94	0	0
16:45	0	0	0	0	0	68	0	4	3	0	2	0	0	99	0	1
17:00	0	0	0	0	0	78	0	3	2	0	1	0	1	102	0	1
17:15	0	0	0	0	0	68	3	1	1	0	0	0	0	78	0	4
17:30	0	0	0	0	0	63	0	3	1	0	0	0	0	85	0	6
17:45	0	0	0	0	0	67	1	2	0	0	0	0	1	91	0	1

File Name:	Engineer Orlando Alarcon Avenue/Hangar Road at Airport Entrance (approx. 145 feet west of terminal) – Heavy Vehicles
Start Date:	5/9/2018
Start Time:	6:00:00 AM
Site Code:	00000123

	SB				WB				NB				EB			
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
06:00	0	0	0	0	0	0	1	0	0	0	0	0	0	2	0	0
06:15	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0
06:30	0	0	0	0	0	2	0	0	0	0	0	0	0	3	0	0
06:45	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0	0
07:00	0	0	0	0	0	5	0	0	0	0	0	0	0	1	0	0
07:15	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0
07:30	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0
07:45	0	0	0	0	0	3	0	0	0	0	0	0	0	2	0	0
08:00	0	0	0	0	0	1	0	0	0	0	1	0	0	2	0	0
08:15	0	0	0	0	0	1	0	0	0	0	0	0	0	3	0	0
08:30	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0
08:45	0	0	0	0	0	1	1	0	0	0	0	0	0	1	0	0
09:00	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0

09:15	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0
09:30	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
09:45	0	0	0	0	0	2	0	0	0	0	0	0	0	2	0	0
10:00	0	0	0	0	0	3	0	0	0	0	0	0	0	2	0	0
10:15	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0
10:30	0	0	0	0	0	1	0	0	0	0	0	0	0	3	0	0
10:45	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0
11:00	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0
11:15	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0
11:30	0	0	0	0	0	2	0	0	1	0	0	0	0	1	0	0
11:45	0	0	0	0	0	7	0	0	0	0	0	0	0	2	0	0
12:00	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
12:15	0	0	0	0	0	1	0	0	0	0	1	0	0	2	0	0
12:30	0	0	0	0	0	1	0	0	0	0	0	0	0	6	0	0
12:45	0	0	0	0	0	5	0	0	0	0	0	0	0	4	0	0
13:00	0	0	0	0	0	3	0	0	0	0	0	0	0	5	0	0
13:15	0	0	0	0	0	2	0	0	0	0	0	0	0	3	0	0
13:30	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0
13:45	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0
14:00	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0
14:15	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0
14:30	0	0	0	0	0	2	0	0	0	0	0	0	0	3	0	0
14:45	0	0	0	0	0	3	0	0	0	0	0	0	0	3	0	0
15:00	0	0	0	0	0	2	0	0	0	0	0	0	0	4	0	0
15:15	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0
15:30	0	0	0	0	0	4	0	0	0	0	0	0	0	2	0	0
15:45	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
16:00	0	0	0	0	0	2	0	0	0	0	0	0	0	2	0	0
16:15	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
16:45	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0
17:30	0	0	0	0	0	1	0	0	0	0	0	0	1	2	0	0
17:45	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0

File Name:	PR-107 at Engineer Orlando Alarcon Avenue/Hangar Road – All Vehicles
Start Date:	5/8/2018
Start Time:	6:00:00 AM
Site Code:	00000123

	SB				WB				NB				EB			
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
06:00	0	19	2	0	0	0	42	0	47	16	0	0	0	0	0	0
06:15	0	20	1	0	0	0	21	4	71	30	0	0	0	0	0	0
06:30	0	42	1	0	1	0	21	1	115	49	0	0	0	0	0	0
06:45	0	41	2	0	1	0	33	0	160	74	0	0	0	0	0	0
07:00	0	71	1	0	1	0	34	0	162	89	0	0	0	0	0	0
07:15	0	98	1	0	1	0	47	3	234	120	0	0	0	0	0	0
07:30	0	128	1	0	1	0	65	0	209	125	0	1	0	0	0	0
07:45	0	147	1	0	1	0	47	3	202	146	0	0	0	0	0	0
08:00	0	122	1	0	0	0	62	2	166	115	0	0	0	0	0	0
08:15	0	63	2	0	4	0	39	3	141	92	0	2	0	0	0	0
08:30	0	84	4	0	3	0	38	2	139	110	0	0	0	0	0	0
08:45	0	86	1	0	2	0	40	1	120	100	0	0	0	0	0	1
09:00	0	80	2	0	1	0	30	2	110	99	0	0	0	0	0	0
09:15	0	77	3	0	2	0	33	3	109	98	0	1	0	0	0	0
09:30	0	96	2	0	1	0	41	1	111	104	0	1	0	0	0	0
09:45	0	99	2	0	2	0	45	1	99	78	0	0	0	0	0	0
10:00	0	120	4	0	3	0	28	1	95	77	0	0	0	0	0	0
10:15	0	114	3	0	2	0	34	0	84	74	0	0	0	0	0	0
10:30	0	130	2	0	1	0	35	0	75	69	0	0	0	0	0	0
10:45	0	121	2	0	1	0	75	1	78	93	0	1	0	0	0	0
11:00	0	135	3	0	3	0	80	2	82	76	0	2	0	0	0	0
11:15	0	118	4	0	0	0	74	0	115	70	0	0	0	0	0	0
11:30	0	127	1	0	2	0	73	0	101	95	0	0	0	0	0	0
11:45	0	148	5	0	0	0	63	0	120	107	0	0	0	0	0	0
12:00	0	170	2	0	1	0	75	1	118	93	0	1	0	0	0	0
12:15	0	103	4	0	2	0	79	0	139	101	0	0	0	0	0	0
12:30	0	114	2	2	4	0	68	0	117	95	0	0	0	0	0	2
12:45	0	111	2	0	3	0	53	0	114	77	0	1	0	0	0	0
13:00	0	102	1	0	2	0	51	0	100	69	0	1	0	0	0	0
13:15	0	105	2	0	3	0	46	0	95	66	0	0	0	0	0	0
13:30	0	123	1	0	2	0	44	1	96	58	0	0	0	0	0	0
13:45	0	120	2	0	2	0	39	2	101	49	0	0	0	0	0	0
14:00	0	166	1	0	1	0	51	0	110	67	0	1	0	0	0	0
14:15	0	146	1	0	1	0	50	0	85	91	0	1	0	0	0	0
14:30	0	121	2	0	2	0	60	0	88	85	0	0	0	0	0	0
14:45	0	122	3	0	3	0	47	1	101	84	0	0	0	0	0	0

15:00	0	186	1	0	3	0	66	1	108	75	0	0	0	0	0	0
15:15	0	157	1	0	0	0	52	0	124	71	0	0	0	0	0	0
15:30	0	203	1	0	1	0	76	0	101	59	0	1	0	0	0	0
15:45	0	127	2	0	3	0	65	2	89	55	0	0	0	0	0	0
16:00	0	122	0	0	1	0	65	4	86	72	0	0	0	0	0	0
16:15	0	113	1	0	2	0	42	1	94	50	0	0	0	0	0	0
16:30	0	175	1	0	1	0	59	0	88	54	0	0	0	0	0	0
16:45	0	126	3	0	2	0	73	0	102	54	0	0	0	0	0	0
17:00	0	121	2	0	1	0	62	0	99	49	0	0	0	0	0	0
17:15	0	101	1	0	0	0	68	2	96	59	0	0	0	0	0	0
17:30	0	68	1	0	2	0	82	0	111	60	0	0	0	0	0	0
17:45	0	57	1	0	1	0	41	4	95	53	0	1	0	0	0	0

File Name:	PR-107 at Engineer Orlando Alarcon Avenue/Hangar Road – Heavy Vehicles
Start Date:	5/8/2018
Start Time:	6:00:00 AM
Site Code:	00000123

	SB				WB				NB				EB			
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
06:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45	0	1	0	0	0	0	0	0	3	0	0	0	0	0	0	0
07:00	0	1	0	0	0	0	0	0	2	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	1	0	2	1	0	0	0	0	0	0
08:30	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	0	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0
09:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:15	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0

09:30	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0
09:45	0	2	0	0	1	0	0	0	1	1	0	0	0	0	0	0
10:00	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0
10:15	0	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0
10:30	0	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0
10:45	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00	0	1	0	0	0	0	2	0	2	2	0	0	0	0	0	0
11:15	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0
11:30	0	2	0	0	0	0	4	0	0	0	0	0	0	0	0	0
11:45	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0
12:00	0	1	0	0	0	0	1	0	0	1	0	0	0	0	0	0
12:15	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0
12:30	0	1	0	0	0	0	2	0	2	0	0	0	0	0	0	0
12:45	0	1	0	0	1	0	3	0	0	1	0	0	0	0	0	0
13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30	0	1	0	0	1	0	0	0	2	0	0	0	0	0	0	0
13:45	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
14:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:15	0	2	0	0	0	0	0	0	2	1	0	0	0	0	0	0
14:30	0	1	0	0	1	0	0	0	1	2	0	0	0	0	0	0
14:45	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0
15:00	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0
15:15	0	1	1	0	0	0	2	0	1	0	0	0	0	0	0	0
15:30	0	2	0	0	0	0	1	0	0	1	0	0	0	0	0	0
15:45	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0
17:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Appendix B. Synchro Printouts for Existing Traffic Conditions

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PR-107 at PR-4467
AM peak-hour (7:15am to 8:15am)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	85	0	200	0	777	62	72	673	0
Future Volume (vph)	0	0	0	85	0	200	0	777	62	72	673	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	11	11	11	11	11	11
Storage Length (ft)	0		0	0		0	100		0	150		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.905			0.989				
Flt Protected					0.985					0.950		
Satd. Flow (prot)	0	0	0	0	1694	0	1837	1816	0	1745	1837	0
Flt Permitted					0.985					0.205		
Satd. Flow (perm)	0	0	0	0	1694	0	1837	1816	0	377	1837	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					163			11				
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		291			621			411			497	
Travel Time (s)		7.9			16.9			8.0			9.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	0	0	92	0	217	0	845	67	78	732	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	309	0	0	912	0	78	732	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.04	1.04	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors				1	2		1	2		1	2	
Detector Template				Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)				20	100		20	100		20	100	
Trailing Detector (ft)				0	0		0	0		0	0	
Detector 1 Position(ft)				0	0		0	0		0	0	
Detector 1 Size(ft)				20	6		20	6		20	6	
Detector 1 Type				Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)				0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)				0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)				0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)					94			94			94	
Detector 2 Size(ft)					6			6			6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type				Perm	NA		Perm	NA		Perm	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases					8			2			6	
Permitted Phases				8			2			6		
Detector Phase				8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)				5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)				22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)				22.5	22.5		47.5	47.5		47.5	47.5	
Total Split (%)				32.1%	32.1%		67.9%	67.9%		67.9%	67.9%	
Maximum Green (s)				18.0	18.0		43.0	43.0		43.0	43.0	
Yellow Time (s)				3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)				1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)					0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)					4.5		4.5	4.5		4.5	4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode				None	None		Max	Max		Max	Max	
Walk Time (s)				7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)				11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)				0	0		0	0		0	0	
Act Effct Green (s)					11.3			43.7		43.7	43.7	
Actuated g/C Ratio					0.18			0.68		0.68	0.68	
v/c Ratio					0.72			0.73		0.30	0.58	
Control Delay					21.3			12.6		9.5	8.8	
Queue Delay					0.0			0.0		0.0	0.0	
Total Delay					21.3			12.6		9.5	8.8	
LOS					C			B		A	A	
Approach Delay					21.3			12.6			8.8	
Approach LOS					C			B			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 64			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 12.4		Intersection LOS: B	
Intersection Capacity Utilization 77.1%		ICU Level of Service D	
Analysis Period (min) 15			
Description: PR-107 at PR-4467 (AM peak-hour)			

Splits and Phases: 3:

PR-107 at PR-4467
PM peak-hour (2:15pm to 3:15pm)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	96	0	159	0	499	147	66	661	0
Future Volume (vph)	0	0	0	96	0	159	0	499	147	66	661	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	11	11	11	11	11	11
Storage Length (ft)	0		0	0		0	100		0	150		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.916			0.966				
Flt Protected					0.982					0.950		
Satd. Flow (prot)	0	0	0	0	1703	0	1837	1761	0	1745	1837	0
Flt Permitted					0.982					0.320		
Satd. Flow (perm)	0	0	0	0	1703	0	1837	1761	0	588	1837	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					115			39				
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		291			621			411			497	
Travel Time (s)		7.9			16.9			8.0			9.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	1%	0%	0%	0%	1%	0%	0%	0%	0%
Adj. Flow (vph)	0	0	0	104	0	173	0	542	160	72	718	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	277	0	0	702	0	72	718	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.04	1.04	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors				1	2		1	2		1	2	
Detector Template				Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)				20	100		20	100		20	100	
Trailing Detector (ft)				0	0		0	0		0	0	
Detector 1 Position(ft)				0	0		0	0		0	0	
Detector 1 Size(ft)				20	6		20	6		20	6	
Detector 1 Type				Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)				0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)				0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)				0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)					94			94			94	
Detector 2 Size(ft)					6			6			6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type				Perm	NA		Perm	NA		Perm	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases					8			2			6	
Permitted Phases				8			2			6		
Detector Phase				8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)				5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)				22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)				22.5	22.5		47.5	47.5		47.5	47.5	
Total Split (%)				32.1%	32.1%		67.9%	67.9%		67.9%	67.9%	
Maximum Green (s)				18.0	18.0		43.0	43.0		43.0	43.0	
Yellow Time (s)				3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)				1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)					0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)					4.5		4.5	4.5		4.5	4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode				None	None		Max	Max		Max	Max	
Walk Time (s)				7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)				11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)				0	0		0	0		0	0	
Act Effct Green (s)					11.6			44.2		44.2	44.2	
Actuated g/C Ratio					0.18			0.68		0.68	0.68	
v/c Ratio					0.69			0.58		0.18	0.57	
Control Delay					23.4			8.4		6.3	8.7	
Queue Delay					0.0			0.0		0.0	0.0	
Total Delay					23.4			8.4		6.3	8.7	
LOS					C			A		A	A	
Approach Delay					23.4			8.4			8.4	
Approach LOS					C			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 64.9			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 10.8		Intersection LOS: B	
Intersection Capacity Utilization 65.7%		ICU Level of Service C	
Analysis Period (min) 15			
Description: PR-107 at PR-4467 (PM peak-hour)			

Splits and Phases: 3:

PR-467 at PR-459
AM peak-hour (7:15am to 8:15am)

Intersection	
Int Delay, s/veh	149.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	193	155	244	563	538	263
Future Vol, veh/h	193	155	244	563	538	263
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	150	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	0	1	1	1	0
Mvmt Flow	210	168	265	612	585	286

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1870	728	871	0	-	0
Stage 1	728	-	-	-	-	-
Stage 2	1142	-	-	-	-	-
Critical Hdwy	6.41	6.2	4.11	-	-	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.3	2.209	-	-	-
Pot Cap-1 Maneuver	~ 80	427	778	-	-	-
Stage 1	480	-	-	-	-	-
Stage 2	306	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 53	427	778	-	-	-
Mov Cap-2 Maneuver	~ 53	-	-	-	-	-
Stage 1	480	-	-	-	-	-
Stage 2	~ 202	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	$ 834.4	3.6	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	778	-	53	427	-	-
HCM Lane V/C Ratio	0.341	-	3.958	0.395	-	-
HCM Control Delay (s)	12	-	$ 1489.5	18.8	-	-
HCM Lane LOS	B	-	F	C	-	-
HCM 95th %tile Q(veh)	1.5	-	23	1.8	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	93.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	202	0	205	0	0	0	207	479	0	0	463	221
Future Vol, veh/h	202	0	205	0	0	0	207	479	0	0	463	221
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	50	-	-	-	150	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	1	0	3	2	2	2	1	1	0	0	1	0
Mvmt Flow	220	0	223	0	0	0	225	521	0	0	503	240

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	1594	-	623	743	0	-	-	-	0
Stage 1	623	-	-	-	-	-	-	-	-
Stage 2	971	-	-	-	-	-	-	-	-
Critical Hdwy	6.41	-	6.23	4.11	-	-	-	-	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	-	3.327	2.209	-	-	-	-	-
Pot Cap-1 Maneuver	~ 118	0	484	869	-	0	0	-	-
Stage 1	537	0	-	-	-	0	0	-	-
Stage 2	369	0	-	-	-	0	0	-	-
Platoon blocked, %					-			-	-
Mov Cap-1 Maneuver	~ 87	0	484	869	-	-	-	-	-
Mov Cap-2 Maneuver	~ 87	0	-	-	-	-	-	-	-
Stage 1	537	0	-	-	-	-	-	-	-
Stage 2	273	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	$ 403.8	3.2	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	869	-	87	484	-	-
HCM Lane V/C Ratio	0.259	-	2.524	0.46	-	-
HCM Control Delay (s)	10.6	-	$ 794.8	18.6	-	-
HCM Lane LOS	B	-	F	C	-	-
HCM 95th %tile Q(veh)	1	-	20.6	2.4	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	424.4

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	0	1	223	3	128	267	284	116	98	426	52
Future Vol, veh/h	1	0	1	223	3	128	267	284	116	98	426	52
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	1	1	1	0	0	1	4
Mvmt Flow	1	0	1	242	3	139	290	309	126	107	463	57

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1658	1719	491	1657	1685	372	520	0	0	435	0	0
Stage 1	704	704	-	952	952	-	-	-	-	-	-	-
Stage 2	954	1015	-	705	733	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.21	4.11	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.309	2.209	-	-	2.2	-	-
Pot Cap-1 Maneuver	79	91	582	~ 79	95	676	1051	-	-	1135	-	-
Stage 1	431	443	-	314	341	-	-	-	-	-	-	-
Stage 2	313	318	-	430	429	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	39	50	582	~ 51	52	676	1051	-	-	1135	-	-
Mov Cap-2 Maneuver	39	50	-	~ 51	52	-	-	-	-	-	-	-
Stage 1	271	384	-	~ 198	214	-	-	-	-	-	-	-
Stage 2	154	200	-	372	372	-	-	-	-	-	-	-

Approach	SE	NW	NE	SW
HCM Control Delay, s	55.8	$ 1907.1	3.9	1.4
HCM LOS	F	F		

Minor Lane/Major Mvmt	NEL	NET	NER	NWLn1	SELn1	SWL	SWT	SWR
Capacity (veh/h)	1051	-	-	77	73	1135	-	-
HCM Lane V/C Ratio	0.276	-	-	4.997	0.03	0.094	-	-
HCM Control Delay (s)	9.7	0	$ 1907.1	55.8	8.5	0	-	
HCM Lane LOS	A	A	-	F	F	A	A	-
HCM 95th %tile Q(veh)	1.1	-	-	41.9	0.1	0.3	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	22.7

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	1	1	139	3	57	120	211	152	96	288	25
Future Vol, veh/h	1	1	1	139	3	57	120	211	152	96	288	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	1	0	2	1	1	2	1	0	8
Mvmt Flow	1	1	1	151	3	62	130	229	165	104	313	27

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1109	1190	327	1109	1122	312	340	0	0	395	0	0
Stage 1	535	535	-	573	573	-	-	-	-	-	-	-
Stage 2	574	655	-	536	549	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.11	6.5	6.22	4.11	-	-	4.11	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.11	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.11	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.509	4	3.318	2.209	-	-	2.209	-	-
Pot Cap-1 Maneuver	189	189	719	188	208	728	1225	-	-	1169	-	-
Stage 1	533	527	-	506	507	-	-	-	-	-	-	-
Stage 2	507	466	-	530	520	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	140	145	719	153	159	728	1225	-	-	1169	-	-
Mov Cap-2 Maneuver	140	145	-	153	159	-	-	-	-	-	-	-
Stage 1	459	469	-	436	437	-	-	-	-	-	-	-
Stage 2	396	401	-	470	463	-	-	-	-	-	-	-

Approach	SE	NW	NE	SW
HCM Control Delay, s	23.9	115	2.1	2
HCM LOS	C	F		

Minor Lane/Major Mvmt	NEL	NET	NER	NWLn1	SELn1	SWL	SWT	SWR
Capacity (veh/h)	1225	-	-	212	194	1169	-	-
HCM Lane V/C Ratio	0.106	-	-	1.02	0.017	0.089	-	-
HCM Control Delay (s)	8.3	0	-	115	23.9	8.4	0	-
HCM Lane LOS	A	A	-	F	C	A	A	-
HCM 95th %tile Q(veh)	0.4	-	-	9.3	0.1	0.3	-	-

Intersection	
Int Delay, s/veh	8.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	14	0	349	0	0	0	0	670	0	0	597	0
Future Vol, veh/h	14	0	349	0	0	0	0	670	0	0	597	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	14	0	1	2	2	2	0	1	0	0	1	0
Mvmt Flow	15	0	379	0	0	0	0	728	0	0	649	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	1377	1377	649	-	0	-	-	-	0
Stage 1	649	649	-	-	-	-	-	-	-
Stage 2	728	728	-	-	-	-	-	-	-
Critical Hdwy	6.54	6.5	6.21	-	-	-	-	-	-
Critical Hdwy Stg 1	5.54	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.54	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.626	4	3.309	-	-	-	-	-	-
Pot Cap-1 Maneuver	150	146	472	0	-	0	0	-	0
Stage 1	498	469	-	0	-	0	0	-	0
Stage 2	457	432	-	0	-	0	0	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	150	0	472	-	-	-	-	-	-
Mov Cap-2 Maneuver	150	0	-	-	-	-	-	-	-
Stage 1	498	0	-	-	-	-	-	-	-
Stage 2	457	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	38.6	0	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	480	-
HCM Lane V/C Ratio	-	0.822	-
HCM Control Delay (s)	-	38.6	-
HCM Lane LOS	-	E	-
HCM 95th %tile Q(veh)	-	7.9	-

