MATCHLINE - SEE SHEET 5

MATCHLINE - SEE SHEET 4

N

0 60 120

SHEET	6 OF 6
DRAWN:	KB
CHECKED:	
SCALE:	1" = 60'
REVISION:	
DATE:	4/25/2022

Desert Gardens
Warren Road & Miller Road
Pinal County, Arizona

Native Plant Inventory Plan

Native Resources Intl.
1540 W Happy Valley Rd.
Phoenix, AZ. 85085
Phone (623) 869-6757
Fax (623) 869-6769

Native Resources International

DESERT GARDENS
OPEN SPACE & RECREATION PLAN

Native Plant Inventory

Exhibit G.6

LEGEND	
S	Salvageable
NS	Non Salvageable
RIP	Remain in Place

SUMMARY			
	TREES	CACTI	TOTAL
Salvageable	677	2	679
Non-Salvageable	0	0	0
Remain-In-Place	0	0	0
Total	677	2	679

INVENTORY

PLANT #	COMMON NAME	CALIPER (IN)	WIDTH (FT)	HEIGHT (FT)	STATUS	COMMENTS
1	Blue Palo Verde	8	13	12	S	
2	Mesquite	4	8	10	S	
3	Blue Palo Verde	4	8	9	S	
4	Blue Palo Verde	12	16	16	S	
5	Blue Palo Verde	12	14	15	S	
6	Blue Palo Verde	8	13	14	S	
7	Blue Palo Verde	7	10	12	S	
8	Blue Palo Verde	16	20	20	S	
9	Blue Palo Verde	10	16	15	S	
10	Blue Palo Verde	10	15	15	S	
11	Blue Palo Verde	10	14	13	S	
12	Mesquite	6	10	10	S	
13	Ironwood	8	12	15	S	
14	Blue Palo Verde	8	12	12	S	
15	Blue Palo Verde	7	11	11	S	
16	Blue Palo Verde	10	14	15	S	
17	Blue Palo Verde	11	15	14	S	
18	Blue Palo Verde	6	9	12	S	
19	Blue Palo Verde	15	20	20	S	
20	Mesquite	4	7	7	S	
21	Blue Palo Verde	5	8	10	S	
22	Blue Palo Verde	5	9	12	S	
23	Blue Palo Verde	8	12	13	S	
24	Blue Palo Verde	7	12	12	S	
25	Blue Palo Verde	7	12	12	S	
26	Blue Palo Verde	8	12	12	S	
27	Blue Palo Verde	7	12	12	S	
28	Blue Palo Verde	5	8	11	S	
29	Blue Palo Verde	7	12	13	S	
30	Blue Palo Verde	8	13	13	S	
31	Blue Palo Verde	9	14	15	S	
32	Blue Palo Verde	8	13	14	S	
33	Blue Palo Verde	9	12	16	S	
34	Blue Palo Verde	9	13	14	S	

PLANT #	COMMON NAME	CALIPER (IN)	WIDTH (FT)	HEIGHT (FT)	STATUS	COMMENTS
35	Blue Palo Verde	7	11	12	S	
36	Blue Palo Verde	8	12	14	S	
37	Mesquite	4	8	11	S	
38	Blue Palo Verde	9	15	15	S	
39	Blue Palo Verde	6	10	12	S	
40	Blue Palo Verde	13	18	18	S	
41	Blue Palo Verde	7	11	12	S	
42	Blue Palo Verde	8	12	14	S	
43	Blue Palo Verde	14	18	20	S	
44	Blue Palo Verde	16	20	18	S	
45	Blue Palo Verde	16	20	17	S	
46	Mesquite	6	11	12	S	
47	Mesquite	10	15	14	S	
48	Saguaro			6	S	2 heads
49	Mesquite	5	9	9	S	
50	Blue Palo Verde	14	18	17	S	
51	Blue Palo Verde	7	10	10	S	
52	Mesquite	9	13	14	S	
53	Blue Palo Verde	16	20	23	S	
54	Mesquite	4	6	7	S	
55	Mesquite	7	11	10	S	
56	Mesquite	7	6	10	S	
57	Mesquite	8	13	13	S	
58	Mesquite	7	11	9	S	
59	Mesquite	5	9	8	S	
60	Mesquite	8	12	12	S	
61	Blue Palo Verde	23	30	29	S	
62	Mesquite	7	11	10	S	
63	Mesquite	8	11	11	S	
64	Mesquite	8	13	14	S	
65	Mesquite	8	13	14	S	
66	Mesquite	7	11	10	S	
67	Mesquite	5	7	7	S	
68	Mesquite	7	10	10	S	
69	Mesquite	8	12	11	S	
70	Mesquite	8	14	12	S	
71	Mesquite	10	14	14	S	
72	Mesquite	8	14	14	S	
73	Mesquite	8	14	13	S	
74	Mesquite	7	10	10	S	
75	Mesquite	5	8	8	S	
76	Mesquite	5	8	8	S	
77	Mesquite	7	13	12	S	