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	19	0	246	0	0	0	0	573	0	0	363	0
Future Vol, veh/h	19	0	246	0	0	0	0	573	0	0	363	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	1	2	2	2	0	1	0	0	1	0
Mvmt Flow	21	0	267	0	0	0	0	623	0	0	395	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	1018	1018	395	-	0	-	-	-	0
Stage 1	395	395	-	-	-	-	-	-	-
Stage 2	623	623	-	-	-	-	-	-	-
Critical Hdwy	6.4	6.5	6.21	-	-	-	-	-	-
Critical Hdwy Stg 1	5.4	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.4	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.309	-	-	-	-	-	-
Pot Cap-1 Maneuver	265	239	656	0	-	0	0	-	0
Stage 1	685	608	-	0	-	0	0	-	0
Stage 2	539	481	-	0	-	0	0	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	265	0	656	-	-	-	-	-	-
Mov Cap-2 Maneuver	265	0	-	-	-	-	-	-	-
Stage 1	685	0	-	-	-	-	-	-	-
Stage 2	539	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.5	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	707	-
HCM Lane V/C Ratio	-	0.407	-
HCM Control Delay (s)	-	13.5	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	2	-

Intersection	
Int Delay, s/veh	86.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	99	0	271	0	644	52	110	358	0
Future Vol, veh/h	0	0	0	99	0	271	0	644	52	110	358	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	1	0	0	0	1	4	2	1	0
Mvmt Flow	0	0	0	108	0	295	0	700	57	120	389	0

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	1356	1356	728	-	0	0	757	0	0
Stage 1	728	728	-	-	-	-	-	-	-
Stage 2	628	628	-	-	-	-	-	-	-
Critical Hdwy	7.11	6.5	6.2	-	-	-	4.12	-	-
Critical Hdwy Stg 1	6.11	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.11	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	4	3.3	-	-	-	2.218	-	-
Pot Cap-1 Maneuver	127	151	427	0	-	-	854	-	0
Stage 1	416	432	-	0	-	-	-	-	0
Stage 2	472	479	-	0	-	-	-	-	0
Platoon blocked, %					-	-		-	
Mov Cap-1 Maneuver	110	124	427	-	-	-	854	-	-
Mov Cap-2 Maneuver	110	124	-	-	-	-	-	-	-
Stage 1	416	432	-	-	-	-	-	-	-
Stage 2	388	393	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 354.4	0	2.3
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	241	854	-
HCM Lane V/C Ratio	-	-	1.669	0.14	-
HCM Control Delay (s)	-	-	$ 354.4	9.9	0
HCM Lane LOS	-	-	F	A	A
HCM 95th %tile Q(veh)	-	-	26	0.5	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	7.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	42	0	86	0	386	109	257	439	0
Future Vol, veh/h	0	0	0	42	0	86	0	386	109	257	439	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	5	0	1	0	1	2	0	2	0
Mvmt Flow	0	0	0	46	0	93	0	420	118	279	477	0

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	1515	1515	479	-	0	0	538	0	0
Stage 1	479	479	-	-	-	-	-	-	-
Stage 2	1036	1036	-	-	-	-	-	-	-
Critical Hdwy	6.45	6.5	6.21	-	-	-	4.1	-	-
Critical Hdwy Stg 1	5.45	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.45	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.545	4	3.309	-	-	-	2.2	-	-
Pot Cap-1 Maneuver	129	121	589	0	-	-	1040	-	0
Stage 1	617	558	-	0	-	-	-	-	0
Stage 2	338	311	-	0	-	-	-	-	0
Platoon blocked, %					-	-		-	
Mov Cap-1 Maneuver	82	0	589	-	-	-	1040	-	-
Mov Cap-2 Maneuver	82	0	-	-	-	-	-	-	-
Stage 1	617	0	-	-	-	-	-	-	-
Stage 2	215	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	60.1	0	3.6
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	194	1040	-
HCM Lane V/C Ratio	-	-	0.717	0.269	-
HCM Control Delay (s)	-	-	60.1	9.7	0
HCM Lane LOS	-	-	F	A	A
HCM 95th %tile Q(veh)	-	-	4.6	1.1	-

Intersection	
Int Delay, s/veh	14.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	453	0	534	0	27	375	82	10	0
Future Vol, veh/h	0	0	0	453	0	534	0	27	375	82	10	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	Free	-	-	None
Storage Length	-	-	-	0	-	200	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	1	0	1	0	0	1	0	0	0
Mvmt Flow	0	0	0	492	0	580	0	29	408	89	11	0

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	218	-	29	-	0	-	29	0	0
Stage 1	29	-	-	-	-	-	-	-	-
Stage 2	189	-	-	-	-	-	-	-	-
Critical Hdwy	6.41	-	6.21	-	-	-	4.1	-	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	-	3.309	-	-	-	2.2	-	-
Pot Cap-1 Maneuver	772	0	1049	0	-	0	1597	-	0
Stage 1	996	0	-	0	-	0	-	-	0
Stage 2	846	0	-	0	-	0	-	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	729	0	1049	-	-	-	1597	-	-
Mov Cap-2 Maneuver	729	0	-	-	-	-	-	-	-
Stage 1	996	0	-	-	-	-	-	-	-
Stage 2	799	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.8	0	6.6
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	729	1049	1597	-
HCM Lane V/C Ratio	-	0.675	0.553	0.056	-
HCM Control Delay (s)	-	19.6	12.6	7.4	0
HCM Lane LOS	-	C	B	A	A
HCM 95th %tile Q(veh)	-	5.3	3.5	0.2	-

Intersection	
Int Delay, s/veh	11.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	215	0	282	0	26	731	194	7	0
Future Vol, veh/h	0	0	0	215	0	282	0	26	731	194	7	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	Free	-	-	None
Storage Length	-	-	-	0	-	200	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	1	0	1	0	0	0	1	14	0
Mvmt Flow	0	0	0	234	0	307	0	28	795	211	8	0

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	457	-	28	-	0	-	28	0	0
Stage 1	28	-	-	-	-	-	-	-	-
Stage 2	429	-	-	-	-	-	-	-	-
Critical Hdwy	6.41	-	6.21	-	-	-	4.11	-	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	-	3.309	-	-	-	2.209	-	-
Pot Cap-1 Maneuver	563	0	1050	0	-	0	1592	-	0
Stage 1	997	0	-	0	-	0	-	-	0
Stage 2	659	0	-	0	-	0	-	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	488	0	1050	-	-	-	1592	-	-
Mov Cap-2 Maneuver	488	0	-	-	-	-	-	-	-
Stage 1	997	0	-	-	-	-	-	-	-
Stage 2	571	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.8	0	7.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	488	1050	1592	-
HCM Lane V/C Ratio	-	0.479	0.292	0.132	-
HCM Control Delay (s)	-	19	9.8	7.6	0
HCM Lane LOS	-	C	A	A	A
HCM 95th %tile Q(veh)	-	2.6	1.2	0.5	-

Guard Road at Crown Road
AM peak-hour (7:15am to 8:15am)

Intersection	
Int Delay, s/veh	10.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	352	0	58	0	54	288	38	30	0
Future Vol, veh/h	0	0	0	352	0	58	0	54	288	38	30	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	0	0	0	0	2	0	0	0
Mvmt Flow	0	0	0	383	0	63	0	59	313	41	33	0

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	330	330	215	-	0	0	372	0	0
Stage 1	215	215	-	-	-	-	-	-	-
Stage 2	115	115	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.5	6.2	-	-	-	4.1	-	-
Critical Hdwy Stg 1	5.42	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4	3.3	-	-	-	2.2	-	-
Pot Cap-1 Maneuver	665	592	830	0	-	-	1198	-	0
Stage 1	821	729	-	0	-	-	-	-	0
Stage 2	910	804	-	0	-	-	-	-	0
Platoon blocked, %					-	-		-	
Mov Cap-1 Maneuver	642	0	830	-	-	-	1198	-	-
Mov Cap-2 Maneuver	642	0	-	-	-	-	-	-	-
Stage 1	821	0	-	-	-	-	-	-	-
Stage 2	878	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	20.8	0	4.5
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	663	1198	-
HCM Lane V/C Ratio	-	-	0.672	0.034	-
HCM Control Delay (s)	-	-	20.8	8.1	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	5.2	0.1	-

Intersection	
Int Delay, s/veh	5.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	209	0	20	0	32	407	72	19	0
Future Vol, veh/h	0	0	0	209	0	20	0	32	407	72	19	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	1	0	0	0	0	1	1	5	0
Mvmt Flow	0	0	0	227	0	22	0	35	442	78	21	0

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	433	433	256	-	0	0	477	0	0
Stage 1	256	256	-	-	-	-	-	-	-
Stage 2	177	177	-	-	-	-	-	-	-
Critical Hdwy	6.41	6.5	6.2	-	-	-	4.11	-	-
Critical Hdwy Stg 1	5.41	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.41	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	4	3.3	-	-	-	2.209	-	-
Pot Cap-1 Maneuver	582	519	788	0	-	-	1090	-	0
Stage 1	789	699	-	0	-	-	-	-	0
Stage 2	856	756	-	0	-	-	-	-	0
Platoon blocked, %					-	-		-	
Mov Cap-1 Maneuver	540	0	788	-	-	-	1090	-	-
Mov Cap-2 Maneuver	540	0	-	-	-	-	-	-	-
Stage 1	789	0	-	-	-	-	-	-	-
Stage 2	794	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.7	0	6.8
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	555	1090	-
HCM Lane V/C Ratio	-	-	0.448	0.072	-
HCM Control Delay (s)	-	-	16.7	8.6	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	2.3	0.2	-

Engineer Orlando Alarcon Avenue at Airport Entrance
AM peak-hour

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	507	29	12	325	0	0
Future Volume (Veh/h)	507	29	12	325	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	551	32	13	353	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			583		946	567
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			583		946	567
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	100
cM capacity (veh/h)			1001		286	523

Direction, Lane #	EB 1	WB 1
Volume Total	583	366
Volume Left	0	13
Volume Right	32	0
cSH	1700	1001
Volume to Capacity	0.34	0.01
Queue Length 95th (ft)	0	1
Control Delay (s)	0.0	0.4
Lane LOS		A
Approach Delay (s)	0.0	0.4
Approach LOS		

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	31.8%	ICU Level of Service	A
Analysis Period (min)	15		
Description: Engineer Orlando Alarcon Avenue/Hanger Road at Airport Entrance (immediately west of terminal)			

Engineer Orlando Alarcon Avenue at Airport Entrance
PM peak-hour (2:15pm to 3:15pm)

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	478	4	9	307	0	0
Future Volume (Veh/h)	478	4	9	307	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	520	4	10	334	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			524		876	522
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			524		876	522
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	100
cM capacity (veh/h)			1053		316	555

Direction, Lane #	EB 1	WB 1
Volume Total	524	344
Volume Left	0	10
Volume Right	4	0
cSH	1700	1053
Volume to Capacity	0.31	0.01
Queue Length 95th (ft)	0	1
Control Delay (s)	0.0	0.3
Lane LOS		A
Approach Delay (s)	0.0	0.3
Approach LOS		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	28.7%	ICU Level of Service	A
Analysis Period (min)	15		
Description: Engineer Orlando Alarcon Avenue at Airport Entrance			

Intersection	
Int Delay, s/veh	0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	499	28	14	329	18	17
Future Vol, veh/h	499	28	14	329	18	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	0	0	2	6	0
Mvmt Flow	542	30	15	358	20	18

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	573	0	946	558
Stage 1	-	-	-	-	558	-
Stage 2	-	-	-	-	388	-
Critical Hdwy	-	-	4.1	-	6.46	6.2
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	-	-	2.2	-	3.554	3.3
Pot Cap-1 Maneuver	-	-	1010	-	285	533
Stage 1	-	-	-	-	565	-
Stage 2	-	-	-	-	677	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1010	-	280	533
Mov Cap-2 Maneuver	-	-	-	-	280	-
Stage 1	-	-	-	-	565	-
Stage 2	-	-	-	-	664	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	16
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	364	-	-	1010	-
HCM Lane V/C Ratio	0.105	-	-	0.015	-
HCM Control Delay (s)	16	-	-	8.6	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	430	8	5	260	35	8
Future Vol, veh/h	430	8	5	260	35	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	0	0	3	0	0
Mvmt Flow	467	9	5	283	38	9

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	476	0	765	472
Stage 1	-	-	-	-	472	-
Stage 2	-	-	-	-	293	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1097	-	374	596
Stage 1	-	-	-	-	632	-
Stage 2	-	-	-	-	762	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1097	-	372	596
Mov Cap-2 Maneuver	-	-	-	-	372	-
Stage 1	-	-	-	-	632	-
Stage 2	-	-	-	-	758	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	15.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	400	-	-	1097	-
HCM Lane V/C Ratio	0.117	-	-	0.005	-
HCM Control Delay (s)	15.2	-	-	8.3	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0	-

PR 107 at Hanger Road
AM peak-hour (7:15am to 8:15am)

Intersection	
Int Delay, s/veh	11.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	221	0	3	0	506	811	4	495	0
Future Vol, veh/h	0	0	0	221	0	3	0	506	811	4	495	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	Yield	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	0	0	33	0	0	0	0	0	0
Mvmt Flow	0	0	0	240	0	3	0	550	882	4	538	0

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	1097	1097	550	-	0	0	550	0	0
Stage 1	550	550	-	-	-	-	-	-	-
Stage 2	547	547	-	-	-	-	-	-	-
Critical Hdwy	6.4	6.5	6.53	-	-	-	4.1	-	-
Critical Hdwy Stg 1	5.4	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.4	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.597	-	-	-	2.2	-	-
Pot Cap-1 Maneuver	~ 238	215	480	0	-	-	1030	-	0
Stage 1	582	519	-	0	-	-	-	-	0
Stage 2	584	521	-	0	-	-	-	-	0
Platoon blocked, %					-	-		-	
Mov Cap-1 Maneuver	~ 237	0	480	-	-	-	1030	-	-
Mov Cap-2 Maneuver	~ 237	0	-	-	-	-	-	-	-
Stage 1	582	0	-	-	-	-	-	-	-
Stage 2	580	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	107.5	0	0.1
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	239	1030	-
HCM Lane V/C Ratio	-	-	1.019	0.004	-
HCM Control Delay (s)	-	-	107.5	8.5	0
HCM Lane LOS	-	-	F	A	A
HCM 95th %tile Q(veh)	-	-	9.8	0	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	11.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	223	0	9	0	335	382	7	575	0
Future Vol, veh/h	0	0	0	223	0	9	0	335	382	7	575	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	Yield	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	0	0	11	0	1	1	0	1	0
Mvmt Flow	0	0	0	242	0	10	0	364	415	8	625	0

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	1004	1004	364	-	0	0	364	0	0
Stage 1	364	364	-	-	-	-	-	-	-
Stage 2	640	640	-	-	-	-	-	-	-
Critical Hdwy	6.4	6.5	6.31	-	-	-	4.1	-	-
Critical Hdwy Stg 1	5.4	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.4	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.399	-	-	-	2.2	-	-
Pot Cap-1 Maneuver	270	244	661	0	-	-	1206	-	0
Stage 1	707	627	-	0	-	-	-	-	0
Stage 2	529	473	-	0	-	-	-	-	0
Platoon blocked, %					-	-		-	
Mov Cap-1 Maneuver	267	0	661	-	-	-	1206	-	-
Mov Cap-2 Maneuver	267	0	-	-	-	-	-	-	-
Stage 1	707	0	-	-	-	-	-	-	-
Stage 2	524	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	77	0	0.1
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	273	1206	-
HCM Lane V/C Ratio	-	-	0.924	0.006	-
HCM Control Delay (s)	-	-	77	8	0
HCM Lane LOS	-	-	F	A	A
HCM 95th %tile Q(veh)	-	-	8.5	0	-

Appendix C. Synchro Printouts for Future Traffic Conditions

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PR-107 at PR-4467
AM peak-hour (7:15am to 8:15am)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	85	0	210	0	793	62	82	689	0
Future Volume (vph)	0	0	0	85	0	210	0	793	62	82	689	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	11	11	11	11	11	11
Storage Length (ft)	0		0	0		0	100		0	150		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.904			0.989				
Flt Protected					0.986					0.950		
Satd. Flow (prot)	0	0	0	0	1694	0	1837	1800	0	1745	1818	0
Flt Permitted					0.986					0.195		
Satd. Flow (perm)	0	0	0	0	1694	0	1837	1800	0	358	1818	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					172			10				
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		291			621			411			497	
Travel Time (s)		7.9			16.9			8.0			9.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	0%	0%	0%	0%	1%	0%	0%	1%	0%
Adj. Flow (vph)	0	0	0	92	0	228	0	862	67	89	749	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	320	0	0	929	0	89	749	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.04	1.04	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors				1	2		1	2		1	2	
Detector Template				Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)				20	100		20	100		20	100	
Trailing Detector (ft)				0	0		0	0		0	0	
Detector 1 Position(ft)				0	0		0	0		0	0	
Detector 1 Size(ft)				20	6		20	6		20	6	
Detector 1 Type				Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)				0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)				0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)				0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)					94			94			94	
Detector 2 Size(ft)					6			6			6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type				Perm	NA		Perm	NA		Perm	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases					8			2			6	
Permitted Phases				8			2			6		
Detector Phase				8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)				5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)				22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)				22.5	22.5		47.5	47.5		47.5	47.5	
Total Split (%)				32.1%	32.1%		67.9%	67.9%		67.9%	67.9%	
Maximum Green (s)				18.0	18.0		43.0	43.0		43.0	43.0	
Yellow Time (s)				3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)				1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)					0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)					4.5		4.5	4.5		4.5	4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode				None	None		Max	Max		Max	Max	
Walk Time (s)				7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)				11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)				0	0		0	0		0	0	
Act Effct Green (s)					11.3			43.5		43.5	43.5	
Actuated g/C Ratio					0.18			0.68		0.68	0.68	
v/c Ratio					0.73			0.76		0.37	0.61	
Control Delay					21.4			13.5		11.3	9.2	
Queue Delay					0.0			0.0		0.0	0.0	
Total Delay					21.4			13.5		11.3	9.2	
LOS					C			B		B	A	
Approach Delay					21.4			13.5			9.4	
Approach LOS					C			B			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 63.9			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 13.1		Intersection LOS: B	
Intersection Capacity Utilization 78.9%		ICU Level of Service D	
Analysis Period (min) 15			
Description: PR-107 at PR-4467 (AM peak-hour)			

Splits and Phases: 3:

PR-107 at PR-4467
PM peak-hour (2:15pm to 3:15pm)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	169	0	159	0	515	147	76	677	0
Future Volume (vph)	0	0	0	169	0	159	0	515	147	76	677	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	11	11	11	11	11	11
Storage Length (ft)	0		0	0		0	100		0	150		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.935			0.967				
Flt Protected					0.975					0.950		
Satd. Flow (prot)	0	0	0	0	1723	0	1837	1762	0	1745	1818	0
Flt Permitted					0.975					0.284		
Satd. Flow (perm)	0	0	0	0	1723	0	1837	1762	0	522	1818	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					65			38				
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		291			621			411			497	
Travel Time (s)		7.9			16.9			8.0			9.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	1%	0%	0%	0%	1%	0%	0%	1%	0%
Adj. Flow (vph)	0	0	0	184	0	173	0	560	160	83	736	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	357	0	0	720	0	83	736	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.04	1.04	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors				1	2		1	2		1	2	
Detector Template				Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)				20	100		20	100		20	100	
Trailing Detector (ft)				0	0		0	0		0	0	
Detector 1 Position(ft)				0	0		0	0		0	0	
Detector 1 Size(ft)				20	6		20	6		20	6	
Detector 1 Type				Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)				0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)				0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)				0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)					94			94			94	
Detector 2 Size(ft)					6			6			6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type				Perm	NA		Perm	NA		Perm	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases					8			2			6	
Permitted Phases				8			2			6		
Detector Phase				8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)				5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)				22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)				22.5	22.5		47.5	47.5		47.5	47.5	
Total Split (%)				32.1%	32.1%		67.9%	67.9%		67.9%	67.9%	
Maximum Green (s)				18.0	18.0		43.0	43.0		43.0	43.0	
Yellow Time (s)				3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)				1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)					0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)					4.5		4.5	4.5		4.5	4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode				None	None		Max	Max		Max	Max	
Walk Time (s)				7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)				11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)				0	0		0	0		0	0	
Act Effct Green (s)					15.5			43.1		43.1	43.1	
Actuated g/C Ratio					0.23			0.64		0.64	0.64	
v/c Ratio					0.80			0.63		0.25	0.64	
Control Delay					35.1			10.7		8.5	11.2	
Queue Delay					0.0			0.0		0.0	0.0	
Total Delay					35.1			10.7		8.5	11.2	
LOS					D			B		A	B	
Approach Delay					35.1			10.7			11.0	
Approach LOS					D			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 67.6			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 15.4		Intersection LOS: B	
Intersection Capacity Utilization 70.6%		ICU Level of Service C	
Analysis Period (min) 15			
Description: PR-107 at PR-4467 (PM peak-hour)			

Splits and Phases: 3:

Intersection	
Int Delay, s/veh	169.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	203	155	244	563	538	273
Future Vol, veh/h	203	155	244	563	538	273
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	150	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	0	1	1	1	0
Mvmt Flow	221	168	265	612	585	297

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1875	733	882	0	-	0
Stage 1	733	-	-	-	-	-
Stage 2	1142	-	-	-	-	-
Critical Hdwy	6.41	6.2	4.11	-	-	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.3	2.209	-	-	-
Pot Cap-1 Maneuver	~ 79	424	771	-	-	-
Stage 1	477	-	-	-	-	-
Stage 2	306	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 52	424	771	-	-	-
Mov Cap-2 Maneuver	~ 52	-	-	-	-	-
Stage 1	477	-	-	-	-	-
Stage 2	~ 201	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	$ 926.4	3.7	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	771	-	52	424	-	-
HCM Lane V/C Ratio	0.344	-	4.243	0.397	-	-
HCM Control Delay (s)	12.1	-	$ 1619.3	19	-	-
HCM Lane LOS	B	-	F	C	-	-
HCM 95th %tile Q(veh)	1.5	-	24.5	1.9	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	105.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	212	0	205	0	0	0	207	479	0	0	463	231
Future Vol, veh/h	212	0	205	0	0	0	207	479	0	0	463	231
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	50	-	-	-	150	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	1	0	3	2	2	2	1	1	0	0	1	0
Mvmt Flow	230	0	223	0	0	0	225	521	0	0	503	251

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	1600	-	629	754	0	-	-	-	0
Stage 1	629	-	-	-	-	-	-	-	-
Stage 2	971	-	-	-	-	-	-	-	-
Critical Hdwy	6.41	-	6.23	4.11	-	-	-	-	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	-	3.327	2.209	-	-	-	-	-
Pot Cap-1 Maneuver	~ 117	0	480	861	-	0	0	-	-
Stage 1	533	0	-	-	-	0	0	-	-
Stage 2	369	0	-	-	-	0	0	-	-
Platoon blocked, %					-			-	-
Mov Cap-1 Maneuver	~ 86	0	480	861	-	-	-	-	-
Mov Cap-2 Maneuver	~ 86	0	-	-	-	-	-	-	-
Stage 1	533	0	-	-	-	-	-	-	-
Stage 2	273	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	$ 448.7	3.2	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	861	-	86	480	-	-
HCM Lane V/C Ratio	0.261	-	2.679	0.464	-	-
HCM Control Delay (s)	10.7	-	$ 864.4	18.8	-	-
HCM Lane LOS	B	-	F	C	-	-
HCM 95th %tile Q(veh)	1	-	22	2.4	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

PR-110 at PR-459 North
AM peak-hour (7:15am to 8:15am)

Intersection	
Int Delay, s/veh	467.1

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	0	1	233	3	128	267	284	126	98	426	52
Future Vol, veh/h	1	0	1	233	3	128	267	284	126	98	426	52
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	1	1	1	0	0	1	4
Mvmt Flow	1	0	1	253	3	139	290	309	137	107	463	57

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1663	1730	491	1663	1691	377	520	0	0	446	0	0
Stage 1	704	704	-	958	958	-	-	-	-	-	-	-
Stage 2	959	1026	-	705	733	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.21	4.11	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.309	2.209	-	-	2.2	-	-
Pot Cap-1 Maneuver	78	89	582	~ 78	94	672	1051	-	-	1125	-	-
Stage 1	431	443	-	312	338	-	-	-	-	-	-	-
Stage 2	311	315	-	430	429	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	38	48	582	~ 50	51	672	1051	-	-	1125	-	-
Mov Cap-2 Maneuver	38	48	-	~ 50	51	-	-	-	-	-	-	-
Stage 1	270	383	-	~ 195	212	-	-	-	-	-	-	-
Stage 2	152	197	-	371	371	-	-	-	-	-	-	-

Approach	SE	NW	NE	SW
HCM Control Delay, s	57.3	$ 2067.8	3.8	1.5
HCM LOS	F	F		

Minor Lane/Major Mvmt	NEL	NET	NER	NWLn1	SELn1	SWL	SWT	SWR
Capacity (veh/h)	1051	-	-	74	71	1125	-	-
HCM Lane V/C Ratio	0.276	-	-	5.347	0.031	0.095	-	-
HCM Control Delay (s)	9.7	0	$ 2067.8	57.3	8.5	0	-	
HCM Lane LOS	A	A	-	F	F	A	A	-
HCM 95th %tile Q(veh)	1.1	-	-	43.6	0.1	0.3	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

PR 110 at PR 459 North
PM peak-hour (2:15pm to 3:15pm)

Intersection	
Int Delay, s/veh	29.8

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	1	1	149	3	57	120	211	162	96	288	25
Future Vol, veh/h	1	1	1	149	3	57	120	211	162	96	288	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	1	0	2	1	1	2	1	0	8
Mvmt Flow	1	1	1	162	3	62	130	229	176	104	313	27

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1115	1201	327	1114	1127	317	340	0	0	405	0	0
Stage 1	535	535	-	578	578	-	-	-	-	-	-	-
Stage 2	580	666	-	536	549	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.11	6.5	6.22	4.11	-	-	4.11	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.11	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.11	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.509	4	3.318	2.209	-	-	2.209	-	-
Pot Cap-1 Maneuver	187	186	719	186	206	724	1225	-	-	1159	-	-
Stage 1	533	527	-	503	504	-	-	-	-	-	-	-
Stage 2	504	460	-	530	520	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	138	142	719	~ 151	157	724	1225	-	-	1159	-	-
Mov Cap-2 Maneuver	138	142	-	~ 151	157	-	-	-	-	-	-	-
Stage 1	458	469	-	432	433	-	-	-	-	-	-	-
Stage 2	393	395	-	469	462	-	-	-	-	-	-	-

Approach	SE	NW	NE	SW
HCM Control Delay, s	24.2	149.9	2	2
HCM LOS	C	F		

Minor Lane/Major Mvmt	NEL	NET	NER	NWLn1	SELn1	SWL	SWT	SWR
Capacity (veh/h)	1225	-	-	202	191	1159	-	-
HCM Lane V/C Ratio	0.106	-	-	1.125	0.017	0.09	-	-
HCM Control Delay (s)	8.3	0	-	149.9	24.2	8.4	0	-
HCM Lane LOS	A	A	-	F	C	A	A	-
HCM 95th %tile Q(veh)	0.4	-	-	10.9	0.1	0.3	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	8.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	14	0	349	0	0	0	0	680	0	0	607	0
Future Vol, veh/h	14	0	349	0	0	0	0	680	0	0	607	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	14	0	1	2	2	2	0	1	0	0	1	0
Mvmt Flow	15	0	379	0	0	0	0	739	0	0	660	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	1399	1399	660	-	0	-	-	-	0
Stage 1	660	660	-	-	-	-	-	-	-
Stage 2	739	739	-	-	-	-	-	-	-
Critical Hdwy	6.54	6.5	6.21	-	-	-	-	-	-
Critical Hdwy Stg 1	5.54	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.54	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.626	4	3.309	-	-	-	-	-	-
Pot Cap-1 Maneuver	146	142	465	0	-	0	0	-	0
Stage 1	492	463	-	0	-	0	0	-	0
Stage 2	451	427	-	0	-	0	0	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	146	0	465	-	-	-	-	-	-
Mov Cap-2 Maneuver	146	0	-	-	-	-	-	-	-
Stage 1	492	0	-	-	-	-	-	-	-
Stage 2	451	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	40.5	0	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	473	-
HCM Lane V/C Ratio	-	0.834	-
HCM Control Delay (s)	-	40.5	-
HCM Lane LOS	-	E	-
HCM 95th %tile Q(veh)	-	8.2	-

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	19	0	246	0	0	0	0	583	0	0	373	0
Future Vol, veh/h	19	0	246	0	0	0	0	583	0	0	373	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	1	2	2	2	0	1	0	0	1	0
Mvmt Flow	21	0	267	0	0	0	0	634	0	0	405	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	1039	1039	405	-	0	-	-	-	0
Stage 1	405	405	-	-	-	-	-	-	-
Stage 2	634	634	-	-	-	-	-	-	-
Critical Hdwy	6.4	6.5	6.21	-	-	-	-	-	-
Critical Hdwy Stg 1	5.4	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.4	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.309	-	-	-	-	-	-
Pot Cap-1 Maneuver	258	232	648	0	-	0	0	-	0
Stage 1	678	602	-	0	-	0	0	-	0
Stage 2	532	476	-	0	-	0	0	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	258	0	648	-	-	-	-	-	-
Mov Cap-2 Maneuver	258	0	-	-	-	-	-	-	-
Stage 1	678	0	-	-	-	-	-	-	-
Stage 2	532	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.7	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	698	-
HCM Lane V/C Ratio	-	0.413	-
HCM Control Delay (s)	-	13.7	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	2	-

Intersection	
Int Delay, s/veh	95.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	99	0	281	0	644	52	120	358	0
Future Vol, veh/h	0	0	0	99	0	281	0	644	52	120	358	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	1	0	0	0	1	4	2	1	0
Mvmt Flow	0	0	0	108	0	305	0	700	57	130	389	0

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	1378	1378	728	-	0	0	757	0	0
Stage 1	728	728	-	-	-	-	-	-	-
Stage 2	650	650	-	-	-	-	-	-	-
Critical Hdwy	7.11	6.5	6.2	-	-	-	4.12	-	-
Critical Hdwy Stg 1	6.11	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.11	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	4	3.3	-	-	-	2.218	-	-
Pot Cap-1 Maneuver	123	146	427	0	-	-	854	-	0
Stage 1	416	432	-	0	-	-	-	-	0
Stage 2	460	468	-	0	-	-	-	-	0
Platoon blocked, %					-	-		-	
Mov Cap-1 Maneuver	~ 105	118	427	-	-	-	854	-	-
Mov Cap-2 Maneuver	~ 105	118	-	-	-	-	-	-	-
Stage 1	416	432	-	-	-	-	-	-	-
Stage 2	371	377	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 386.9	0	2.5
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	237	854	-
HCM Lane V/C Ratio	-	-	1.743	0.153	-
HCM Control Delay (s)	-	-	$ 386.9	10	0
HCM Lane LOS	-	-	F	A	A
HCM 95th %tile Q(veh)	-	-	27.6	0.5	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	8.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	42	0	96	0	386	109	267	439	0
Future Vol, veh/h	0	0	0	42	0	96	0	386	109	267	439	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	5	0	1	0	1	2	0	2	0
Mvmt Flow	0	0	0	46	0	104	0	420	118	290	477	0

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	1537	1537	479	-	0	0	538	0	0
Stage 1	479	479	-	-	-	-	-	-	-
Stage 2	1058	1058	-	-	-	-	-	-	-
Critical Hdwy	6.45	6.5	6.21	-	-	-	4.1	-	-
Critical Hdwy Stg 1	5.45	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.45	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.545	4	3.309	-	-	-	2.2	-	-
Pot Cap-1 Maneuver	126	117	589	0	-	-	1040	-	0
Stage 1	617	558	-	0	-	-	-	-	0
Stage 2	329	304	-	0	-	-	-	-	0
Platoon blocked, %					-	-		-	
Mov Cap-1 Maneuver	78	0	589	-	-	-	1040	-	-
Mov Cap-2 Maneuver	78	0	-	-	-	-	-	-	-
Stage 1	617	0	-	-	-	-	-	-	-
Stage 2	204	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	65.2	0	3.7
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	197	1040	-
HCM Lane V/C Ratio	-	-	0.761	0.279	-
HCM Control Delay (s)	-	-	65.2	9.8	0
HCM Lane LOS	-	-	F	A	A
HCM 95th %tile Q(veh)	-	-	5.1	1.1	-

PR-110 at Wing Road
AM peak-hour (7:15am to 8:15am)

Intersection	
Int Delay, s/veh	15.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	463	0	534	0	27	385	82	10	0
Future Vol, veh/h	0	0	0	463	0	534	0	27	385	82	10	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	Free	-	-	None
Storage Length	-	-	-	0	-	200	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	1	0	1	0	0	1	0	0	0
Mvmt Flow	0	0	0	503	0	580	0	29	418	89	11	0

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	218	-	29	-	0	-	29	0	0
Stage 1	29	-	-	-	-	-	-	-	-
Stage 2	189	-	-	-	-	-	-	-	-
Critical Hdwy	7.11	-	6.21	-	-	-	4.1	-	-
Critical Hdwy Stg 1	6.11	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.11	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	-	3.309	-	-	-	2.2	-	-
Pot Cap-1 Maneuver	740	0	1049	0	-	0	1597	-	0
Stage 1	991	0	-	0	-	0	-	-	0
Stage 2	815	0	-	0	-	0	-	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	708	-	1049	-	-	-	1597	-	-
Mov Cap-2 Maneuver	708	-	-	-	-	-	-	-	-
Stage 1	991	-	-	-	-	-	-	-	-
Stage 2	769	-	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.8	0	6.6
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	708	1049	1597	-
HCM Lane V/C Ratio	-	0.711	0.553	0.056	-
HCM Control Delay (s)	-	21.6	12.6	7.4	0
HCM Lane LOS	-	C	B	A	A
HCM 95th %tile Q(veh)	-	6	3.5	0.2	-

Intersection	
Int Delay, s/veh	11.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	225	0	282	0	26	741	194	7	0
Future Vol, veh/h	0	0	0	225	0	282	0	26	741	194	7	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	Free	-	-	None
Storage Length	-	-	-	0	-	200	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	1	0	1	0	0	0	1	14	0
Mvmt Flow	0	0	0	245	0	307	0	28	805	211	8	0

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	457	-	28	-	0	-	28	0	0
Stage 1	28	-	-	-	-	-	-	-	-
Stage 2	429	-	-	-	-	-	-	-	-
Critical Hdwy	6.41	-	6.21	-	-	-	4.11	-	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	-	3.309	-	-	-	2.209	-	-
Pot Cap-1 Maneuver	563	0	1050	0	-	0	1592	-	0
Stage 1	997	0	-	0	-	0	-	-	0
Stage 2	659	0	-	0	-	0	-	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	488	0	1050	-	-	-	1592	-	-
Mov Cap-2 Maneuver	488	0	-	-	-	-	-	-	-
Stage 1	997	0	-	-	-	-	-	-	-
Stage 2	571	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.1	0	7.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	488	1050	1592	-
HCM Lane V/C Ratio	-	0.501	0.292	0.132	-
HCM Control Delay (s)	-	19.6	9.8	7.6	0
HCM Lane LOS	-	C	A	A	A
HCM 95th %tile Q(veh)	-	2.8	1.2	0.5	-

Guard Road at Crown Road
AM peak-hour (7:15am to 8:15am)

Intersection	
Int Delay, s/veh	12.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	362	0	58	0	54	298	38	30	0
Future Vol, veh/h	0	0	0	362	0	58	0	54	298	38	30	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	0	0	0	0	2	0	0	0
Mvmt Flow	0	0	0	393	0	63	0	59	324	41	33	0

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	336	336	221	-	0	0	383	0	0
Stage 1	221	221	-	-	-	-	-	-	-
Stage 2	115	115	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.5	6.2	-	-	-	4.1	-	-
Critical Hdwy Stg 1	6.12	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4	3.3	-	-	-	2.2	-	-
Pot Cap-1 Maneuver	618	588	824	0	-	-	1187	-	0
Stage 1	781	724	-	0	-	-	-	-	0
Stage 2	890	804	-	0	-	-	-	-	0
Platoon blocked, %					-	-		-	
Mov Cap-1 Maneuver	601	567	824	-	-	-	1187	-	-
Mov Cap-2 Maneuver	601	567	-	-	-	-	-	-	-
Stage 1	781	724	-	-	-	-	-	-	-
Stage 2	859	776	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	24.9	0	4.5
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	624	1187	-
HCM Lane V/C Ratio	-	-	0.732	0.035	-
HCM Control Delay (s)	-	-	24.9	8.1	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	6.3	0.1	-

Intersection	
Int Delay, s/veh	6.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	219	0	20	0	32	417	72	19	0
Future Vol, veh/h	0	0	0	219	0	20	0	32	417	72	19	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	1	0	0	0	0	1	1	5	0
Mvmt Flow	0	0	0	238	0	22	0	35	453	78	21	0

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	438	438	261	-	0	0	488	0	0
Stage 1	261	261	-	-	-	-	-	-	-
Stage 2	177	177	-	-	-	-	-	-	-
Critical Hdwy	6.41	6.5	6.2	-	-	-	4.11	-	-
Critical Hdwy Stg 1	5.41	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.41	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	4	3.3	-	-	-	2.209	-	-
Pot Cap-1 Maneuver	578	515	783	0	-	-	1080	-	0
Stage 1	785	696	-	0	-	-	-	-	0
Stage 2	856	756	-	0	-	-	-	-	0
Platoon blocked, %					-	-		-	
Mov Cap-1 Maneuver	536	0	783	-	-	-	1080	-	-
Mov Cap-2 Maneuver	536	0	-	-	-	-	-	-	-
Stage 1	785	0	-	-	-	-	-	-	-
Stage 2	794	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17.2	0	6.8
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	551	1080	-
HCM Lane V/C Ratio	-	-	0.471	0.072	-
HCM Control Delay (s)	-	-	17.2	8.6	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	2.5	0.2	-

Engineer Orlando Alarcon Avenue at Airport Entrance
AM peak-hour

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	517	29	12	335	0	0
Future Volume (Veh/h)	517	29	12	335	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	562	32	13	364	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			594		968	578
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			594		968	578
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	100
cM capacity (veh/h)			992		278	516

Direction, Lane #	EB 1	WB 1
Volume Total	594	377
Volume Left	0	13
Volume Right	32	0
cSH	1700	992
Volume to Capacity	0.35	0.01
Queue Length 95th (ft)	0	1
Control Delay (s)	0.0	0.4
Lane LOS		A
Approach Delay (s)	0.0	0.4
Approach LOS		

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	32.3%	ICU Level of Service	A
Analysis Period (min)	15		
Description: Engineer Orlando Alarcon Avenue/Hanger Road at Airport Entrance (immediately west of terminal)			

Engineer Orlando Alarcon Avenue at Airport Entrance
PM peak-hour (2:15pm to 3:15pm)

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	488	4	9	317	0	0
Future Volume (Veh/h)	488	4	9	317	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	530	4	10	345	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			534		897	532
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			534		897	532
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	100
cM capacity (veh/h)			1044		307	547

Direction, Lane #	EB 1	WB 1
Volume Total	534	355
Volume Left	0	10
Volume Right	4	0
cSH	1700	1044
Volume to Capacity	0.31	0.01
Queue Length 95th (ft)	0	1
Control Delay (s)	0.0	0.3
Lane LOS		A
Approach Delay (s)	0.0	0.3
Approach LOS		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	29.3%	ICU Level of Service	A
Analysis Period (min)	15		
Description: Engineer Orlando Alarcon Avenue at Airport Entrance			

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	509	28	14	339	18	17
Future Vol, veh/h	509	28	14	339	18	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	0	0	2	6	0
Mvmt Flow	553	30	15	368	20	18

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	584	0	967	568
Stage 1	-	-	-	-	568	-
Stage 2	-	-	-	-	399	-
Critical Hdwy	-	-	4.1	-	6.46	6.2
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	-	-	2.2	-	3.554	3.3
Pot Cap-1 Maneuver	-	-	1001	-	277	526
Stage 1	-	-	-	-	559	-
Stage 2	-	-	-	-	669	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1001	-	272	526
Mov Cap-2 Maneuver	-	-	-	-	272	-
Stage 1	-	-	-	-	559	-
Stage 2	-	-	-	-	656	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	16.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	355	-	-	1001	-
HCM Lane V/C Ratio	0.107	-	-	0.015	-
HCM Control Delay (s)	16.4	-	-	8.7	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	440	8	5	270	35	8
Future Vol, veh/h	440	8	5	270	35	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	0	0	3	0	0
Mvmt Flow	478	9	5	293	38	9

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	487	0	787	483
Stage 1	-	-	-	-	483	-
Stage 2	-	-	-	-	304	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1086	-	363	588
Stage 1	-	-	-	-	625	-
Stage 2	-	-	-	-	753	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1086	-	361	588
Mov Cap-2 Maneuver	-	-	-	-	361	-
Stage 1	-	-	-	-	625	-
Stage 2	-	-	-	-	748	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	15.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	389	-	-	1086	-
HCM Lane V/C Ratio	0.12	-	-	0.005	-
HCM Control Delay (s)	15.5	-	-	8.3	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Intersection	
Int Delay, s/veh	14.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	231	0	3	0	516	821	4	505	0
Future Vol, veh/h	0	0	0	231	0	3	0	516	821	4	505	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	Yield	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	0	0	33	0	0	0	0	0	0
Mvmt Flow	0	0	0	251	0	3	0	561	892	4	549	0