PLANT #	COMMON NAME	CALIPER (IN)	WIDTH (FT)	HEIGHT (FT)	STATUS	COMMENTS
78	Mesquite	6	8	8	S	
79	Mesquite	7	10	10	S	
80	Mesquite	6	10	9	S	
81	Blue Palo Verde	7	10	14	S	
82	Blue Palo Verde	7	10	17	S	
83	Blue Palo Verde	4	7	11	S	
84	Blue Palo Verde	5	7	13	S	
85	Blue Palo Verde	7	12	13	S	
86	Mesquite	6	11	10	S	
87	Blue Palo Verde	4	7	7	S	
88	Mesquite	9	14	12	S	
89	Blue Palo Verde	6	11	11	S	
90	Mesquite	6	10	10	S	
91	Mesquite	8	12	12	S	
92	Mesquite	8	13	14	S	
93	Mesquite	8	13	14	S	
94	Mesquite	5	7	7	S	
95	Mesquite	6	10	10	S	
96	Mesquite	6	11	10	S	
97	Mesquite	5	9	9	S	
98	Mesquite	9	15	15	S	
99	Mesquite	9	15	15	S	
100	Mesquite	8	14	12	S	
101	Mesquite	7	11	12	S	
102	Mesquite	6	10	10	S	
103	Mesquite	9	15	15	S	
104	Mesquite	6	10	10	S	
105	Mesquite	6	10	12	S	
106	Mesquite	5	7	8	S	
107	Mesquite	9	14	14	S	
108	Mesquite	9	13	12	S	
109	Mesquite	6	10	10	S	
110	Mesquite	6	8	9	S	
111	Mesquite	7	10	11	S	
112	Mesquite	9	15	14	S	
113	Mesquite	9	14	14	S	
114	Blue Palo Verde	7	7	12	S	
115	Mesquite	5	8	8	S	
116	Mesquite	7	10	10	S	
117	Mesquite	7	14	13	S	
118	Mesquite	8	14	13	S	
119	Mesquite	6	10	10	S	
120	Mesquite	6	10	10	S	

PLANT #	COMMON NAME	CALIPER (IN)	WIDTH (FT)	HEIGHT (FT)	STATUS	COMMENTS
121	Mesquite	6	10	9	S	
122	Mesquite	7	10	10	S	
123	Mesquite	6	8	8	S	
124	Mesquite	7	10	10	S	
125	Blue Palo Verde	7	10	14	S	
126	Mesquite	7	10	10	S	
127	Mesquite	8	14	14	S	
128	Mesquite	8	15	14	S	
129	Mesquite	8	15	14	S	
130	Mesquite	5	9	7	S	
131	Blue Palo Verde	6	10	13	S	
132	Blue Palo Verde	7	12	15	S	
133	Blue Palo Verde	8	12	15	S	
134	Blue Palo Verde	9	14	15	S	
135	Blue Palo Verde	12	16	18	S	
136	Mesquite	8	13	13	S	
137	Blue Palo Verde	8	13	15	S	
138	Mesquite	7	10	10	S	
139	Mesquite	6	10	10	S	
140	Mesquite	6	8	8	S	
141	Mesquite	6	8	8	S	
142	Mesquite	7	10	10	S	
143	Mesquite	6	8	8	S	
144	Mesquite	5	8	8	S	
145	Mesquite	5	8	8	S	
146	Mesquite	6	9	9	S	
147	Mesquite	6	9	9	S	
148	Mesquite	7	13	12	S	
149	Mesquite	7	12	12	S	
150	Mesquite	7	13	12	S	
151	Mesquite	5	8	7	S	
152	Mesquite	5	8	8	S	
153	Mesquite	7	13	12	S	
154	Mesquite	4	7	7	S	
155	Blue Palo Verde	7	12	15	S	
156	Mesquite	10	18	17	S	
157	Blue Palo Verde	5	9	9	S	
158	Mesquite	7	12	11	S	
159	Mesquite	6	10	10	S	
160	Mesquite	6	10	10	S	
161	Mesquite	6	10	10	S	
162	Mesquite	6	10	10	S	
163	Mesquite	8	13	12	S	

PLANT #	COMMON NAME	CALIPER (IN)	WIDTH (FT)	HEIGHT (FT)	STATUS	COMMENTS
164	Mesquite	6	10	10	S	
165	Mesquite	8	14	12	S	
166	Mesquite	6	10	9	S	
167	Mesquite	4	8	8	S	
168	Mesquite	4	6	6	S	
169	Blue Palo Verde	5	8	8	S	
170	Mesquite	5	8	8	S	
171	Blue Palo Verde	10	16	16	S	
172	Mesquite	6	11	9	S	
173	Blue Palo Verde	4	14	13	S	
174	Mesquite	4	8	8	S	
175	Blue Palo Verde	6	9	9	S	
176	Blue Palo Verde	8	13	13	S	
177	Blue Palo Verde	6	9	14	S	
178	Blue Palo Verde	5	8	9	S	
179	Blue Palo Verde	8	12	14	S	
180	Ironwood	10	14	16	S	
181	Blue Palo Verde	5	8	8	S	
182	Blue Palo Verde	5	8	8	S	
183	Blue Palo Verde	4	8	8	S	
184	Mesquite	6	9	7	S	
185	Mesquite	5	8	7	S	
186	Blue Palo Verde	7	10	10	S	
187	Mesquite	7	14	12	S	
188	Mesquite	8	14	12	S	
189	Blue Palo Verde	8	14	14	S	
190	Blue Palo Verde	8	14	13	S	
191	Blue Palo Verde	6	10	9	S	
192	Mesquite	6	10	9	S	
193	Mesquite	7	11	9	S	
194	Mesquite	4	8	8	S	
195	Mesquite	6	10	9	S	
196	Mesquite	5	7	7	S	
197	Mesquite	5	8	8	S	
198	Mesquite	7	11	9	S	
199	Blue Palo Verde	7	11	11	S	
200	Mesquite	8	14	14	S	
201	Mesquite	7	13	10	S	
202	Mesquite	7	10	10	S	
203	Mesquite	4	7	7	S	
204	Mesquite	7	13	12	S	
205	Mesquite	7	11	10	S	
206	Mesquite	7	11	11	S	

PLANT #	COMMON NAME	CALIPER (IN)	WIDTH (FT)	HEIGHT (FT)	STATUS	COMMENTS
207	Mesquite	5	8	7	S	
208	Mesquite	6	8	9	S	
209	Mesquite	8	13	13	S	
210	Mesquite	5	6	7	S	
211	Mesquite	8	13	12	S	
212	Mesquite	6	11	9	S	
213	Mesquite	7	11	11	S	
214	Mesquite	4	7	7	S	
215	Mesquite	7	11	11	S	
216	Mesquite	5	8	8	S	
217	Mesquite	5	8	8	S	
218	Mesquite	4	6	7	S	
219	Mesquite	5	9	8	S	
220	Mesquite	7	12	11	S	
221	Mesquite	8	13	12	S	
222	Mesquite	10	15	13	S	
223	Mesquite	5	8	7	S	
224	Blue Palo Verde	6	8	8	S	
225	Mesquite	7	11	10	S	
226	Mesquite	8	14	13	S	
227	Mesquite	4	7	7	S	
228	Mesquite	8	13	12	S	
229	Mesquite	8	14	13	S	
230	Mesquite	7	10	9	S	
231	Mesquite	8	14	13	S	
232	Mesquite	4	6	7	S	
233	Mesquite	6	10	10	S	
234	Mesquite	6	9	9	S	
235	Mesquite	5	7	7	S	
236	Mesquite	6	9	9	S	
237	Mesquite	8	13	12	S	
238	Mesquite	7	11	10	S	
239	Mesquite	8	13	12	S	
240	Mesquite	6	8	7	S	
241	Mesquite	8	14	12	S	
242	Mesquite	6	8	8	S	
243	Mesquite	6	8	8	S	
244	Mesquite	7	10	10	S	
245	Mesquite	8	14	13	S	
246	Mesquite	8	12	12	S	
247	Mesquite	7	10	11	S	
248	Mesquite	7	10	11	S	
249	Mesquite	6	10	11	S	