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	1119	1119	561	-	0	0	561	0	0
Stage 1	561	561	-	-	-	-	-	-	-
Stage 2	558	558	-	-	-	-	-	-	-
Critical Hdwy	6.4	6.5	6.53	-	-	-	4.1	-	-
Critical Hdwy Stg 1	5.4	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.4	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.597	-	-	-	2.2	-	-
Pot Cap-1 Maneuver	~ 231	209	473	0	-	-	1020	-	0
Stage 1	575	513	-	0	-	-	-	-	0
Stage 2	577	515	-	0	-	-	-	-	0
Platoon blocked, %					-	-		-	
Mov Cap-1 Maneuver	~ 230	0	473	-	-	-	1020	-	-
Mov Cap-2 Maneuver	~ 230	0	-	-	-	-	-	-	-
Stage 1	575	0	-	-	-	-	-	-	-
Stage 2	574	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	132.3	0	0.1
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	232	1020	-
HCM Lane V/C Ratio	-	-	1.096	0.004	-
HCM Control Delay (s)	-	-	132.3	8.5	0
HCM Lane LOS	-	-	F	A	A
HCM 95th %tile Q(veh)	-	-	11.3	0	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	14.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	233	0	9	0	345	392	7	585	0
Future Vol, veh/h	0	0	0	233	0	9	0	345	392	7	585	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	Yield	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	0	0	11	0	1	1	0	1	0
Mvmt Flow	0	0	0	253	0	10	0	375	426	8	636	0

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	1026	1026	375	-	0	0	375	0	0
Stage 1	375	375	-	-	-	-	-	-	-
Stage 2	651	651	-	-	-	-	-	-	-
Critical Hdwy	6.4	6.5	6.31	-	-	-	4.1	-	-
Critical Hdwy Stg 1	5.4	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.4	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.399	-	-	-	2.2	-	-
Pot Cap-1 Maneuver	262	237	652	0	-	-	1195	-	0
Stage 1	699	621	-	0	-	-	-	-	0
Stage 2	523	468	-	0	-	-	-	-	0
Platoon blocked, %					-	-		-	
Mov Cap-1 Maneuver	259	0	652	-	-	-	1195	-	-
Mov Cap-2 Maneuver	259	0	-	-	-	-	-	-	-
Stage 1	699	0	-	-	-	-	-	-	-
Stage 2	518	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	94.8	0	0.1
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	265	1195	-
HCM Lane V/C Ratio	-	-	0.993	0.006	-
HCM Control Delay (s)	-	-	94.8	8	0
HCM Lane LOS	-	-	F	A	A
HCM 95th %tile Q(veh)	-	-	9.8	0	-

APPENDIX J

Draft EA Public Involvement

(to be provided at Preliminary Final EA)

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APPENDIX J.1

Notice of Availability of Draft EA and Notice of Combined Public Hearing/Public Information Workshop

(to be provided at Preliminary Final EA)

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APPENDIX J.2

Draft EA Agency Transmittal Letters and Distribution List

(To be provided at Preliminary Final EA)

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APPENDIX K

DOT Section 4(f) Evaluation

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Department of Transportation Act Section 4(f) Evaluation

Rafael Hernandez Airport
Runway 8-26 Reconstruction

Prepared for:

Puerto Rico Port Authority
and
Federal Aviation Administration

Prepared by:

AECOM

July 2020

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACRONYMS AND ABBREVIATIONS

AC	Advisory Circular
AC	Asphalt Concrete
ADG	Aircraft Design Group
AEDT	Aviation Environmental Design Tool
AFB	Air Force Base
BQN	Rafael Hernandez Airport
CFR	Code of Federal Regulations
DNL	Day-Night Average Noise Level
DOT	U.S. Department of Transportation
DSA	Direct Study Area
EA	Environmental Assessment
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulation
FHWA	U.S. Federal Highway Administration
GSA	General Services Administration
ISA	Indirect Study Area
LDA	Landing Distance Available
MOA	Memorandum of Agreement
MOS	Modification of Design Standard
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
OFA	Object Free Area
PCC	Portland Cement Concrete
PEQB	Puerto Rico Environmental Quality Board
PRPB	Puerto Rico Planning Board
ROFA	Runway Object Free Area
RPZ	Runway Protection Zone
RSA	Runway Safety Area
SHPO	State Historic Preservation Office
TORA	Take-off Run Available
US	United States
USC	United States Code

1.1. INTRODUCTION

The Puerto Rico Port Authority (PRPA) has prepared an Environmental Assessment (EA) in accordance with the provisions of the National Environmental Policy Act of 1969 (NEPA), to assess the potential environmental impacts of a proposed reconstruction of Runway 8-26 and associated improvements at Rafael Hernandez Airport (BQN), hereinafter referred to as the Proposed Project.

The Proposed Project has the potential to directly or indirectly impact properties protected by U.S. Department of Transportation (DOT) Act Section 4(f), codified at 23 United States Code (USC) Part 138 and 49 USC 303. Section 4(f) affords protection for publicly owned parks, recreational areas, wildlife/waterfowl refuges, and significant historic sites that may be affected by projects approved or funded by the DOT or any of its operating administrations, including the Federal Aviation Administration (FAA).

This Draft Evaluation evaluates and documents the Proposed Project in terms of its compliance with the requirements of Section 4(f). The FAA is the lead federal agency for both NEPA and Section 4(f) compliance.

1.1.1. REGULATORY CONTEXT

Per 49 USC 303(c), a federal agency such as the FAA may approve a transportation program or project requiring the use of a publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national , state or local significance, or land of an historic site of national, state, or local significance, only if: (1) there is no prudent or feasible alternative to using that land; and (2) the program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use. Regulatory requirements for implementing Section 4(f) that are applicable to the Proposed Project are further described in the following sections.

1.1.1.1. SECTION 4(F) USE

Use of a Section 4(f) property by a project occurs in any of the following circumstances (23 Code of Federal Regulations [CFR] 774.17):

- Land from the Section 4(f) property is permanently incorporated into a transportation facility;
- There is a temporary occupancy of land that is adverse in terms of the statute's preservation purpose, as determined by the criteria in 23 CFR 774.13(d) (i.e., when all or part of the Section 4(f) property is required for project construction-related activities); or
- There is a constructive use of the Section 4(f) property, which is defined at 23 CFR 774.15(a) as a use which occurs when the transportation project does not incorporate land from the Section 4(f) property, but the project's proximity impacts are so severe that

the protected activities, features or attributes that qualify the property for protection under Section 4(f) are substantially impaired.

- A Proposed Project's indirect effects in the following areas is necessary to ascertain whether a constructive use of any Section 4(f) resources in the proximity of the project would occur: air quality, light emissions and visual impacts, and noise.

1.1.1.2. DE MINIMIS IMPACTS

Section 4(f) regulations at 23 CFR Part 774 et seq. establishes procedures for determining whether or not the use of a Section 4(f) property, as described in **Section 1.1.1.1** above, has a *de minimis* impact on the property. A *de minimis* impact on a publicly owned park, recreational area, or fish/wildlife refuge is an impact that does not "adversely affect the activities, features and attributes of the Section 4(f) property (23 CFR 774.17). In addition, *de minimis* impacts on any applicable historic sites are those where a "no effect" or "no adverse effect" determination has been made and concurred with by the State Historic Preservation Office (SHPO).

Accordingly, in implementing these regulations for projects where the FAA has jurisdiction, FAA Order 1050.1F, *Environmental Impacts, Policies and Procedures Desk Reference* allows the FAA to "make a *de minimis* impact determination with respect to the physical use of a Section 4(f) property if, after taking into account any measures to minimize harm, the result is either: 1) a determination that the project would not adversely affect the activities, features or attributes qualifying a park…for protection under Section 4(f); or 2) a Section 106 finding of no adverse effect or no historic properties affected".

Procedural requirements for Section 4(f) compliance are codified at DOT Order 5610.1C. Albeit not binding, per Order 1050.1F, U.S. Federal Highway Administration (FHWA) regulations at 23 CFR 774 *et seq*., and FHWA implementing guidance for these regulations, can be used by the FAA in determining compliance of aviation projects with Section 4(f).

Per the FHWA Section 4(f) Policy Paper, a *de minimis* impact determination constitutes a finding under the Act, "is not an evaluation of alternatives, and no avoidance or feasible and prudent avoidance alternatives analysis is required". A *de minimis* impact determination does not require consideration of all possible planning to minimize harm because avoidance, mitigation, minimization or enhancement of any foregone characteristics afforded protection under the Act are included as part of the determination (23 CFR 774.17).

1.1.1.3. EXCEPTIONS AND EXEMPTIONS

Section 4(f) regulations contain exceptions to the requirement for Section 4(f) approval, such as restoration, rehabilitation or maintenance of transportation facilities that are on or eligible to be listed to the NRHP when adverse effects would not occur; archaeological sites that are on or eligible to be listed to the NRHP when the resource is important chiefly because of what can be learned by data recovery and has minimal value for preservation in place; and temporary occupancies of land that are minimal enough to not constitute a use within the definitions of

Section 4(f). Section 4(f) exemptions typically apply to the use of railroad or transit lines historically used for the transportation of goods or passengers.

1.1.1.4. ALTERNATIVES EVALUATION

If a Section 4(f) property would be used for a transportation project, the FAA must demonstrate that there is no feasible and prudent alternative to the use of the Section 4(f) property, and that the project includes all measures to minimize harm to the property. If there is no feasible prudent avoidance alternative and the use of the Section 4(f) property is not a *de minimis* impact, the FAA may approve only the alterative that causes the least overall harm in light of Section 4(f) protections.

1.1.2. DESCRIPTION OF THE PROPOSED PROJECT

The Proposed Project involves reconstruction of Runway 8-26. The runway is 11,700 feet long by 200 feet wide with 50-foot shoulders. The center section of the runway between 2,000 feet and 8,000 feet is comprised of six to eight inches of Portland Cement Concrete (PCC), with Asphalt Concrete (AC) overlay with thicknesses varying between three and six inches. A 2004 pavement evaluation[1] concluded that the PCC sections on both ends of the runway are in good condition with Pavement Condition Index (PCI) values of 88 (i.e., "Good"), but the AC overlay sections across the approximate 8,200-foot center portion had PCI values ranging from 0 to 13 (i.e., "Failed"). The two-inch asphalt overlay had totally failed and the underlying asphalt was heavily oxidized. It was also determined that based on PCC modulus values the PCC underlying the asphalt pavement must be removed and replaced.

A pavement condition study was subsequently conducted by the United States (US) Air Force in 2013[2], noting that although approximately 4,000 feet within this section of the runway has been repaired, a 2,000-foot section has a PCI Rating of "Very Poor" (i.e., less than 40) causing a 25% reduction in adjusted gross loads for aircraft using the runway. In that same year, an airport inspection was conducted by the FAA[3] in accordance with 14 CFR Part 139 and revealed that BQN was not in compliance with 14 CFR Section (§) 139.305(a)(6):

> *"Ponding was observed along the length of Runway 8-26. The runway needs to be crowned and grooved to avoid standing water. Runway grooving is needed to eliminate hydroplaning on the wet runway, resulting in shorter braking distance of aircraft on wet pavement. The pavement condition of the runway is poor and must be addressed. Although Foreign Object Debris was not found on the runway, it needs to be resurfaced. The certificate holder must develop a project to correct the pavement*

[1] *Final Pavement Evaluation Report, Runway 8-26, Rafael Hernandez International Airport (BQN), Aguadilla, Puerto Rico*. Prepared by DMJM Aviation, Inc., June 2004.
[2] *Airfield Pavement Summary*. Prepared by U.S. Air Force, February 2013.
[3] *Letter of Correction from Charlotte Jones, FAA Southern Region, to Edgar Sierra, Rafael Hernandez Airport, regarding CY 2013 14 CFR Part 139 Compliance Inspection*, EIR Number: 2013SO800102, September 10, 2013.

condition [by Dec 16, 2013]. An overlay should be designed to build up the centerline and create a crowned section with a shortened drainage length"

Subsequent analysis as part of the PRPA Regional Airports Pavement Maintenance and Management Program[4] corroborated previous PCI reports. Runway 8-26 requires reconstruction to comply with 14 CFR Section (§) 139.305(a)(6).

The purpose of the proposed runway and associated airfield improvements is twofold: 1) provide an air carrier runway of sufficient pavement strength and condition to accommodate existing and future operations at BQN; and 2) maintain adequate runway length (i.e., a minimum of 10.500 feet take-off distance) for the existing and future aircraft fleet mix using BQN during pavement rehabilitation and reconstruction.

The Proposed Project and associated airfield improvements would provide an air carrier runway of sufficient strength and adequate length to accommodate existing and future operations of the existing and projected future aircraft fleet at BQN. Once completed, the runway would comply with all current FAA design and safety standards. The Proposed Project would also provide an air carrier runway of sufficient strength and adequate length to accommodate existing and future operations of the existing and projected future aircraft fleet at BQN during rehabilitation and reconstruction activities. Large portions of the existing runway show signs of pavement deterioration and ponding is present along the length of the runway. As a result of this condition, BQN is not in compliance with 14 Code of Federal Regulations (CFR) Section (§) 139.305(a)(6).

Based on planning information generated to date, Runway 8-26 reconstruction can feasibly be accomplished in two principal ways:

- Construct temporary Runway 8-26, rehabilitate existing runway, and restore operations to newly reconstructed existing runway. To implement, convert Taxiway M to a temporary 11,000-foot by 150-foot AC runway, 70 feet north of its existing centerline. Correct crown section on Taxiway M to correct longitudinal grade. Reconstruct Runway 8-26 to 11,000 feet by 150 feet of PCC with crown section and runway grooving. Demolish buildings to the south of the runway that would be included in the runway's object free areas and safety areas.

- Construct new permanent Runway 8-26 to replace the existing Runway 8-26. To implement, construct 11,000 feet by 200 feet AC runway, 500 feet south of existing Runway 8-26 centerline. Convert existing Runway 8-26 to full length-parallel taxiway. Demolish buildings to the south of the runway that would be included in the runway's object free areas and safety areas.

[4] *Regional Airport Pavement Maintenance and Management Program, Rafael Hernandez Airport (BQN)*. Prepared by Kimley-Horn and Associates, Inc., June 2016.

1.1.3. ALTERNATIVES EVALUATED

Five Action Alternatives for runway reconstruction were developed for the EA, and each was evaluated for its ability to satisfy the purpose and need of the Proposed Project and for its feasibility in terms of construction and operations. A No-Action Alternative (i.e., not implementing or constructing the project) was also included for comparative purposes. Two Action Alternatives, Alternative 2B and Alternative 2D (hereafter collectively referred to as the "Action Alternatives"), were found to satisfy the purpose and need and constructability and operations requirements. The potential environmental impacts of Alternatives 2B and 2D were evaluated in the EA.

Section 4(f) prohibits the use of a Section 4(f) property if there is a feasible and prudent avoidance alternative; if any such alternatives exist, one of these must be selected. Per 23 CFR 774.17, an alternative is not feasible if it cannot be built as a matter of sound engineering judgment. The regulation also states that an alternative is not prudent under the following conditions:

1. It compromises the project to a degree that it is unreasonable to proceed with the project in light of its stated purpose and need;
2. It results in unacceptable safety or operational problems;
3. After reasonable mitigation, it still causes severe social, economic or environmental impacts; severe disruption to established communities; severe disproportionate impacts to minority or low income populations; and/or severe impacts to environmental resources protected under other Federal statutes;
4. It results in additional construction, maintenance or operational costs of extraordinary magnitude;
5. It causes other unique problems or unusual factors;
6. It involves multiple factors as above that while are individually minor, cumulatively cause unique problems or impacts of extraordinary magnitude.

The FAA has performed all possible planning to confirm that there are no feasible and prudent avoidance alternatives to the Proposed Project's impacts on Section 4(f) properties. An alternative is not considered feasible if it cannot be built as a matter of sound engineering judgment (23 CFR 774.17). Further, an alternative is not considered prudent if it compromises the project to a degree that it is unreasonable to proceed in light of its purpose and need, results in unacceptable safety or operational problems, causes significant or disproportionate social, economic or environmental impacts after mitigation, or results in additional costs of extraordinary magnitude.

Table 1.1-1 summarizes the alternatives developed for the EA and considered by FAA, among others specifically added within the context of Section 4(f), along with a determination of whether they are feasible or prudent. Of the feasible prudent alternatives, Alternatives 2B and 2D would not avoid the Section 4(f) resources, and on balance, both of these alternatives present the same level of harm to the Section 4(f) resources in question. Therefore, either Alternative 2B or 2D could constitute the "least overall harm" alternative under Section 4(f).

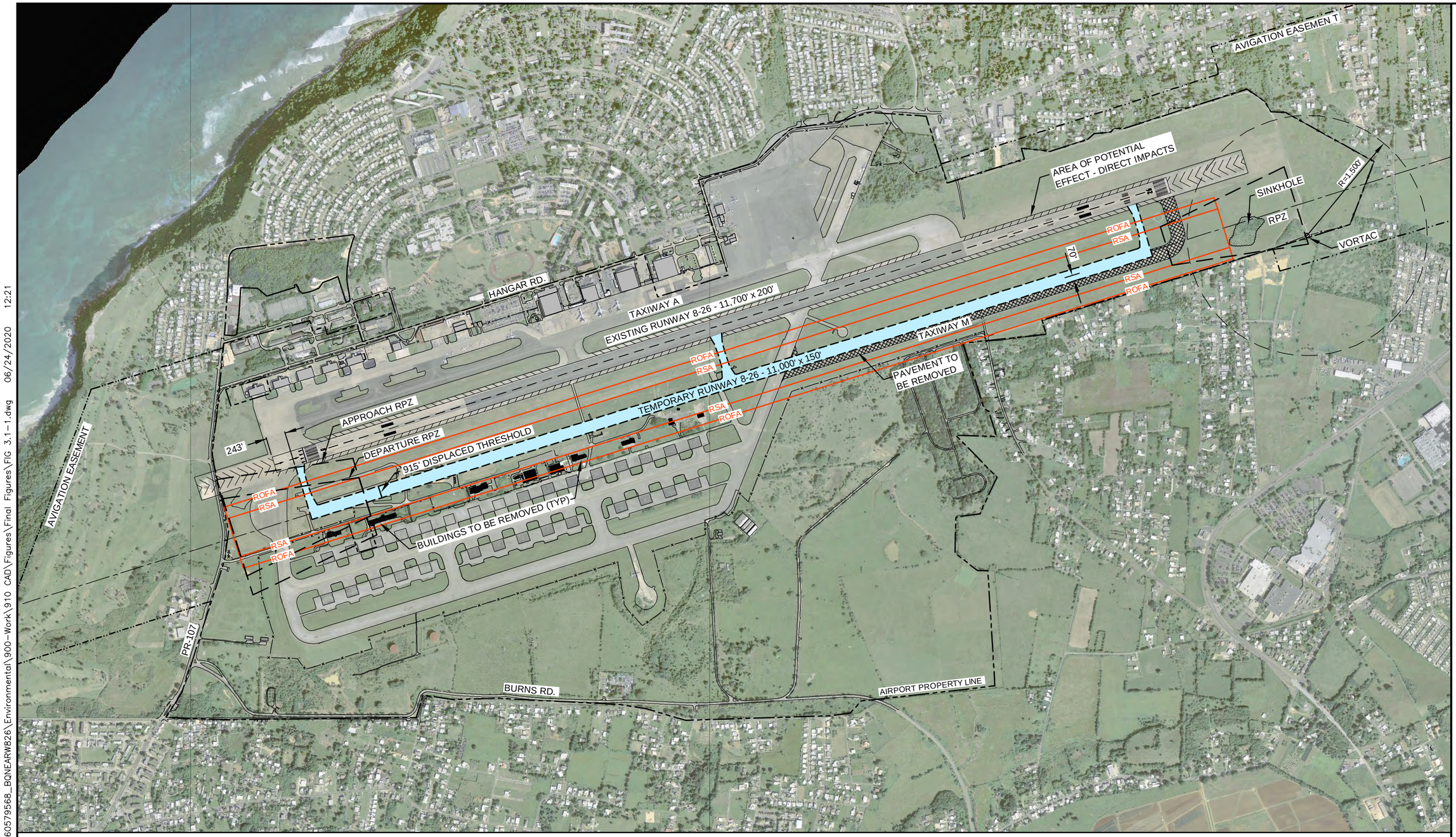
Table 1.1-1 Alternatives Summary

Alternative	Description	Avoids 4(f) Properties?	Determination
1B	Reconstruct Runway 8-26 in place, 243 feet east of current alignment. Demolish airfield buildings and structures to the south of the project area to accommodate object-free areas of temporary runway. Reduce usable runway take-off length to 10,085 feet on Runway 26, and 10,950 feet landing distance on Runway 8. All runway protection zone areas would be contained on Airport property (**Figure 1.1-1**).	No. Impacts Runway 8-26 and southern buildings which qualify as Section 4(f) resources.	Feasible, but not prudent: Does not provide requisite minimum take-off length of 10,500 feet, as stated in purpose and need, which would cause safety/operational problems for cargo air carrier fleet.
1C	Reconstruct Runway 8-26 in place, 478 feet east of current alignment. Demolish airfield buildings and structures to the south of the project area to accommodate object-free areas of temporary runway. Reduce usable runway length to 10,600 feet of take-off length on Runway 26, 10,715 feet on Runway 8. Reduce landing distance on Runway 8 to 10,715 feet and 10,755 on Runway 26. Realign approximately 2,060 lineal feet of Borinquen Avenue (Route 107) to avoid placement in runway protection zone (**Figure 1.1-2**).	No. Impacts Runway 8-26 and southern buildings which qualify as Section 4(f) resources.	Feasible, but not prudent: Meets minimum take-off length requirements but impacts Route 107 which would increase social, economic and environmental impact associated with project.
2B	Reconstruct a new Runway 8-26 500 feet south and 862 feet east of current alignment. Demolish airfield buildings and structures to the south of the project area to accommodate object-free areas of permanent runway. Reduce usable runway length to 10,698 feet take-off distance on Runway 26, 10,870 feet landing distance on Runway 26,	No. Impacts Runway 8-26 and southern buildings which qualify as Section 4(f) resources.	Feasible and Prudent: Provides requisite minimum take-off length of 10,500 feet, as stated in purpose and need. All construction activities would be contained entirely on airport property.