PLANT #	COMMON NAME	CALIPER (IN)	WIDTH (FT)	HEIGHT (FT)	STATUS	COMMENTS
250	Mesquite	5	8	8	S	
251	Mesquite	6	9	9	S	
252	Mesquite	5	8	8	S	
253	Mesquite	7	11	10	S	
254	Mesquite	8	12	11	S	
255	Mesquite	4	7	7	S	
256	Mesquite	7	10	11	S	
257	Mesquite	6	10	11	S	
258	Mesquite	10	15	13	S	
259	Mesquite	4	7	7	S	
260	Mesquite	4	7	8	S	
261	Mesquite	8	13	12	S	
262	Mesquite	8	13	12	S	
263	Mesquite	5	9	8	S	
264	Mesquite	5	9	8	S	
265	Mesquite	8	14	13	S	
266	Mesquite	8	14	13	S	
267	Mesquite	7	10	11	S	
268	Mesquite	6	9	9	S	
269	Mesquite	7	13	12	S	
270	Mesquite	4	8	7	S	
271	Mesquite	5	8	7	S	
272	Mesquite	8	14	13	S	
273	Mesquite	10	14	13	S	
274	Mesquite	5	7	7	S	
275	Mesquite	8	13	12	S	
276	Mesquite	5	8	8	S	
277	Mesquite	8	13	11	S	
278	Mesquite	5	8	7	S	
279	Mesquite	5	8	7	S	
280	Mesquite	7	11	11	S	
281	Mesquite	7	13	12	S	
282	Mesquite	5	8	9	S	
283	Mesquite	8	14	13	S	
284	Mesquite	8	13	12	S	
285	Mesquite	7	11	10	S	
286	Mesquite	6	9	9	S	
287	Mesquite	7	10	10	S	
288	Mesquite	5	8	8	S	
289	Mesquite	8	13	12	S	
290	Mesquite	6	9	9	S	
291	Mesquite	7	12	11	S	
292	Mesquite	7	11	11	S	

PLANT #	COMMON NAME	CALIPER (IN)	WIDTH (FT)	HEIGHT (FT)	STATUS	COMMENTS
293	Mesquite	7	10	10	S	
294	Mesquite	7	10	10	S	
295	Mesquite	5	8	9	S	
296	Mesquite	7	11	10	S	
297	Mesquite	7	11	10	S	
298	Mesquite	7	10	10	S	
299	Mesquite	7	10	10	S	
300	Mesquite	6	10	10	S	
301	Mesquite	5	7	8	S	
302	Mesquite	6	9	9	S	
303	Blue Palo Verde	8	14	15	S	
304	Mesquite	6	9	11	S	
305	Mesquite	7	10	11	S	
306	Mesquite	4	8	8	S	
307	Mesquite	8	13	12	S	
308	Mesquite	8	13	12	S	
309	Mesquite	8	13	12	S	
310	Mesquite	6	10	10	S	
311	Mesquite	6	10	10	S	
312	Mesquite	10	14	12	S	
313	Mesquite	8	13	12	S	
314	Mesquite	7	11	12	S	
315	Mesquite	6	10	12	S	
316	Mesquite	7	10	12	S	
317	Mesquite	6	10	10	S	
318	Mesquite	8	13	12	S	
319	Mesquite	7	11	10	S	
320	Mesquite	7	11	10	S	
321	Mesquite	6	9	9	S	
322	Mesquite	8	13	13	S	
323	Mesquite	8	13	13	S	
324	Mesquite	5	8	8	S	
325	Mesquite	8	14	13	S	
326	Mesquite	4	8	8	S	
327	Blue Palo Verde	4	8	10	S	
328	Mesquite	6	10	11	S	
329	Mesquite	7	10	10	S	
330	Mesquite	8	14	13	S	
331	Mesquite	8	14	13	S	
332	Mesquite	7	11	10	S	
333	Mesquite	4	7	7	S	
334	Mesquite	4	7	7	S	
335	Mesquite	7	12	12	S	