Alternative	Description	Avoids 4(f) Properties?	Determination
	and 10,145 feet landing distance on Runway 8. All runway protection zone areas would be contained on Airport property (**Figure 1.1-3**).		
2C	Reconstruct a new Runway 8-26 500 feet south and 862 feet east of current alignment. Demolish airfield buildings and structures to the south of the project area to accommodate object-free areas of permanent runway. Realign 2,060 lineal feet of Borinquen Avenue (Route 107) to avoid runway protection zone. Reduce usable runway length to 10,145 feet landing distance on Runway 8 and 10,870 feet landing distance on Runway 26 (**Figure 1.1-4**).	No. Impacts Runway 8-26 and southern buildings which qualify as Section 4(f) resources.	Feasible, but not prudent: Meets minimum take-off length requirements but impacts Route 107 which would increase social, economic and environmental impact associated with project.
2D	Reconstruct a new Runway 8-26 500 feet south and 1,187 feet east of current alignment. Demolish airfield buildings and structures to the south of the project area to accommodate object-free areas of permanent runway. Reduce usable runway length to 10,148 feet landing distance on Runway 8, 10,548 feet landing distance on Runway 26, and 10,675 take-off distance on Runway 8 (**Figure 1.1-5**)	No. Impacts Runway 8-26 and southern buildings which qualify as Section 4(f) resources.	Feasible and Prudent: Provides requisite minimum take-off length of 10,500 feet, as stated in purpose and need. All construction activities would be contained entirely on airport property.
No-Action	For comparative purposes under NEPA, impacts of each project Alternative described above will be assessed against the option of taking no action (i.e., not implementing or constructing the project).	Yes	Feasible, but not prudent: Does not meet the stated purpose and need of the Proposed Project. The runway would continue to deteriorate, causing unsafe operational conditions at BQN.

Alternative	Description	Avoids 4(f) Properties?	Determination
Rehabilitate Runway in Place and Close Airport During Construction	Perform pavement reconstruction on Runway 8-26 in place. No buildings to the south of the project would be impacted. BQN would be closed to flight traffic for the duration of the construction period.	No. Buildings to the south of the Runway, which qualify as Section 4(f) resources, would be avoided. However, Runway 8-26 itself would still be impacted.	Feasible, but not prudent: Meets purpose and need by repairing Runway condition and providing minimum operational runway lengths. Temporary loss of operational capability at BQN would impact its role in international air carrier service and disaster relief operations in Puerto Rico, and revenue loss would negatively impact local/regional economy.
Rehabilitate Runway in Place and Move Aircraft Operations to Luis Munoz Marin International Airport (SJU) During Construction	Perform pavement reconstruction on Runway 8-26 in place. No buildings to the south of the project would be impacted. BQN air traffic would be moved to SJU for the duration of the construction period.	No. Buildings to the south of the Runway, which qualify as Section 4(f) resources, would be avoided. However, Runway 8-26 itself would still be impacted.	Feasible, but not prudent: Meets purpose and need by repairing Runway condition and providing minimum operational runway lengths. However, SJU's largest runway is only 10,400 feet long, which is below the minimum requirement of the project, and therefore relocated air traffic would incur operational penalties. Temporary loss of operational capability at BQN would impact its role in international air carrier service and disaster relief operations in Puerto Rico. Increased air traffic at SJU would negatively impact the social and natural environment in San Juan by inducing additional noise, air quality and land use impacts to the areas surrounding SJU.

Source: AECOM, 2017.



LEGEND

TEMPORARY PAVEMENT CONSTRUCTION

TO BE REMOVED

DECLARED DISTANCES

RUNWAY	TORA	TODA	ASDA	LDA
8	11,000'	11,000'	10,950'	10,035'
26	10,085'	11,000'	11,000'	11,000'

N

1000 0 1000

GRAPHIC SCALE IN FEET

RAFAEL HERNANDEZ AIRPORT
Aguadilla, Puerto Rico
RUNWAY 8-26 RECONSTRUCTION
ENVIRONMENTAL ASSESSMENT

ALTERNATIVE 1B

FIGURE 1.1-1

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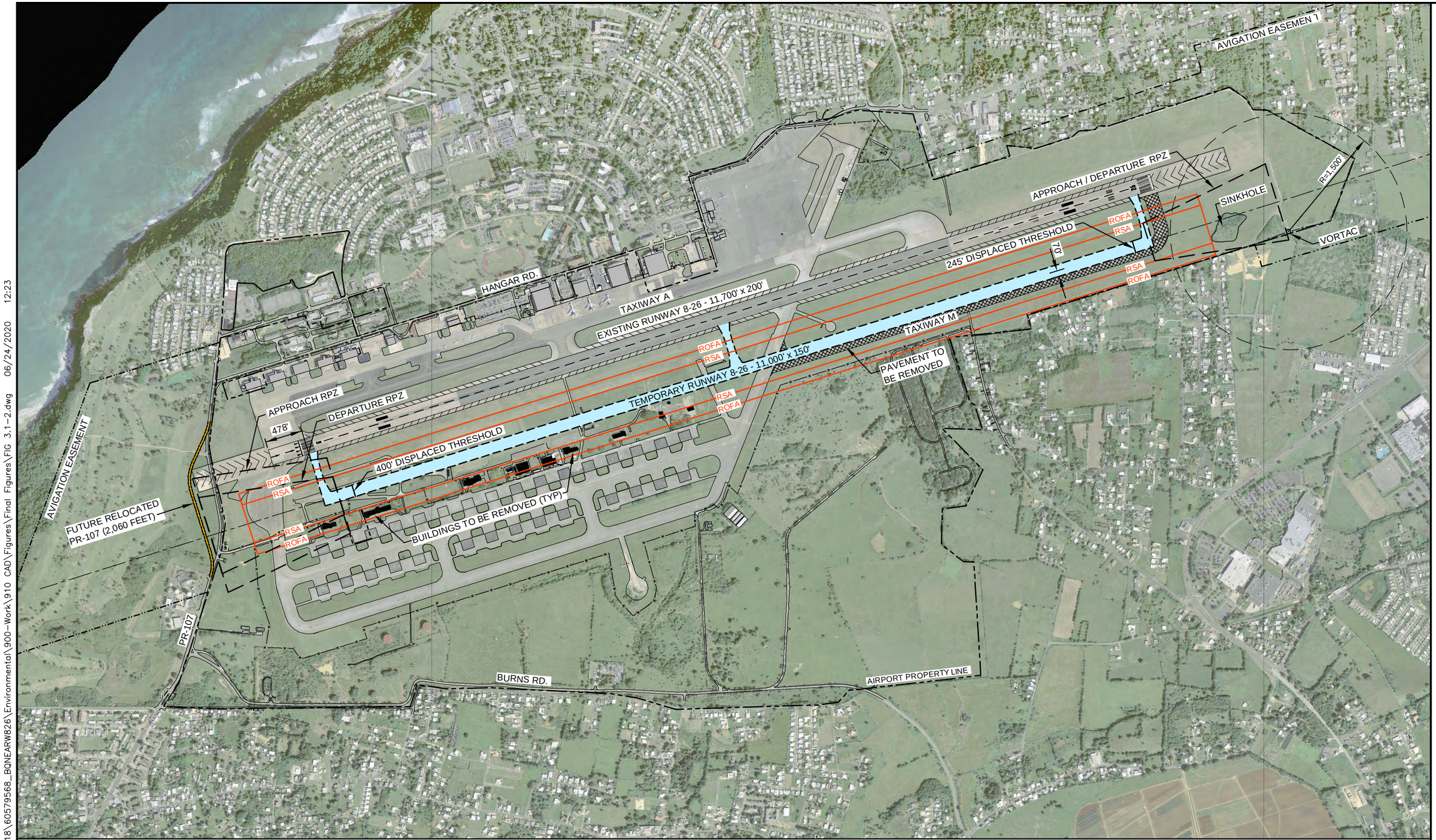
RAFAEL HERNANDEZ AIRPORT
Aguadilla, Puerto Rico

RUNWAY 8-26 RECONSTRUCTION
ENVIRONMENTAL ASSESSMENT

ALTERNATIVE 1C



DECLARED DISTANCES

RUNWAY	TORA	TODA	ASDA	LDA
8	10,715'	11,000'	10,715'	10,715'
26	10,600'	11,000'	11,000'	10,755'

N

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GRAPHIC SCALE IN FEET

FIGURE
1.1-2

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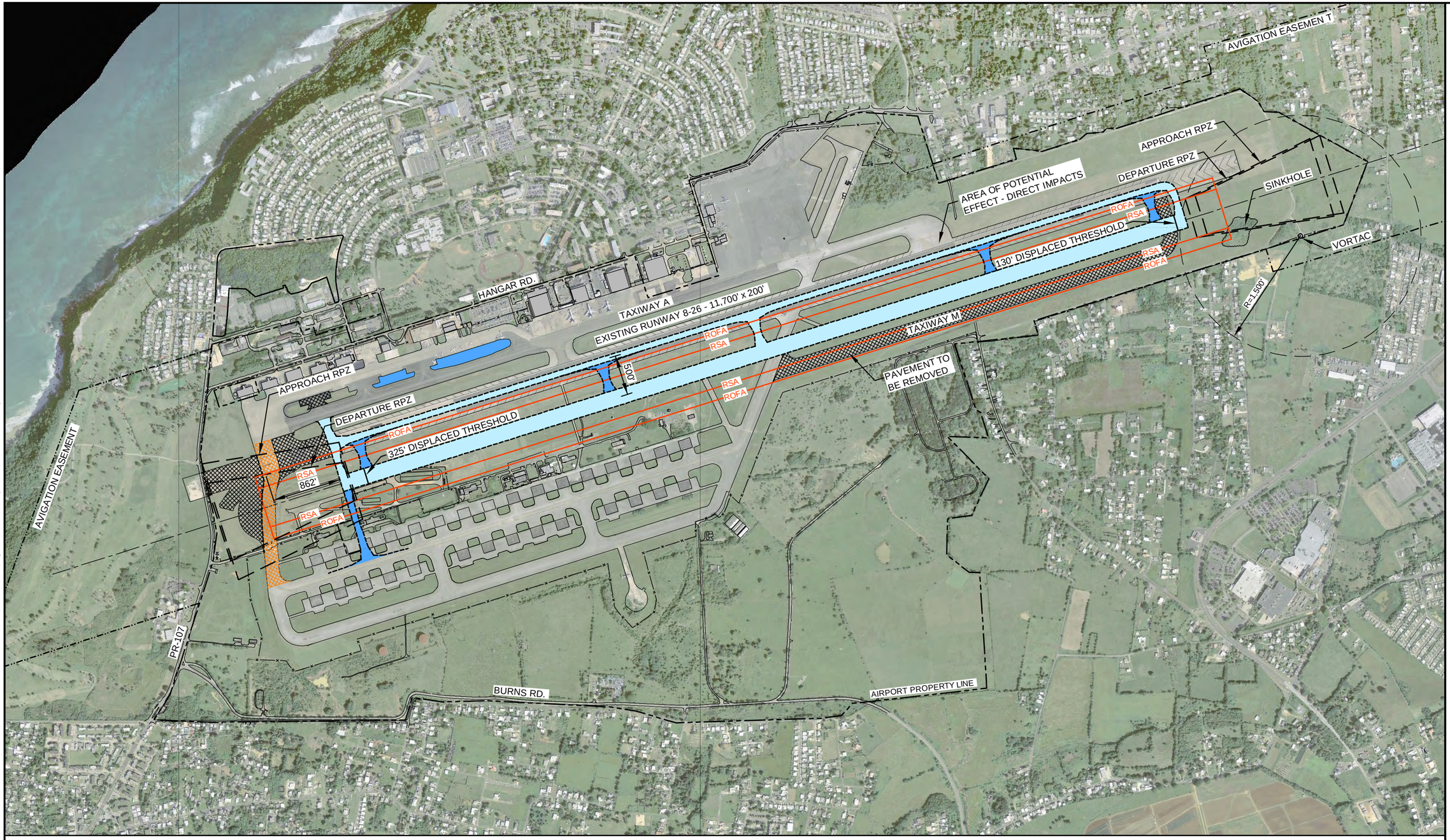

LEGEND

- INITIAL PAVEMENT CONSTRUCTION
- FUTURE TAXIWAY CONNECTIONS (ONCE JUSTIFIED)
- TO BE DEMOLISHED UPON TAXIWAY CONNECTION TO THE SOUTH

DECLARED DISTANCES

RUNWAY	TORA	TODA	ASDA	LDA
8	11,000'	11,000'	10,470'	10,145'
26	10,698'	11,000'	11,000'	10,870'

N

1000 0 1000

GRAPHIC SCALE IN FEET

RAFAEL HERNANDEZ AIRPORT
Aguadilla, Puerto Rico
RUNWAY 8-26 RECONSTRUCTION
ENVIRONMENTAL ASSESSMENT

ALTERNATIVE 2B

FIGURE 1.1-3

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RAFAEL HERNANDEZ AIRPORT
Aguadilla, Puerto Rico

RUNWAY 8-26 RECONSTRUCTION
ENVIRONMENTAL ASSESSMENT

ALTERNATIVE 2C

AVIGATION EASEMEN T
APPROACH RPZ
DEPARTURE RPZ
AREA OF POTENTIAL EFFECT - DIRECT IMPACTS
SINKHOLE
VORTAC
R=1,500'
ROFA
RSA
130' DISPLACED THRESHOLD
HANGAR RD.
TAXIWAY A
EXISTING RUNWAY 8-26 - 11,700' x 200'
TAXIWAY M
FUTURE RUNWAY 8-26 - 11,000' x 200'
500'
PAVEMENT TO BE REMOVED
DEPARTURE RPZ
APPROACH RPZ
325' DISPLACED THRESHOLD
862'
AVIGATION EASEMENT
FUTURE RELOCATED PR-107 (2,060 FEET)
PR-107
BURNS RD.
AIRPORT PROPERTY LINE

LEGEND
- INITIAL PAVEMENT CONSTRUCTION
- FUTURE TAXIWAY CONNECTIONS (ONCE JUSTIFIED)
- TO BE DEMOLISHED UPON TAXIWAY CONNECTION TO THE SOUTH

DECLARED DISTANCES

RUNWAY	TORA	TODA	ASDA	LDA
8	11,000'	11,000'	10,470'	10,145'
26	11,000'	11,000'	11,000'	10,870'

N

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GRAPHIC SCALE IN FEET

FIGURE 1.1-4

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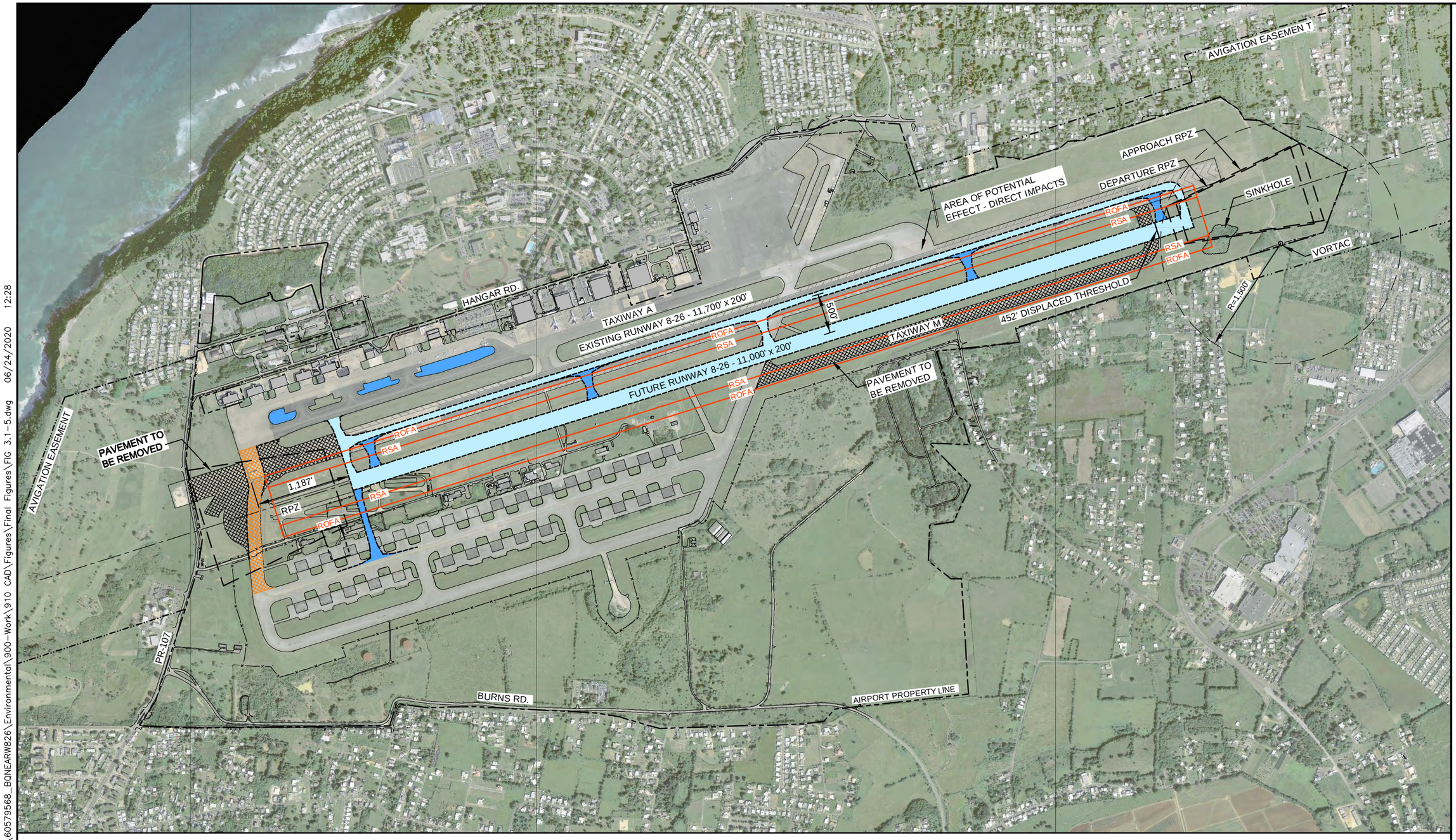

LEGEND

- INITIAL PAVEMENT CONSTRUCTION
- FUTURE TAXIWAY CONNECTIONS (ONCE JUSTIFIED)
- TO BE DEMOLISHED UPON TAXIWAY CONNECTION TO THE SOUTH

DECLARED DISTANCES

RUNWAY	TORA	TODA	ASDA	LDA
8	10,675'	11,000'	10,148'	10,148'
26	11,000'	11,000'	11,000'	10,548'

N

1000 0 1000

GRAPHIC SCALE IN FEET

RAFAEL HERNANDEZ AIRPORT
Aguadilla, Puerto Rico
RUNWAY 8-26 RECONSTRUCTION
ENVIRONMENTAL ASSESSMENT

ALTERNATIVE 2D

FIGURE 1.1-5

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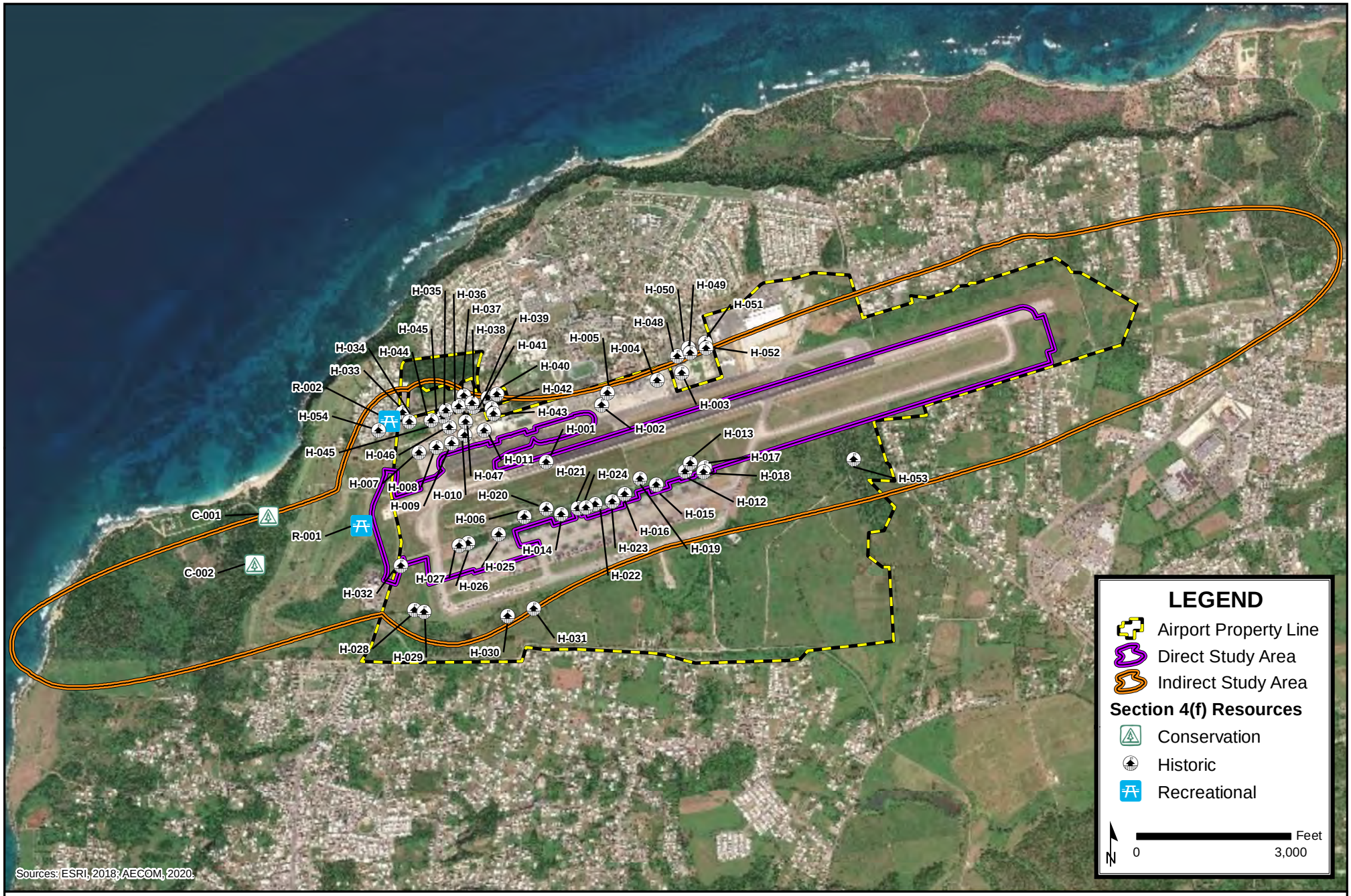
1.2. DESCRIPTION OF SECTION 4(F) RESOURCES

This section includes a summary appraisal of Section 4(f) resources that could be potentially directly or constructively used by the Proposed Project, including a description of amenities and any stakeholders involved in the operation, maintenance or administration of the resource.

A Direct Study Area (DSA) was delineated within which direct physical impacts of the Proposed Project alternatives (i.e., construction footprint) have been characterized and disclosed. To account for indirect ground disturbance activities that may occur during construction, such as materials and equipment staging, the DSA includes a 100-foot buffer. Section 4(f) resources within the DSA were evaluated for potential physical use and constructive use by the Proposed Project. An Indirect Study Area (ISA) was also delineated to assess potential secondary impacts not related to the construction footprint of the Proposed Project alternatives, and corresponds to the area within the composite DNL 60 dB of the Proposed Project and retained alternatives. buffer. Section 4(f) resources within the DSA were evaluated for potential constructive use by the Proposed Project.

A comprehensive list of Section 4(f) resources within the DSA and ISA was developed to assess potential impacts resulting from the Proposed Project. Numerous Section 4(f) resources included in this evaluation are associated with the airport's history as a military base dating to World War II and the Cold War. BQN was initially conceived and constructed as the US military air base Borinquen Field, with construction beginning in 1939. The base was re-designated as Ramey Air Force Base (AFB) in 1948 and was considered an important strategic military asset during the first half of the Cold War. In 1974 virtually all of Ramey AFB was deemed to be in excess by the US General Services Administration (GSA) and subsequently distributed to a variety of military and other government entities. In 1978 the GSA conveyed approximately 1,486 acres, and 309 acres more in easements, to PRPA for airport purposes. This property is now BQN. During t consultation by the FAA on March 24, 2020, the Puerto Rico SHPO indicated that it considers BQN to be a historic district eligible for listing to the NRHP due to its historic association with Ramey AFB, and that all structures associated with the former Borinquen Field and Ramey AFB (described below) individually contribute to the historic district. Historic properties are considered to be Section 4(f) resources, therefore structures associated with BQN's military history are afforded protection under Section 4(f) regulations. An additional search of Aguadilla Municipio parcel data was performed to identify other potential Section 4(f) resources (such as public parks and conservation areas) within the DSA and ISA.

Figure 1.2-1 depicts the locations of Section 4(f) resources identified as potentially affected by the Proposed Project. Historic Section 4(f) resources and other identified Section 4(f) resources are discussed in the following sections. Each Section 4(f) resource is identified on the Figure using a unique ID. Resources are differentiated based on category (e.g., recreational areas, historic resources). **Table 1.2-1** describes each resource that is individually identified on **Figure 1.2-1**.



RAFAEL HERNANDEZ AIRPORT

RUNWAY 8-26 RECONSTRUCTION
ENVIRONMENTAL ASSESSMENT

DOT SECTION 4(F) RESOURCES

FIGURE
1.2-1

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Table 1.2-1 Section 4(f) Resources within the DSA and ISA

Resource Category	Map ID (Figure 1.2-1)	Name	Year or Timeframe of Construction (for Historic Properties)	Description
Historic Structure	H-001	Runway 8-26	Circa-1939	The current Runway 8-26 is 11,700 feet long by 200 feet wide with 50-foot shoulders. The center section of the runway between 2,000 feet and 8,000 feet is comprised of six to eight inches of PCC, with AC overlay with thicknesses varying between three and six inches. Runway construction at Borinquen field began immediately upon breaking ground at the airfield in 1939. Runway 8-26 was lengthened from 1941 to 1946. From 1957 to 1959 it was extended and widened, in order to accommodate the B-52 heavy bomber aircraft. A partial length 1.5-inch asphalt overlay was applied in 1971 before Ramey Air Force Base was closed in 1972 . Since initial construction and widening, relatively small portions of the runway have undergone various repairs and rehabilitations. According to a 2017 Pavement Maintenance and Management Program (PMMP) report, roughly 66% of the runway (approximately 6,188,971 square feet of the of the 9,348,881 total square feet) has not undergone any pavement repair or maintenance in 50 or more years . This indicates that at least two-thirds of the runway are comprised of materials that date back at least to Ramey AFB. The Puerto Rico SHPO has determined that the runway is potentially eligible for NRHP listing.
Historic Structure	H-002	Building 400 - Control Tower	Circa-1941	Six-story, reinforced-concrete, truncated obelisk. Narrow incised bands in the concrete separate the floors. A 2015 metal-and-glass octagonal flight control cab tops the tower, with an external walkway. The tower was non-operational from the time of Ramey AFB closure, and was re-commissioned in 2007 to server as the BQN control tower. An winding metal stair previously provided cab access and still stands, but a freestanding concrete elevator shaft and connecting walkway were added in 2015. Per consultation with SHPO, this structure has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.

Resource Category	Map ID (Figure 1.2-1)	Name	Year or Timeframe of Construction (for Historic Properties)	Description
Historic Structure	H-003	Building 402 - Hangar 2	Circa-1941	Building is nearly square, about 265' across and 255' deep with a concrete arch roof supported by 15 ribs. Large open hangar area encompasses more than an acre, with interior space set aside for office space. Structure has been regularly maintained and updated since construction and is presently in good condition. The US Coast Guard currently occupies the hangar. Per consultation with SHPO, this structure has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.
Historic Structure	H-004	Building 403 - Hangar 3	Circa-1941	Building is nearly square, about 265' across and 255' deep with a concrete arch roof supported by 15 ribs. Roof continues as flat overhangs on the east and west faces. Large open hangar area encompasses more than an acre, with interior space set aside for office space. Hurricane Maria damaged the roof in 2017 and water infiltration has loosened bits of the ceiling; a mesh protects those working below from fragments of falling debris. Structure has been regularly maintained and updated since construction and is presently in generally good condition, hurricane damage notwithstanding. FedEx currently occupies the hangar. Per consultation with SHPO, this structure has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.
Historic Structure	H-005	Building 405 - Hangar 5	Circa-1941	Original building is nearly square, about 265' across and 255' deep with a concrete arch roof supported by 15 ribs. The structure has been modified numerous times to accommodate various functions, including serving as the BQN terminal during the mid-2000s. The interior has been extensively modified and modernized, including addition of airport terminal amenities such as a baggage claim area and gift shop. Per consultation with SHPO, this structure has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.
Historic Structure	H-006	Building 3 - Gazebo	1960s	Original use appears to have been a picnic area for the military alert crews that occupied building 1245 in rotating shifts. Structure

Resource Category	Map ID (Figure 1.2-1)	Name	Year or Timeframe of Construction (for Historic Properties)	Description
				consists of heavily overgrown remains of what may have been a gazebo or picnic shelter stand in a roughly rectangular area of ground. Former structure retains portions of ten concrete-block posts spaced to form a rectangle. Its concrete floor slab remains in place, but its roof is gone. Per consultation with SHPO, this structure has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.
Historic Structure	H-007	Building 571 - Nose Dock Hangar	Between 1956 and 1959	Originally used as a nose dock hangar, which supports the body of an aircraft within its walls, while the nose projects out through an extension of the wall. Approximately 200' wide and 90' deep, with an approximately 30'-deep nose dock extending at the center of its the north rear elevation. Steel truss building with offset gable roof. Known aircraft historically using the hangar include B-52 and KC-135. After base closure, may have been used to service aircraft until 1983, after which time it has been used by the Puerto Rico Department of Education for band exercises and folkloric dances. Per consultation with SHPO, this structure has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.
Historic Structure	H-008	Building 572 - Nose Dock Hangar	Between 1956 and 1959	Originally used as a nose dock hangar, which supports the body of an aircraft within its walls, while the nose projects out through an extension of the wall. Approximately 200' wide and 90' deep, with an approximately 30'-deep nose dock extending at the center of its the north rear elevation. Steel truss building with offset gable roof. Known aircraft historically using the hangar include B-52 and KC-135. Until 2017 the building was the Western Aviation Service Corp. hangar, which housed the Borinquen Field-Ramey Air Force Base Museum. Hurricane Maria heavily damaged the building and the museum. It is currently vacant with most of the same gaping holes and damage it sustained in September 2017. Per consultation with SHPO, this structure has integrity under NRHP

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				criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.
Historic Structure	H-009	Building 573 - Nose Dock Hangar	Between 1956 and 1959	Originally used as a nose dock hangar, which supports the body of an aircraft within its walls, while the nose projects out through an extension of the wall. Approximately 200' wide and 90' deep, with an approximately 30'-deep nose dock extending at the center of its the north rear elevation. Steel truss building with offset gable roof. Known aircraft historically using the hangar include B-52 and KC-135. Building currently houses Vortex Aviation, a provider of contracted aircraft maintenance related services to aircraft owners and operators. Per consultation with SHPO, this structure has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.
Historic Structure	H-010	Building 574 - Nose Dock Hangar	Between 1956 and 1959	Building is believed to have been constructed and used in identical fashion to Buildings 571, 572, and 573, based on historic aerial photographs. Building was demolished between 2009 and 2012 due to its dilapidated and dangerous condition, and only the concrete pad remains. Per consultation with SHPO, this structure has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.
Historic Structure	H-011	Building 575 - Hangar	Between 1956 and 1959	Building had a historic structure and purpose similar to Buildings 571, 572, and 573. Building has been dramatically altered from its original condition. Currently houses Department of Homeland Security, Customs and Border Protection, Caribbean Air Marine Branch. Per consultation with SHPO, this structure has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.
Historic Structure	H-012	Building 1029 - Ground Support Equipment Shop	Between 1956 and 1959	Original constructed to house a military ground support equipment shop. Between the base closure and the present, it appears to have been used intermittently for airport equipment storage and at times a repair shop. Rectangular core of building is one-story tall and built of plaster-covered concrete block. A concrete-block band rings the building. Interior of the main block is a straightforward

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				utilitarian space with exposed metal trusses and concrete block. The interiors of the wings are not accessible. Per consultation with SHPO, this structure has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.
Historic Structure	H-013	Building 1031 - Electric Power Station	Late 1950s	Originally constructed as a power station for Ramey AFB. Was at least partially used or maintained from the 1990s until present. Building is nearly square and one-story tall with concrete block walls and a flat roof. Inside, two concrete pads likely once held generators or other equipment. Per consultation with SHPO, this structure has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.
Historic Structure	H-014	1132 - Squadron Operations	Late 1950s	Historically used to house military squadron operations. Building interior was substantially altered by subsequent private occupants -- a medical equipment manufacturer and a pharmaceuticals manufacturer, beginning in the 1970s. Building is long and rectangular with extensions at each of its elevations. Built of plastered concrete blocks and topped by a flat concrete roof. Building maintenance appears to have ceased by 2010. Per consultation with SHPO, this structure has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.
Historic Structure	H-015	Building 1070 - Aircraft Maintenance Organizational Shop	Between 1956 and 1959	Initially constructed as a military aircraft organizational shop. Subsequent to base closure, it may have been partially used by unknown occupants until 2010. One-story tall and built of concrete blocks covered in plaster with a flat overhanging concrete roof. Currently vacant. Per consultation with SHPO, this structure has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.
Historic Structure	H-016	Building 1071 - Squadron Operations	Between 1956 and 1959	Historically used for Ramey AFB squadron operations, however the specific squadron is unknown. At times was used as a civilian airport terminal. May have been partially in use by non-military

Resource Category	Map ID (Figure 1.2-1)	Name	Year or Timeframe of Construction (for Historic Properties)	Description
				occupants after the closure of Ramey AFB until 2010, however the later occupants are unknown. One-story tall with concrete-block walls, concrete piers that project forward as pilasters, and a flat concrete roof. An extension at the building's eastern end likely made when building was converted to civilian terminal. The interior appears to have been altered to accommodate terminal use. Currently vacant and overgrown with vegetation. Per consultation with SHPO, this structure has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.
Historic Structure	H-017	Building 1072 - Weapons and Base Systems Shop	Between 1956 and 1959	Originally constructed to house a weapons and base systems shop for Ramey AFB. Tall, one-story, concrete-block building with a nearly flat roof with no overhangs. Building's interior has functional exposed concrete-block walls and is littered with old computer and mechanical equipment, plastic pipes, bricks, and other odds and ends. Possibly partially used and maintained until 2010, but currently vacant, unmaintained, and greatly dilapidated. Per consultation with SHPO, this structure has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.
Historic Structure	H-018	Building 1073 - Traffic Check House	Between 1956 and 1959	Constructed as a traffic check house for Ramey AFB. Small nearly square building built of concrete block with a widely overhanging flat concrete roof. The inside is a single open space. Appears to have been vacant and overgrown by 2002. Per consultation with SHPO, this structure has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.
Historic Structure	H-019	Building 1089 - Weather Observation Tower	Between 1956 and 1959	Originally erected to serve as a weather observation tower for Ramey AFB. When the base closed its control tower was closed and from 1974 to 2007, the civilian airport operated as a "non-towered" airport. During this time Building 1089 was used as a makeshift control tower. Building consists of a one-story concrete block base with concrete corner posts and a glass-filled cab with a

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				flat roof above. Building is currently vacant. Per consultation with SHPO, this structure has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.
Historic Structure	H-020	Building 1104 - Storage and Supply	Late 1950s	Originally constructed to serve as a storage building. One-story tall and built of concrete block, shaped like a comb with four widely spaced teeth. Building was vacated by 1999. Building maintenance appears to have ceased by 2010. Per consultation with SHPO, this structure has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.
Historic Structure	H-021	Building 1121 - Electrical Station	Late 1950s	Originally constructed as an Air Force base electrical station. Small, rectangular, concrete-block building with concrete beams and a concrete slab roof. Vacant and heavily overgrown, with wires down on it from utility poles, and cannot not be carefully viewed or approached. Per consultation with SHPO, this structure has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.
Historic Structure	H-022	Building 1128 - Armaments and Avionics Shop	Late 1950s (northern third). 1970-1980s (southern two-thirds)	Originally constructed to house a military armaments and avionics shop. Former pharmaceutical company tenant likely altered building interior to suit its industrial needs. Original rectangular rear block is one-story tall. Built of concrete block with concrete columns and topped by a flat overhanging concrete roof. A rectangular, one-story, flat-roofed, concrete addition—also post-1970s—projects to the building's west. The building is vacant, significantly deteriorated, heavily overgrown, and unsafe to enter. Per consultation with SHPO, this structure has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.
Historic Structure	H-023	Building 1129 - Armaments and Electrical Shop	Between 1956 and 1959	Originally constructed to house armaments and electrical shops for Ramey AFB, and was later occupied and expanded by a private laboratory company. Most of the core first story of this long building is original, if heavily altered, construction appears to be built of

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				concrete block, but much of its original wall surface is hidden by circa-1975 extensions along its west side and south-facing elevations and at its northwest corner. The later additions appear to be of concrete block. The building was not entered during current resource survey due to industrial hazards, but previous investigations report: "Its interior is full of industrial wastes, which include a large number of vials full of unknown chemicals. Building materials dangle everywhere. Most rooms have no windows and signs reveal the possibility of that hazardous materials were handled when last in use." Building may have been in use and partially maintained until circa-2010. Currently vacant and heavily overgrown with vegetation. Per consultation with SHPO, this structure has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.
Historic Structure	H-024	Building 1133 - Captive Water Supply Tank Building	Late 1950s	Constructed as a captive water supply tank building and tank for Ramey AFB. Subsequently occupied by a private laboratory company beginning around 1975. Small, rectangular, concrete-block building with concrete beams and a concrete slab roof and an exterior 12'-diameter tank as long as the building. Vacant and heavily overgrown, with wires down on it from utility poles, and cannot be carefully viewed or approached along its north elevation. Per consultation with SHPO, this structure has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.
Historic Structure	H-025	Building 1245 - Readiness Crew Facility	Late 1950s	Historically used to house on-alert B-52 bomber crews. Appears to have been internally converted and used for non-military storage beginning in the 1990s. Long, one-story, rectangular, concrete-block building. Maintenance on the building appears to have ceased circa 2010. Per consultation with SHPO, this structure has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.

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Historic Structure	H-026	Building 1251 - Target Intelligence	Between 1956 and 1959	Historically a target intelligence or combat building or facility used to train military aircrew members in the techniques of identifying targets identification and developing proper bombing procedures. Possibly later used for storage by a non-military enterprise. Building consists of two one-story rectangles of different depths that form a flush elevation on the south-facing facade. Stuccoed concrete block topped by a flat roof. Currently abandoned. Per consultation with SHPO, this structure has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.
Historic Structure	H-027	Building 1270 - Storage	Between 1956 and 1959	Original use unknown. Appears to have been used by the military for small mechanical equipment storage. Small, rectangular, concrete block building with a single room. Currently abandoned and overgrown with vegetation. Per consultation with SHPO, this structure has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.
Historic Structure	H-028	Building 1203 - Small Arms Magazine	Early 1940s	Historically a small arms magazine with former access to boxcars and trucks via a former American Railroad spur line, and a former roadway extended a short distance west to Borinquen Avenue. Rectangular concrete building with a flat, overhanging roof. A concrete loading dock extends along its south elevation. The bays have been altered from their original construction. Appears to be long vacant and portions of the building are overgrown with vegetation and exhibit gaping holes in the walls. Per consultation with SHPO, this structure has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.
Historic Structure	H-029	Building 1204 - Small Arms Magazine	Early 1940s	Historically a small arms magazine with former access to boxcars and trucks via a former American Railroad spur line, and a former roadway extended a short distance west to Borinquen Avenue. Rectangular concrete building with a flat, overhanging roof. A concrete loading dock extends along its south elevation. The bays

Resource Category	Map ID (Figure 1.2-1)	Name	Year or Timeframe of Construction (for Historic Properties)	Description
				have been altered from their original construction. Appears to be long vacant and portions of the building are overgrown with vegetation. Per consultation with SHPO, this structure has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.
Historic Structure	H-030	Building 1214 - Fuel Storage Tank	Between 1951 and 1964	Large, round metal tank set within barriers to contain any fuel spills. Its roof has collapsed along with most of its walls. Per consultation with SHPO, this structure has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.
Historic Structure	H-031	Building 1215 - Fuel Storage Tank	Between 1951 and 1964	Large, round metal tank set within barriers to contain any fuel spills. It walls still stand and are heavily rusted. The roof has partially collapsed. Per consultation with SHPO, this structure has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.
Historic Structure	H-032	Building 1230 - Storage	Late 1940s	Rectangular concrete building with a flat roof, with a concrete loading dock along most of its west-facing elevation. Firewalls and shelving inside the building suggest that it historically housed flammable, pressurized, or other hazardous materials. The building is currently in relatively good condition. Per consultation with SHPO, this structure has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.
Historic Structure	H-033	Building 501 - Motor Transportation and Repair)	Early 1940s	Functioned as a military vehicle repair shop from the early 1940s until the early 1970s when it was sold to a private concern and reconfigured into retail shops. One story rectangular concrete building with pilasters and a flat roof. The building has undergone many structural and superficial modifications. As of 2020, its storefronts were in disrepair and all of its shops were vacant. Per consultation with SHPO, this structure has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.