PLANT #	COMMON NAME	CALIPER (IN)	WIDTH (FT)	HEIGHT (FT)	STATUS	COMMENTS
336	Mesquite	7	10	10	S	
337	Mesquite	7	10	10	S	
338	Mesquite	6	9	9	S	
339	Mesquite	8	14	13	S	
340	Mesquite	5	9	10	S	
341	Mesquite	8	12	12	S	
342	Mesquite	8	12	12	S	
343	Mesquite	10	14	14	S	
344	Mesquite	6	11	9	S	
345	Mesquite	7	13	12	S	
346	Mesquite	7	12	12	S	
347	Mesquite	7	12	12	S	
348	Mesquite	5	8	8	S	
349	Mesquite	7	12	12	S	
350	Mesquite	8	14	13	S	
351	Blue Palo Verde	8	13	14	S	
352	Mesquite	8	13	14	S	
353	Mesquite	6	10	13	S	
354	Mesquite	6	10	13	S	
355	Mesquite	6	10	13	S	
356	Mesquite	6	10	15	S	
357	Mesquite	6	10	10	S	
358	Mesquite	6	9	9	S	
359	Mesquite	9	14	13	S	
360	Mesquite	6	11	11	S	
361	Mesquite	6	9	9	S	
362	Mesquite	7	11	10	S	
363	Mesquite	5	8	8	S	
364	Mesquite	8	14	13	S	
365	Blue Palo Verde	4	7	8	S	
366	Blue Palo Verde	6	8	12	S	
367	Blue Palo Verde	7	11	13	S	
368	Mesquite	7	12	12	S	
369	Mesquite	8	12	13	S	
370	Blue Palo Verde	7	12	13	S	
371	Mesquite	8	13	14	S	
372	Mesquite	8	13	14	S	
373	Mesquite	9	13	15	S	
374	Mesquite	9	13	15	S	
375	Mesquite	12	14	16	S	
376	Mesquite	8	13	15	S	
377	Mesquite	8	13	16	S	
378	Mesquite	12	15	17	S	

PLANT #	COMMON NAME	CALIPER (IN)	WIDTH (FT)	HEIGHT (FT)	STATUS	COMMENTS
379	Mesquite	12	15	17	S	
380	Mesquite	7	12	16	S	
381	Mesquite	13	15	18	S	
382	Mesquite	10	13	17	S	
383	Mesquite	14	20	21	S	
384	Mesquite	8	12	15	S	
385	Mesquite	16	21	20	S	
386	Mesquite	10	16	16	S	
387	Mesquite	7	12	13	S	
388	Mesquite	7	11	12	S	
389	Mesquite	7	10	11	S	
390	Mesquite	14	16	19	S	
391	Mesquite	14	22	23	S	
392	Mesquite	7	12	13	S	
393	Mesquite	8	13	15	S	
394	Mesquite	10	14	16	S	
395	Mesquite	8	11	15	S	
396	Mesquite	7	13	15	S	
397	Mesquite	9	14	20	S	
398	Mesquite	8	13	15	S	
399	Blue Palo Verde	20	30	28	S	
400	Mesquite	4	7	8	S	
401	Mesquite	6	8	9	S	
402	Mesquite	18	28	27	S	
403	Mesquite	7	12	11	S	
404	Mesquite	7	11	11	S	
405	Mesquite	6	10	10	S	
406	Mesquite	10	16	15	S	
407	Mesquite	5	8	8	S	
408	Mesquite	5	8	8	S	
409	Blue Palo Verde	6	9	10	S	
410	Blue Palo Verde	6	9	10	S	
411	Blue Palo Verde	9	13	16	S	
412	Blue Palo Verde	15	27	26	S	
413	Blue Palo Verde	5	9	13	S	
414	Blue Palo Verde	6	9	12	S	
415	Mesquite	6	9	13	S	
416	Mesquite	5	8	9	S	
417	Mesquite	5	8	9	S	
418	Blue Palo Verde	5	8	9	S	
419	Mesquite	16	23	20	S	
420	Mesquite	7	11	10	S	
421	Mesquite	9	14	13	S	

PLANT #	COMMON NAME	CALIPER (IN)	WIDTH (FT)	HEIGHT (FT)	STATUS	COMMENTS
422	Mesquite	12	16	15	S	
423	Mesquite	8	14	13	S	
424	Mesquite	8	13	12	S	
425	Mesquite	8	14	12	S	
426	Mesquite	6	9	8	S	
427	Mesquite	6	9	8	S	
428	Mesquite	6	9	9	S	
429	Mesquite	7	10	10	S	
430	Mesquite	7	11	11	S	
431	Mesquite	7	10	10	S	
432	Mesquite	5	8	9	S	
433	Mesquite	6	10	10	S	
434	Mesquite	8	13	12	S	
435	Mesquite	7	12	12	S	
436	Mesquite	7	12	12	S	
437	Mesquite	6	10	10	S	
438	Mesquite	9	14	12	S	
439	Mesquite	9	14	12	S	
440	Mesquite	6	8	8	S	
441	Mesquite	9	14	13	S	
442	Mesquite	5	8	8	S	
443	Blue Palo Verde	7	12	13	S	
444	Mesquite	8	13	11	S	
445	Mesquite	5	8	8	S	
446	Mesquite	7	11	10	S	
447	Mesquite	5	8	8	S	
448	Mesquite	7	10	9	S	
449	Mesquite	8	13	12	S	
450	Mesquite	7	10	10	S	
451	Mesquite	6	9	9	S	
452	Mesquite	6	9	9	S	
453	Mesquite	6	8	8	S	
454	Mesquite	8	13	13	S	
455	Mesquite	8	13	13	S	
456	Mesquite	6	10	12	S	
457	Mesquite	7	11	10	S	
458	Mesquite	9	14	13	S	
459	Mesquite	8	13	12	S	
460	Mesquite	5	8	8	S	
461	Mesquite	8	13	12	S	
462	Mesquite	9	14	13	S	
463	Mesquite	7	11	10	S	
464	Mesquite	10	15	14	S	

PLANT #	COMMON NAME	CALIPER (IN)	WIDTH (FT)	HEIGHT (FT)	STATUS	COMMENTS
465	Mesquite	7	12	10	S	
466	Mesquite	8	13	12	S	
467	Mesquite	9	14	13	S	
468	Mesquite	9	15	13	S	
469	Mesquite	12	16	15	S	
470	Mesquite	12	16	15	S	
471	Mesquite	4	7	7	S	
472	Mesquite	9	15	14	S	
473	Mesquite	8	13	12	S	
474	Mesquite	8	13	14	S	
475	Mesquite	10	15	14	S	
476	Mesquite	12	16	15	S	
477	Mesquite	5	8	8	S	
478	Mesquite	6	10	9	S	
479	Mesquite	10	15	13	S	
480	Mesquite	7	13	12	S	
481	Mesquite	9	14	13	S	
482	Mesquite	7	12	12	S	
483	Mesquite	7	11	11	S	
484	Mesquite	8	13	12	S	
485	Mesquite	7	12	11	S	
486	Mesquite	8	14	13	S	
487	Mesquite	5	8	8	S	
488	Mesquite	5	8	8	S	
489	Mesquite	7	10	10	S	
490	Mesquite	7	10	10	S	
491	Mesquite	5	8	8	S	
492	Mesquite	5	8	8	S	
493	Mesquite	7	11	11	S	
494	Mesquite	8	14	14	S	
495	Mesquite	7	10	10	S	
496	Mesquite	4	6	8	S	
497	Mesquite	8	14	13	S	
498	Blue Palo Verde	7	10	12	S	
499	Mesquite	6	10	10	S	
500	Blue Palo Verde	8	12	14	S	
501	Blue Palo Verde	7	10	12	S	
502	Mesquite	7	11	11	S	
503	Mesquite	7	10	10	S	
504	Mesquite	7	10	10	S	
505	Mesquite	7	10	10	S	
506	Mesquite	6	9	10	S	
507	Mesquite	6	9	10	S	