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Historic Structure	H-034	Building 502 - Ordnance Repair Shop	Early 1940s	Originally an ordnance repair shop. By 1966 it provided ground power to Ramey AFB. After the closure of Ramey AFB it was transitioned from military control and held a water works shop. Two-story, two-tier rectangular concrete structure with a flat roof with overhanging eaves. The original building has been physically altered on numerous occasions. Currently vacant, with broken window panes and closely sealed doors. Per consultation with SHPO, this structure has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.
Historic Structure	H-035	Building 503 - Quartermaster Warehouse	Early 1940s	Initially used as a quartermaster warehouse for Borinquen Field and later served as the Base Equipment Management Officed for Ramey AFB. Flat-roofed rectangular concrete building with evenly spaced pilasters. Structure is currently in generally good condition and has been occupied by Head Start services for at least 20 years. Per consultation with SHPO, this structure has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.
Historic Structure	H-036	Building 504 – Bakery	Early 1940s	Originally served as the base bakery. It was still a bakery in 1966, but by 1983 the Puerto Rican National Guard was using it for storage. A basic two-story, flat-roofed, concrete, rectangular building. It has been heavily altered, though, by changes to its windows and entries, enclosure of a porte cochere, and the modern addition of crenellations. Currently used for storage by the National Guard. Per consultation with SHPO, this structure has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.
Historic Structure	H-037	Building 505 - Utility Shop	Early 1940s	Constructed as a utility shop for Borinquen Field and later used as the civil engineering office for Ramey AFB. Later housed offices for the Puerto Rican National Guard, then the US Immigration and Naturalization Service, and is now occupied by US Customs and Border Patrol. The original one-story concrete core building remains in place, but has been enclosed in other later building

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				additions. Per consultation with SHPO, this structure has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.
Historic Structure	H-038	Building 506 - Commissary and Quartermaster Warehouse	Early 1940s	Used as a commissary and quartermaster warehouse for Borinquen Field and Ramey AFB. After base closure, the building served as headquarters of the 20th battalion of the Puerto Rican National Guard. Two-story, L-shaped concrete block building with a flat roof. Original structure is largely intact. Building is currently vacant. Per consultation with SHPO, this structure has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.
Historic Structure	H-039	Building 507 - Power Plant	Early 1940s	Served as a powerplant for both Borinquen Field and Ramey AFB. Tall, one-story concrete rectangle with a flat roof and narrow windows. Building is in disrepair, is heavily overgrown with vegetation, and has been vacant since 1999. Per consultation with SHPO, this structure has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.
Historic Structure	H-040	Building 508 - Laundry	Early 1940s	Constructed as a military laundry facility and was used as such until the closure of Ramey AFB. Plainly finished one-story rectangular concrete building with a flat roof. Building is largely intact with few physical alterations, but was abandoned by 1999 and currently remains vacant. Per consultation with SHPO, this structure has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.
Historic Structure	H-041	Building 509 - Cold Storage Plant	Early 1940s	Built as a cold storage plant for Borinquen Field. Under Ramey AFB it served a similar function but was called the "ice plant." Transferred to US Navy control after base closure, and leased to the National Guard from 1983 until at least 1999. Original building is a plainly covered one-story concrete structure with a flat roof edged by parapet walls. It has undergone numerous physical alterations. Appears to be vacant at the present time. Per

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				consultation with SHPO, this structure has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.
Historic Structure	H-042	Building 510 - Air Corps Garage	Early 1940s	Initially constructed as a vehicle garage for Borinquen Field Air Corps. Later occupied by the US Army Reserve and National Guard. One-story concrete building with pilasters and a flat roof with overhanging eaves. Structure was later modified by enclosing some windows, doors, and garage bays and several additions. Currently part of the National Guard Armory. Per consultation with SHPO, this structure has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.
Historic Structures	H-043	Building 511 - Air Corps Garage	Early 1940s	Initially constructed as a vehicle garage for Borinquen Field Air Corps. Later occupied by the US Army Reserve and National Guard. One-story concrete building with pilasters and a flat roof with overhanging eaves. Structure was later modified by enclosing some windows, doors, and garage bays and several additions and other modifications. Currently part of the National Guard Armory. Per consultation with SHPO, this structure has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.
Historic Structure	H-044	Building 512 - Quartermaster Warehouse	Early 1940s	Served as a quartermaster warehouse on the north side of a former railroad spur line. Possibly continued to serve as a warehouse after the railroad closure, but appears to have been vacant for decades at this time. Long, one-story concrete rectangle with a gabled roof supported by wooden trusses. Remains a basic functional warehouse building, although it remains vacant. Per consultation with SHPO, this structure has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.
Historic Structure	H-045	Building 513 - Quartermaster Warehouse	Early 1940s	Served as a quartermaster warehouse on the north side of a former railroad spur line. Possibly continued to serve as a warehouse after the railroad closure, but appears to have been

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				vacant for decades at this time. Long, one-story concrete rectangle with a gabled roofs. Currently vacant and in ruinous condition. Per consultation with SHPO, this structure has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.
Historic Structure	H-046	Building 524 - Pavement and Grounds	Early 1940s	Constructed to house Borinquen Field's pavement and grounds office, and continued to serve this function for Ramey AFB. By 1999 it housed a private school. One-story building with a flat roof which is now covered by solar panels. Structure has undergone numerous alterations to its original design, including sealing off of windows and doors and numerous structural additions. Currently occupied by Friedrich Froebel Bilingual School. Per consultation with SHPO, this structure has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.
Historic Structure	H-047	Building 543 - Veterinary Office	Early to Mid-1950s	Original purpose is unknown, but served as a veterinary clinic for Ramey AFB from the mid-1950s until base closure. One-story rectangular plain concrete building with a flat roof. The original structure has been extensively physically altered from its original construction. Currently occupied by US Customs and Border Patrol. Per consultation with SHPO, this structure has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.
Historic Structure	H-048	Building 406 - Fire Station	Early 1940s	Originally constructed and used as a fire station for Borinquen field and later Ramey AFB. By 1966 was used as a communication center and confinement center. In 1972 and 1973 it served as an office for base security and law enforcement and a telephone center. A long, rectangular two-story plain concrete building with a flat roof with a wide overhang, and a one-story concrete extension on its west elevation. Three of the four original bays have been enclosed. Exterior stairs have been added on the west side and numerous other alterations to the structure have occurred. The building currently houses US Coast Guard personnel. Per

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				consultation with SHPO, this structure has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.
Historic Structure	H-049	Building 407 - Paint, Oil, and Dope House	Early 1940s	Storage building for paints, oils, lubricants, and related materials for Borinquen Field and possible Ramey AFB. Plainly finished one-story concrete rectangle with a flat roof with widely overhanging eaves. Minor mostly cosmetic alterations have been made to the building, as well as an addition of a small entry block on the south elevation. Currently occupied by the US Coast Guard. Per consultation with SHPO, this structure has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.
Historic Structure	H-050	Building 408 - Photographic Laboratory	Early 1940s	Originally constructed and used as a photographic laboratory and possibly later as another unknown type of laboratory. In 1970 is housed the Office of Special Investigations for Ramey AFB. Small, one-story concrete building with a widely overhanging flat roof. Somewhat more elaborately decorated than other nearby contemporary buildings, with a tall raised foundation and a west facing entry set in a central projection that steps back toward the doorway. Building has undergone minor physical alterations. Currently occupied by the US Coast Guard. Per consultation with SHPO, this structure has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.
Historic Structure	H-051	Building 409 - Air Corps Garage	Early 1940s	First constructed and used as a garage for the Borinquen Field Air Corps. During the Cold War it was used as a communications center for Ramey AFB. After base closure, the US Coast Guard continued to use it as a communications center. A rectangular flat roofed one-story concrete building currently with seven bays, although the original number of bays in unknown. Some bays and windows have been enclosed. Currently occupied by the US Coast Guard. Per consultation with SHPO, this structure has integrity

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				under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.
Historic Structure	H-052	Building 410 - Air Corps Garage	Early 1940s	Original construction and use were identical to Building 409. By 1966 it had been converted to a flight simulation building and communications center for Ramey AFB. After base closure, the US Coast Guard continued to use it as a flight simulation building. A rectangular, flat-roofed, one story concrete garage with a flat finish currently divided into seven bays. The original number of bays is unknown, due to later alterations. Currently occupied by the US Coast Guard. Per consultation with SHPO, this structure has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.
Historic Area	H-053	Civilian War Housing	Early 1940s	Former civilian neighborhood located directly south of Runway 8-26 and constructed in the early years of Borinquen Field to house civilian workers involved in base construction, who had lived in tents on the base at the onset of construction. Development was funded by the 1940 Defense Housing and Community Facilities and Services Act. The development originally included approximately 110 individual buildings, however by 1964 approximately 25 units had been removed from the neighborhood's northern end as the northern access road had been shifted south, apparently to accommodate runway alterations. The southern portion of the neighborhood is located outside of the ISA. In 1966 Ramey AFB began rehabilitation activities on the structures. In 1967 the neighborhood was renamed "Tropical Acres" and rehabilitation work continued, including repairs and upgrades to the electrical system. Upon closure of Ramey Air Force Base, the neighborhood was fenced off and became completely overgrown with vegetation. It remains inaccessible (due to a barbed wire topped chain link fence) and overgrown. The neighborhood initially consisted of one- and two-story concrete block buildings with no adornment, flat widely overhanging roofs, numerous long louvered window bays,

Resource Category	Map ID (Figure 1.2-1)	Name	Year or Timeframe of Construction (for Historic Properties)	Description
				and multiple doors. Many of the original residences are believed to exist currently. Some of the house walls and roofs are believed to be still intact, with windows and doors removed and degraded interiors. Per consultation with SHPO, this area as a whole has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.
Historic Area	H-054	Fullana Neighborhood (Partial)	Between 1952 and 1956	Located north of Golf Street, west of Borinquen Avenue, and southeast of the Punta Borinquen lighthouse and includes 137 individual resources within the ISA. The neighborhood was constructed under the Wherry Housing Act of 1949, which intended to correct poor living conditions for US military families at US military bases. The Fullana neighborhood (like all Wherry Housing) was constructed by private developers through a long-term lease with the federal government. However, in early 1958, the federal government purchased and assumed control of all Wherry Housing units at Ramey Air Force Base, including those outside of the ISA. Wherry neighborhoods, regardless of location and regional style have several common characteristics exhibited in this neighborhood: wide curvilinear streets, large front lawns, long blocks, three-way intersections, and modest house designs. The original construction of the Fullana neighborhood featured modest single-story, single-family concrete homes on evenly divided, largely rectangular lots with a modest setback, with a small front yard and driveway. All of the houses appear to have originally featured an L-shaped floor plan with an attached roofed carport at the front that gave them a rectangular footprint. The residences were originally topped with flat roofs. A single set of paired louvered windows punctuated the building facades and a second set of the same style was typically found on the inside wall of the carport. Original building entrances were housed underneath the carport and unornamented. As is the case with most Wherry Act residences, most of the houses have been partially to extensively

Resource Category	Map ID (Figure 1.2-1)	Name	Year or Timeframe of Construction (for Historic Properties)	Description
				altered. Many have received a variety of extensions and additions over the years. Roughly one-third of the houses retain enough of their original features to be recognizable. Some original housing resources and initially undeveloped parcels within the neighborhood have been lost to modern development, including modern commercial and apartment buildings and a large modern Skate and Splash Park (Resource R-002). Additional changes to features such as landscaping, walls, and fences, and construction of modern housing on formerly vacant lots within the neighborhood have significantly altered the character of the neighborhood as compared to its original layout and character. Per consultation with SHPO, this area as a whole has integrity under NRHP criteria that makes it a contributing resource to a historic district comprising Ramey Air Force Base.
Recreational Area	R-001	Punta Borinquen Golf Course and Club House	1943-1944	The 18-hole course is 6,633 yards long from its blue back tees, 6,098 yards from its middle white tees, and 4,900 from its forward red tees. It is a straightforward design of essentially linear holes punctuated by the occasional palm tree and a small number of sand traps Its terrain is gently rolling. The course's most notable feature is its location, overlooking the confluence of the Caribbean Sea and the Atlantic Ocean. In 1973 it became a private golf course. When Ramey AFB closed, Punta Borinquen became Puerto Rico's first public golf course . The central portion of the Punta Borinquen Golf Course clubhouse was part of the original construction in 1944. Numerous later additions at unknown dates have followed. The original central portion of the clubhouse has been significantly altered from its initial design and construction, both inside and outside. The clubhouse is a long, one-story, concrete building with a flat roof. Later additions include an extension to the structure on at least one side; the addition of a flat-roofed porte cochere from the entry area, which conceals the original façade; and a semicircular patio. Most of the original windows and doors and the entire interior have been

Resource Category	Map ID (Figure 1.2-1)	Name	Year or Timeframe of Construction (for Historic Properties)	Description
				altered. In spite of numerous alterations, the original core of the building remains largely intact, and the clubhouse is currently in use for its original intended purpose. Because the golf course and its clubhouse are publicly owned and accessible this property is eligible for protection under Section 4(f).
Recreation Area	R-002	Aguadilla (Ramey) Skate and Splash Park	--	Located approximately 1500 feet northwest of the western end of the current Runway 8-26 at BQN. The park has three main areas: a water playground zone, a non-wet playground area, and an expansive skateboarding park with various skating pools . The date of construction is relatively new, although the specific year of construction is unknown. It is a privately owned recreational facility that is open to the public for a fee. As a publicly-accessible recreation facility, this property is eligible for protection under Section 4(f)
Conservation Area	C-001	Conservation Area (Unnamed)	--	Apparently unnamed conservation area adjacent to Resource C-002. A large wooded open space located approximately 2200 feet east of the east end of the current Runway 8-26. Bounded on its east side by Punta Borinquen Golf Course, on its northwest by Borinquen Beach, and on its south by the Villa del Golf road, which separates this area from Resource C-002 to the south. Because the conservation area is publicly owned and accessible this property is eligible for protection under Section 4(f).
Conservation Area	C-002	Conservation Area (Unnamed)	--	Apparently unnamed conservation area adjacent to Resource C-001. A large wooded open space located approximately 2200 feet east of the east end of the current Runway 8-26. Bounded on its east side by Punta Borinquen Golf Course, by Wilderness Road to the south, and the Villa del Golf makes up the preserve's northern border and separates it from Resource C-001 to the north. On the north end, along Villa del Golf is a listing for the Hoyo 8 Mountain Bike Park, which appears to feature technical single track mountain bike trails, some of which penetrate the preserve . Google Maps also highlights the Ruinas de el Faro trail within the

Resource Category	Map ID (Figure 1.2-1)	Name	Year or Timeframe of Construction (for Historic Properties)	Description
				preserve, although information about the trail seems to be unavailable. Because the conservation area is publicly owned and accessible this property is eligible for protection under Section 4(f).

Sources: *Final Pavement Evaluation Report, Runway 8-26, Rafael Hernandez International Airport (BQN), Aguadilla, Puerto Rico*. DMJM Aviation, Inc. June 4, 2004;
Regional Airports Pavement Maintenance and Management Program, Rafael Hernández International Airport (BQN). Kimley Horn Puerto Rico, LLC. 2017.
Phase I Cultural Resources Survey: Architectural History, Rafael Hernandez International Airport, Aguadilla, Puerto Rico. Prepared by AECOM, Inc., March 2020;
Discover Puerto Rico Website: https://www.discoverpuertorico.com/profile/rameys-skate-splash-park/7701;
Trail Forks Website: https://www.trailforks.com/trails/hoyo-8-trail-track/

1.3. IMPACTS ON SECTION 4(F) RESOURCES

In accordance with Section 4(f) use definitions summarized in **Section 1.1.1.1** of this Evaluation, the following sections evaluate potential impacts of the Proposed Project on the Section 4(f) resources described in **Section 1.2**.

1.3.1. PHYSICAL USE OF SECTION 4(F) RESOURCES

Section 4(f) resources located within the DSA were evaluated for physical use by the Proposed Project under Section 4(f) regulations. As previously discussed, physical use would occur if the Proposed Project either permanently incorporates a Section 4(f) property into a transportation facility; or the Proposed Project results in a temporary occupancy of land that is adverse in terms of the statute's preservation purpose, as determined by the criteria in 23 CFR 774.13(d) (i.e., when all or part of the Section 4(f) property is required for project construction-related activities).

Both Proposed Action Alternatives include reconstructing Runway 8-26 500 feet to the south of its present location, as well as shifting the runway 862 feet east under Alternative 2B or 1,187 east under Alternative 2D. Both Action Alternatives would require demolition of 21 buildings south of the reconstructed/relocated Runway 8-26 to achieve compliance with 14 CFR 77.17(a)(5), which prevents the persistence or placement of objects within the surface of a takeoff and/or landing area of an airport, or within any imaginary surface (including, primary, horizontal, conical, approach or transitional surfaces). Alternative 2B and Alternative 2D would each result in physical use of 17 total Section 4(f) resources: demolition of 16 buildings south of proposed runway reconstruction location, and alteration of the existing Runway 8-26 to serve as a parallel taxiway. **Table 1.3-1** provides a summary the Proposed Project's physical use of Section 4(f) resources within the DSA.

Table 1.3-1 Summary of Physical use Impacts to Section 4(f) Resources

Resource Category	Map ID (Figure 1.3-1)	Name	Evaluation
Historic Structure	H-001	Runway 8-26	Conversion of runway to parallel taxiway will require removal and replacement of historic pavement materials. *Physical use.*
Historic Structure	H-006	Building 3 - Gazebo	Demolition and removal of historic structure to comply with 14 CFR 77.17(a)(5). *Physical use.*
Historic Structure	H-012	Building 1029 - Ground Support Equipment Shop	Demolition and removal of historic structure to comply with 14 CFR 77.17(a)(5). *Physical use.*
Historic Structure	H-013	Building 1031 - Electric Power Station	Demolition and removal of historic structure to comply with 14 CFR 77.17(a)(5). *Physical use.*

Resource Category	Map ID (Figure 1.3-1)	Name	Evaluation
Historic Structure	H-014	Building 1132 - Squadron Operations	Demolition and removal of historic structure to comply with 14 CFR 77.17(a)(5). *Physical use.*
Historic Structure	H-015	Building 1070 - Aircraft Maintenance Organizational Shop	Demolition and removal of historic structure to comply with 14 CFR 77.17(a)(5). *Physical use.*
Historic Structure	H-016	Building 1071 - Squadron Operations	Demolition and removal of historic structure to comply with 14 CFR 77.17(a)(5). *Physical use.*
Historic Structure	H-017	Building 1072 - Weapons and Base Systems Shop	Demolition and removal of historic structure to comply with 14 CFR 77.17(a)(5). *Physical use.*
Historic Structure	H-018	Building 1073 - Traffic Check House	Demolition and removal of historic structure to comply with 14 CFR 77.17(a)(5). *Physical use.*
Historic Structure	H-019	Building 1089 - Weather Observation Tower	Demolition and removal of historic structure to comply with 14 CFR 77.17(a)(5). *Physical use.*
Historic Structure	H-020	Building 1104 - Storage and Supply	Demolition and removal of historic structure to comply with 14 CFR 77.17(a)(5). *Physical use.*
Historic Structure	H-021	Building 1121 - Electrical Station	Demolition and removal of historic structure to comply with 14 CFR 77.17(a)(5). *Physical use.*
Historic Structure	H-022	Building 1128 - Armaments and Avionics Shop	Demolition and removal of historic structure to comply with 14 CFR 77.17(a)(5). *Physical use.*
Historic Structure	H-023	Building 1129 - Armaments and Electrical Shop	Demolition and removal of historic structure to comply with 14 CFR 77.17(a)(5). *Physical use.*
Historic Structure	H-024	Building 1133 - Captive Water Supply Tank Building	Demolition and removal of historic structure to comply with 14 CFR 77.17(a)(5). *Physical use.*
Historic Structure	H-025	Building 1245 - Readiness Crew Facility	Demolition and removal of historic structure to comply with 14 CFR 77.17(a)(5). *Physical use.*

Resource Category	Map ID (Figure 1.3-1)	Name	Evaluation
Historic Structure	H-026	Building 1251 - Target Intelligence	Demolition and removal of historic structure to comply with 14 CFR 77.17(a)(5). *Physical use.*

Source: AECOM, 2020.

1.3.2. CONSTRUCTIVE USE OF SECTION 4(F) RESOURCES

The potential for constructive use under Section 4(f) was evaluated for the Section 4(f) resources within the DSA that would not experience physical use, and for all Section 4(f) resources located within the ISA. Constructive use would occur if the proximity of the Proposed Project results in air quality impacts, light and visual emissions impacts, or noise impacts so severe that the protected activities, features or attributes that qualify the property for protection under Section 4(f) are substantially impaired.

As discussed in detail in the EA, the Proposed Project would not result in an increase in airport capacity or a change in the types of aircraft using BQN, and long-term operational air quality impacts would not occur. A minor short-term increase in air pollutant emissions would result from construction-related vehicles and equipment, but these increases would be limited to the construction period. Aguadilla Municipio is considered in attainment/unclassifiable for all National Ambient Air Quality Standards (NAAQS). Therefore, implementation of the Proposed Project would not substantially impair the features of any Section 4(f) resources and constructive use would not occur on this basis.

The relocated runway would require airfield lighting changes that would result in an increase in light and visual emissions associated with the relocated runway, while decreasing light and visual emissions in the area currently occupied by Runway 8-26. These increased emissions associated with the reconstructed runway would mostly affect areas on the airfield and would not impair any of the unique features or functionality of any Section 4(f) resources. Constructive use would not occur on this basis.

The relocation of Runway 8-26 would shift noise contours (an estimate of noise exposure at given locations) associated with landing, takeoff, approach, climb-out, and taxiing of aircraft roughly 500 feet to the south, relative to current airport noise exposure conditions. Section 4(f) resources in the northern portions of the ISA would consequently experience a decrease in noise exposure with implementation of either Action Alternative.

Table 1.3-2 displays land use compatibility with DNL designations. A specific point analysis was prepared using FAA's Aviation Environmental Design Tool (AEDT) for each Section 4(f) resource located within the DSA and ISA to determine whether the DNL resulting from each Proposed Project alternative would result in constructive use for each resource. **Table 1.3-3** depicts the results of the point analysis. The most notable increases at grid points would occur at the former locations of buildings that would be demolished as a result of the Proposed Project, and therefore

would not constitute constructive use. The remaining Section 4(f) resources would either experience a decreased DNL as a result of the Proposed Project, or the resulting increased DNL would remain land use compatible. Therefore, the Proposed Project would not result in constructive use of any Section 4(f) properties as a result of noise impacts.

Table 1.3-2 Land Use Compatibility with Yearly Day-Night Average Sound Levels

	Yearly DNL					
	Below 65 dB	**65-70 dB**	**70-75 dB**	**75-80 dB**	**80-85 dB**	**Over 85 dB**
Residential						
Residential (Other than mobile homes & transient lodges)	Y	N[1]	N[1]	N	N	N
Mobile Home Parks	Y	N	N	N	N	N
Transient Lodging	Y	N[1]	N[1]	N[1]	N	N
Public Use						
Schools	Y	N[1]	N[1]	N	N	N
Hospitals, Nursing Homes	Y	25	30	N	N	N
Churches, Auditoriums, Concert Halls	Y	25	30	N	N	N
Governmental Services	Y	Y	25	30	N	N
Transportation	Y	Y	Y[2]	Y[3]	Y[4]	Y[4]
Parking	Y	Y	Y[2]	Y[3]	Y[4]	N
Commercial Use						
Offices, Business & Professional	Y	Y	25	30	N	N
Wholesale & Retail Building Materials, Hardware & Farm Equipment	Y	Y	Y[2]	Y[3]	Y[4]	N
Retail Trade - General	Y	Y	25	30	N	N
Utilities	Y	Y	Y[2]	Y[3]	Y[4]	N
Communications	Y	Y	25	30	N	N
Manufacturing & Production						
Manufacturing, General	Y	Y	Y[2]	Y[3]	Y[4]	N
Photographic and Optical	Y	Y	25	30	N	N
Agriculture (Except Livestock) & Forestry	Y	Y[6]	Y[7]	Y[8]	Y[8]	Y[8]
Livestock Farming & Breeding	Y	Y[6]	Y[7]	N	N	N
Mining & Fishing, Resource Production & Extraction	Y	Y	Y	Y	Y	Y
Recreational						
Outdoor Sports Arenas, Spectator Sports	Y	Y[5]	Y[5]	N	N	N
Outdoor Music Shells, Amphitheaters	Y	N	N	N	N	N
Nature Exhibits & Zoos	Y	Y	N	N	N	N
Amusement, Parks, Resorts, Camps	Y	Y	Y	N	N	N
Golf Courses, Riding Stables, Water Recreation	Y	Y	25	30	N	N
Golf Courses, Riding Stables, Water Recreation	Y	Y	25	30	N	N

Source: Title 14 CFR part 150, Appendix A, Table 1, January 1998.
NOTE:
The responsibility for determining the acceptable and permissible land uses and the relationship between specific properties remains with the local authorities. FAA determinations under Part 150 are not intended to substitute

federally determined land use for those determined to be appropriate by local authorities in response to locally determined needs and values in achieving noise-compatible land uses.

KEY TO TABLE:

SLUCM Standard Land Use Coding Manual.

Y (Yes) Land Use and related structures are compatible without restrictions.

N (No) Land Use and related structures are not compatible and should be prohibited.

NLR Noise Level Reduction (outdoor to indoor) are to be achieved through incorporation of noise attenuation into the design and construction of structure.

25,30, or 35 Land use and related structures are generally compatible; measures to achieve NLR of 25, 30, or 35 dB must be incorporated in design and construction of structure.

[1] Where the community determines that residential or school uses must be allowed, measures to achieve outdoor to indoor NLR of at least 25 dB and 30 dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide a NLR of 20 dB, thus, the reduction requirements are often stated as 5, 10 or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year round. However, the use of NLR criteria will not eliminate outdoor noise problems.

[2] Measures to achieve NLR of 25 dB must be incorporated into the design and construction of portions of the buildings where the public is received, office areas, noise-sensitive areas, or where the normal noise level is low.

[3] Measures to achieve NLR of 30 dB must be incorporated into the design and construction of portions of the buildings where the public is received, office areas, noise-sensitive areas, or where the normal noise level is low.

[4] Measures to achieve NLR of 35 dB must be incorporated into the design and construction of portions of the buildings where the public is received, office areas, noise-sensitive areas, or where the normal noise level is low.

[5] Land use compatible provided special sound reinforcement systems are installed.

[6] Residential buildings require an NLR of 25 dB.

[7] Residential buildings require an NLR of 30 dB.

[8] Residential buildings not permitted.

Noncompatible land use denoted in red highlighting.

Table 1.3-3 Predicted Sound Level Changes at Section 4(f) Properties

Category	ID	Description	2029 Predicted Sound Level (DNL dB)			Change From No-Action (DNL dB)		Conclusion	
			No-Action	Alt 2B	Alt 2D	Alt 2B	Alt 2D	Alt 2B	Alt 2D
Conservation Area	C-001	Conservation Area (Unnamed)	60.8	56.6	56.6	-4.2	-4.2	No constructive use: sound level decreases	No constructive use: sound level decreases
	C-002	Conservation Area (Unnamed)	63.8	62.7	62.6	-1.1	-1.1	No constructive use: sound level decreases	No constructive use: sound level decreases
Historic Structure	H-001	Runway 8-26	87.1	68.9	69.8	-18.2	-17.3	No constructive use: sound level decreases	No constructive use: sound level decreases
	H-002	Building 400 - Control Tower	63.4	59.0	59.3	-4.4	-4.1	No constructive use: sound level decreases	No constructive use: sound level decreases
	H-003	Building 402 - Hangar 2	62.6	57.9	57.8	-4.7	-4.9	No constructive use: sound level decreases	No constructive use: sound level decreases
	H-004	Building 403 - Hangar 3	62.3	57.6	57.6	-4.7	-4.7	No constructive use: sound level decreases	No constructive use: sound level decreases
	H-005	Building 405 - Hangar 5	61.4	57.5	57.7	-3.9	-3.7	No constructive use: sound level decreases	No constructive use: sound level decreases
	H-006	Building 3 - Gazebo	63.9	74.3	75.8	10.4	11.9	No constructive use; sound levels increase but building slated for demolition (see Physical Use impacts discussion)	No constructive use; sound levels increase but building slated for demolition (see Physical Use impacts discussion)
	H-007	Building 571 - Nose Dock Hangar	69.5	62.8	61.1	-6.8	-8.5	No constructive use: sound level decreases	No constructive use: sound level decreases

Category	ID	Description	2029 Predicted Sound Level (DNL dB)			Change From No-Action (DNL dB)		Conclusion	
			No-Action	Alt 2B	Alt 2D	Alt 2B	Alt 2D	Alt 2B	Alt 2D
	H-008	Building 572 - Nose Dock Hangar	67.8	64.3	63.0	-3.5	-4.7	No constructive use: sound level decreases	No constructive use: sound level decreases
	H-009	Building 573 - Nose Dock Hangar	66.3	63.9	64.3	-2.4	-2.0	No constructive use: sound level decreases	No constructive use: sound level decreases
	H-010	Building 574 - Nose Dock Hangar	64.5	62.3	63.5	-2.2	-1.0	No constructive use: sound level decreases	No constructive use: sound level decreases
	H-011	Building 575 - Hangar	63.7	61.5	62.3	-2.2	-1.4	No constructive use: sound level decreases	No constructive use: sound level decreases
	H-012	Building 1029 - Ground Support Equipment Shop	61.6	67.6	67.6	6.0	5.9	No constructive use; sound levels increase but building slated for demolition (see Physical Use impacts discussion)	No constructive use; sound levels increase but building slated for demolition (see Physical Use impacts discussion)
	H-013	Building 1031 - Electric Power Station	62.9	70.2	70.0	7.4	7.1	No constructive use; sound levels increase but building slated for demolition (see Physical Use impacts discussion)	No constructive use; sound levels increase but building slated for demolition (see Physical Use impacts discussion)
	H-014	Building 1132 - Squadron Operations	61.3	68.9	69.6	7.6	8.3	No constructive use; sound levels increase but building slated for	No constructive use; sound levels increase but building slated for

Category	ID	Description	2029 Predicted Sound Level (DNL dB)			Change From No-Action (DNL dB)		Conclusion	
			No-Action	Alt 2B	Alt 2D	Alt 2B	Alt 2D	Alt 2B	Alt 2D
								demolition (see Physical Use impacts discussion)	demolition (see Physical Use impacts discussion)
	H-015	Building 1070 - Aircraft Maintenance Organizational Shop	60.5	66.5	66.4	6.0	5.9	No constructive use; sound levels increase but building slated for demolition (see Physical Use impacts discussion)	No constructive use; sound levels increase but building slated for demolition (see Physical Use impacts discussion)
	H-016	Building 1071 - Squadron Operations	60.4	67.2	67.6	6.8	7.1	No constructive use; sound levels increase but building slated for demolition (see Physical Use impacts discussion)	No constructive use; sound levels increase but building slated for demolition (see Physical Use impacts discussion)
	H-017	Building 1072 - Weapons and Base Systems Shop	61.5	67.3	66.9	5.8	5.3	No constructive use; sound levels increase but building slated for demolition (see Physical Use impacts discussion)	No constructive use; sound levels increase but building slated for demolition (see Physical Use impacts discussion)
	H-018	Building 1073 - Traffic Check House	60.7	65.9	65.5	5.2	4.8	No constructive use; sound levels increase but building	No constructive use; sound levels increase but building

Category	ID	Description	2029 Predicted Sound Level (DNL dB)			Change From No-Action (DNL dB)		Conclusion	
			No-Action	Alt 2B	Alt 2D	Alt 2B	Alt 2D	Alt 2B	Alt 2D
								slated for demolition (see Physical Use impacts discussion)	slated for demolition (see Physical Use impacts discussion)
	H-019	Building 1089 - Weather Observation Tower	62.3	70.3	70.6	8.0	8.3	No constructive use; sound levels increase but building slated for demolition (see Physical Use impacts discussion)	No constructive use; sound levels increase but building slated for demolition (see Physical Use impacts discussion)
	H-020	Building 1104 -Storage and Supply	63.6	73.2	74.0	9.6	10.4	No constructive use; sound levels increase but building slated for demolition (see Physical Use impacts discussion)	No constructive use; sound levels increase but building slated for demolition (see Physical Use impacts discussion)
	H-021	Building 1121 -Electrical Station	61.1	68.7	69.1	7.6	8.0	No constructive use; sound levels increase but building slated for demolition (see Physical Use impacts discussion)	No constructive use; sound levels increase but building slated for demolition (see Physical Use impacts discussion)
	H-022	Building 1128 - Armaments and Avionics Shop	60.6	67.8	68.2	7.2	7.6	No constructive use; sound levels increase	No constructive use; sound levels increase

Category	ID	Description	2029 Predicted Sound Level (DNL dB)			Change From No-Action (DNL dB)		Conclusion	
			No-Action	Alt 2B	Alt 2D	Alt 2B	Alt 2D	Alt 2B	Alt 2D
								but building slated for demolition (see Physical Use impacts discussion)	but building slated for demolition (see Physical Use impacts discussion)
	H-023	Building 1129 - Armaments and Electrical Shop	60.0	66.7	66.8	6.7	6.8	No constructive use; sound levels increase but building slated for demolition (see Physical Use impacts discussion)	No constructive use; sound levels increase but building slated for demolition (see Physical Use impacts discussion)
	H-024	Building 1133 -Captive Water Supply Tank Building	60.6	67.8	68.2	7.3	7.7	No constructive use; sound levels increase but building slated for demolition (see Physical Use impacts discussion)	No constructive use; sound levels increase but building slated for demolition (see Physical Use impacts discussion)
	H-025	Building 1245 - Readiness Crew Facility	63.4	74.1	75.5	10.7	12.1	No constructive use; sound levels increase but building slated for demolition (see Physical Use impacts discussion)	No constructive use; sound levels increase but building slated for demolition (see Physical Use impacts discussion)
	H-026	Building 1251 - Target Intelligence	65.4	72.7	67.9	7.3	2.5	No constructive use; sound	No constructive use; sound

Category	ID	Description	2029 Predicted Sound Level (DNL dB)			Change From No-Action (DNL dB)		Conclusion	
			No-Action	Alt 2B	Alt 2D	Alt 2B	Alt 2D	Alt 2B	Alt 2D
								levels increase but building slated for demolition (see Physical Use impacts discussion)	levels increase but building slated for demolition (see Physical Use impacts discussion)
	H-027	Building 1270 - Storage	66.1	70.0	65.3	3.9	-0.7	No constructive use; sound levels increase but land use remains noise-compatible.	No constructive use: sound level decreases
	H-028	Building 1203 - Small Arms Magazine	56.8	56.3	55.2	-0.5	-1.6	No constructive use: sound level decreases	No constructive use: sound level decreases
	H-029	Building 1204 - Small Arms Magazine	56.7	56.6	55.4	-0.1	-1.3	No constructive use: sound level decreases	No constructive use: sound level decreases
	H-030	Building 1214 - Fuel Storage Tank	53.1	56.9	56.7	3.8	3.7	No constructive use; sound levels increase but land use remains noise-compatible.	No constructive use; sound levels increase but land use remains noise-compatible.
	H-031	Building 1215 - Fuel Storage Tank	52.4	56.2	56.5	3.8	4.1	No constructive use; sound levels increase but land use remains noise-compatible.	No constructive use; sound levels increase but land use remains noise-compatible.
	H-032	Building 1230 - Storage	62.4	61.2	60.8	-1.3	-1.6	No constructive use: sound level decreases	No constructive use: sound level decreases

Category	ID	Description	2029 Predicted Sound Level (DNL dB)			Change From No-Action (DNL dB)		Conclusion	
			No-Action	Alt 2B	Alt 2D	Alt 2B	Alt 2D	Alt 2B	Alt 2D
	H-033	Building 501 - Motor Transportation and Repair)	62.6	58.7	57.3	-4.0	-5.3	No constructive use: sound level decreases	No constructive use: sound level decreases
	H-034	Building 502 - Ordnance Repair Shop	64.0	59.7	58.4	-4.2	-5.6	No constructive use: sound level decreases	No constructive use: sound level decreases
	H-035	Building 503 - Quartermaster Warehouse	60.8	60.2	60.9	-0.6	0.1	No constructive use: sound level decreases	No constructive use; sound levels increase but land use remains noise-compatible.
	H-036	Building 504 - Bakery	59.9	59.1	60.4	-0.8	0.5	No constructive use: sound level decreases	No constructive use; sound levels increase but land use remains noise-compatible.
	H-037	Building 505 - Utility Shop	58.4	57.8	59.0	-0.6	0.6	No constructive use: sound level decreases	No constructive use; sound levels increase but land use remains noise-compatible.
	H-038	Building 506 - Commissary and Quartermaster Warehouse	59.1	58.2	59.2	-1.0	0.1	No constructive use: sound level decreases	No constructive use; sound levels increase but land use remains noise-compatible.
	H-039	Building 507 - Power Plant	58.4	57.3	58.1	-1.1	-0.2	No constructive use: sound level decreases	No constructive use: sound level decreases

Category	ID	Description	2029 Predicted Sound Level (DNL dB)			Change From No-Action (DNL dB)		Conclusion	
			No-Action	Alt 2B	Alt 2D	Alt 2B	Alt 2D	Alt 2B	Alt 2D
	H-040	Building 508 - Laundry	58.0	56.7	57.5	-1.3	-0.4	No constructive use: sound level decreases	No constructive use: sound level decreases
	H-041	Building 509 - Cold Storage Plant	59.7	58.6	59.6	-1.1	-0.1	No constructive use: sound level decreases	No constructive use: sound level decreases
	H-042	Building 510 - Air Corps Garage	59.8	58.4	59.2	-1.5	-0.6	No constructive use: sound level decreases	No constructive use: sound level decreases
	H-043	Building 511 - Air Corps Garage	60.7	59.0	59.9	-1.7	-0.9	No constructive use: sound level decreases	No constructive use: sound level decreases
	H-044	Building 512 - Quartermaster Warehouse	62.9	61.3	60.7	-1.6	-2.2	No constructive use: sound level decreases	No constructive use: sound level decreases
	H-045	Building 513 - Quartermaster Warehouse	61.7	60.9	61.3	-0.8	-0.5	No constructive use: sound level decreases	No constructive use: sound level decreases
	H-046	Building 524 - Pavement and Grounds	63.2	61.8	62.5	-1.4	-0.7	No constructive use: sound level decreases	No constructive use: sound level decreases
	H-047	Building 543 - Veterinary Office	62.1	60.5	61.7	-1.5	-0.3	No constructive use: sound level decreases	No constructive use: sound level decreases
	H-048	Building 406 - Fire Station	59.8	55.8	55.7	-4.0	-4.1	No constructive use: sound level decreases	No constructive use: sound level decreases
	H-049	Building 407 - Paint, Oil, and Dope House	60.1	56.1	55.9	-4.0	-4.2	No constructive use: sound level decreases	No constructive use: sound level decreases
	H-050	Building 408 - Photographic Laboratory	59.3	55.5	55.4	-3.8	-4.0	No constructive use: sound level decreases	No constructive use: sound level decreases

Category	ID	Description	2029 Predicted Sound Level (DNL dB)			Change From No-Action (DNL dB)		Conclusion	
			No-Action	Alt 2B	Alt 2D	Alt 2B	Alt 2D	Alt 2B	Alt 2D
	H-051	Building 409 - Air Corps Garage	59.5	55.7	55.5	-3.8	-4.0	No constructive use: sound level decreases	No constructive use: sound level decreases
	H-052	Building 410 - Air Corps Garage	60.3	56.3	56.1	-4.0	-4.2	No constructive use: sound level decreases	No constructive use: sound level decreases
	H-053	Civilian War Housing	58.3	60.8	60.6	2.5	2.4	No constructive use; sound levels increase but land use remains noise-compatible.	No constructive use; sound levels increase but land use remains noise-compatible.
	H-054	Fullana Neighborhood (Partial)	61.3	56.9	55.7	-4.5	-5.6	No constructive use: sound level decreases	No constructive use: sound level decreases
Recreational Area	R-001	Punta Borinquen Golf Course and Club House	68.0	63.2	63.1	-4.7	-4.9	No constructive use: sound level decreases	No constructive use: sound level decreases
	R-002	Aguadilla (Ramey) Skate and Splash Park	62.0	57.6	56.3	-4.4	-5.7	No constructive use: sound level decreases	No constructive use: sound level decreases

Source: AEDT, 2020.

In summary, the Proposed Project would not result in impacts to air quality, light and visual emissions, or increased noise impacts that would significantly impair any Section 4(f) resources. No constructive use of Section 4(f) resources would result from the Proposed Project.

1.3.3. MEASURES TO MINIMIZE HARM

In summary, both Runway 8-26 and 16 of the 21 buildings to be demolished as a result of both Alternatives 2B and 2D are considered Section 4(f) properties with significant direct, physical use as defined at 23 CFR 774.17. No constructive use impacts have been identified. The direct physical use of these properties is significant because they are each individually considered to be contributing resources to a historic district as determined in consultation with the SHPO as required by Section 106 of the National Historic Preservation Act (NHPA). The use is not *de minimis* in nature because alterations to the affected Section 4(f) properties constitute an adverse effect to historic resources per 36 CFR 800.

Because these alternatives unavoidably impact Section 4(f) resources, mitigation is required to minimize the harm incurred. Each impacted Section 4(f) resource individually contributes to the NRHP-eligible Ramey Air Force Base historic district. Mitigations proposed for adverse effects under Section 106 and ratified with a Memorandum of Agreement (MOA) between FAA and SHPO constitute the mitigation measures under Section 4(f). By adhering to the MOA stipulations discussed in **Section 4.7.2.1** of the EA for cultural resources and included in **Appendix C** of the EA, the FAA will mitigate significant Section 4(f) impacts associated with the Proposed Project.

1.4. AGENCY COORDINATION AND PUBLIC INVOLVEMENT

The Puerto Rico Planning Board (PRPB), Puerto Rico Environmental Quality Board (PEQB), and other Commonwealth and local agencies received scoping information as part of the EA early agency coordination process, and provided comments on potential impacts to the Section 4(f) resources. With respect to potential archaeological and historic resources in the vicinity of the Proposed Project, the Puerto Rico SHPO received and reviewed a Cultural Resources Assessment Survey for the Proposed Project through NHPA Section 106 consultation with FAA, and subsequently concluded that all structures associated with the Former Ramey AFB individually contribute to a historic district that is eligible for inclusion to the NRHP, and therefore are considered Section 4(f) resources.

In accordance with 23 CFR 774.5(b)(2), the public and agencies with jurisdiction over the Section 4(f) resources affected or potentially affected by the Proposed Project will be afforded the opportunity to review and comment on the effects of the Proposed Project on the resources during the Draft EA comment period.

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