PLANT #	COMMON NAME	CALIPER (IN)	WIDTH (FT)	HEIGHT (FT)	STATUS	COMMENTS
508	Mesquite	5	8	8	S	
509	Mesquite	7	12	12	S	
510	Mesquite	7	12	12	S	
511	Mesquite	7	11	12	S	
512	Mesquite	8	14	13	S	
513	Mesquite	7	12	12	S	
514	Mesquite	8	14	13	S	
515	Mesquite	7	13	12	S	
516	Mesquite	7	11	12	S	
517	Mesquite	7	12	11	S	
518	Mesquite	8	14	13	S	
519	Mesquite	7	12	11	S	
520	Mesquite	6	10	10	S	
521	Mesquite	5	8	8	S	
522	Mesquite	8	13	12	S	
523	Mesquite	4	7	7	S	
524	Mesquite	7	10	10	S	
525	Mesquite	7	10	9	S	
526	Mesquite	9	14	13	S	
527	Mesquite	6	9	7	S	
528	Mesquite	10	18	14	S	
529	Mesquite	9	14	12	S	
530	Mesquite	6	8	7	S	
531	Mesquite	9	14	13	S	
532	Mesquite	8	13	10	S	
533	Mesquite	7	11	10	S	
534	Mesquite	6	8	6	S	
535	Mesquite	14	16	14	S	
536	Mesquite	10	14	13	S	
537	Mesquite	16	20	16	S	
538	Mesquite	9	14	13	S	
539	Mesquite	12	15	14	S	
540	Mesquite	7	12	12	S	
541	Mesquite	12	15	14	S	
542	Mesquite	15	18	16	S	
543	Blue Palo Verde	4	7	8	S	
544	Mesquite	8	13	12	S	
545	Mesquite	8	13	13	S	
546	Mesquite	7	11	10	S	
547	Mesquite	14	17	16	S	
548	Mesquite	6	10	9	S	
549	Mesquite	7	11	10	S	
550	Mesquite	8	13	11	S	

PLANT #	COMMON NAME	CALIPER (IN)	WIDTH (FT)	HEIGHT (FT)	STATUS	COMMENTS
551	Blue Palo Verde	8	14	13	S	
552	Blue Palo Verde	7	13	12	S	
553	Mesquite	8	13	12	S	
554	Mesquite	10	15	14	S	
555	Mesquite	8	14	13	S	
556	Mesquite	16	17	14	S	
557	Mesquite	12	17	14	S	
558	Blue Palo Verde	4	9	9	S	
559	Mesquite	10	16	14	S	
560	Mesquite	10	15	14	S	
561	Mesquite	12	16	15	S	
562	Mesquite	8	15	13	S	
563	Mesquite	6	11	10	S	
564	Mesquite	12	15	15	S	
565	Mesquite	8	14	12	S	
566	Mesquite	5	8	7	S	
567	Mesquite	10	15	15	S	
568	Barrel			4	S	
569	Mesquite	8	14	13	S	
570	Blue Palo Verde	4	8	8	S	
571	Mesquite	6	8	7	S	
572	Mesquite	4	6	6	S	
573	Blue Palo Verde	4	6	6	S	
574	Mesquite	6	10	10	S	
575	Mesquite	6	10	10	S	
576	Mesquite	7	12	11	S	
577	Mesquite	7	12	11	S	
578	Mesquite	6	10	8	S	
579	Mesquite	7	10	9	S	
580	Mesquite	7	10	9	S	
581	Mesquite	6	8	7	S	
582	Mesquite	7	10	9	S	
583	Mesquite	8	13	11	S	
584	Mesquite	6	11	9	S	
585	Mesquite	7	12	11	S	
586	Mesquite	6	8	8	S	
587	Mesquite	10	14	12	S	
588	Mesquite	8	13	12	S	
589	Mesquite	5	8	7	S	
590	Mesquite	6	10	10	S	
591	Mesquite	9	14	12	S	
592	Mesquite	8	13	11	S	
593	Mesquite	6	10	10	S	

PLANT #	COMMON NAME	CALIPER (IN)	WIDTH (FT)	HEIGHT (FT)	STATUS	COMMENTS
594	Mesquite	4	6	6	S	
595	Mesquite	7	11	10	S	
596	Mesquite	8	12	11	S	
597	Mesquite	6	10	9	S	
598	Mesquite	6	8	7	S	
599	Mesquite	4	7	6	S	
600	Mesquite	5	8	8	S	
601	Mesquite	6	9	8	S	
602	Mesquite	4	7	6	S	
603	Mesquite	6	10	8	S	
604	Mesquite	5	7	7	S	
605	Mesquite	8	13	12	S	
606	Mesquite	7	11	10	S	
607	Mesquite	5	7	7	S	
608	Mesquite	7	10	9	S	
609	Mesquite	7	11	11	S	
610	Mesquite	7	11	9	S	
611	Mesquite	8	12	10	S	
612	Mesquite	12	15	14	S	
613	Mesquite	6	10	9	S	
614	Mesquite	12	15	14	S	
615	Mesquite	6	9	9	S	
616	Mesquite	7	11	10	S	
617	Mesquite	7	11	10	S	
618	Mesquite	8	13	11	S	
619	Mesquite	5	8	8	S	
620	Mesquite	7	11	9	S	
621	Mesquite	6	10	9	S	
622	Mesquite	8	13	12	S	
623	Mesquite	24	30	27	S	
624	Mesquite	7	12	12	S	
625	Mesquite	8	14	16	S	
626	Mesquite	7	10	11	S	
627	Mesquite	7	10	13	S	
628	Mesquite	8	13	13	S	
629	Mesquite	7	13	13	S	
630	Mesquite	7	13	13	S	
631	Mesquite	10	15	15	S	
632	Mesquite	7	12	12	S	
633	Mesquite	8	13	14	S	
634	Mesquite	7	10	13	S	
635	Mesquite	9	14	13	S	
636	Mesquite	8	13	12	S	

PLANT #	COMMON NAME	CALIPER (IN)	WIDTH (FT)	HEIGHT (FT)	STATUS	COMMENTS
637	Mesquite	16	17	14	S	
638	Mesquite	7	11	10	S	
639	Mesquite	7	10	9	S	
640	Mesquite	8	12	11	S	
641	Mesquite	6	10	10	S	
642	Mesquite	7	11	10	S	
643	Mesquite	8	13	13	S	
644	Mesquite	7	10	11	S	
645	Mesquite	7	10	11	S	
646	Mesquite	7	10	11	S	
647	Mesquite	7	11	11	S	
648	Mesquite	7	11	11	S	
649	Mesquite	7	10	11	S	
650	Mesquite	6	10	10	S	
651	Mesquite	6	10	10	S	
652	Mesquite	5	8	8	S	
653	Mesquite	6	10	9	S	
654	Mesquite	5	8	9	S	
655	Mesquite	7	12	11	S	
656	Mesquite	7	11	12	S	
657	Mesquite	9	13	13	S	
658	Mesquite	7	12	12	S	
659	Mesquite	7	12	12	S	
660	Mesquite	6	8	8	S	
661	Mesquite	7	11	11	S	
662	Mesquite	7	11	11	S	
663	Mesquite	5	8	10	S	
664	Mesquite	7	10	12	S	
665	Mesquite	7	10	12	S	
666	Mesquite	7	12	12	S	
667	Mesquite	7	10	10	S	
668	Mesquite	7	10	10	S	
669	Mesquite	8	13	11	S	
670	Mesquite	9	14	12	S	
671	Mesquite	6	10	9	S	
672	Mesquite	7	12	11	S	
673	Mesquite	7	12	11	S	
674	Mesquite	12	16	14	S	
675	Mesquite	14	20	18	S	
676	Mesquite	7	9	11	S	
677	Blue Palo Verde	14	20	18	S	
678	Blue Palo Verde	8	14	14	S	
679	Blue Palo Verde	20	27	23	S	

DESERT GARDENS

OPEN SPACE & RECREATION PLAN

Proposed Site Plan

Exhibit I

SITE DATA		
Gross Area	226.50 acres	
Zoning	R-7/PAD	
Max. Density Permitted	3.50 du/ac	
Approximate Density Provided	± 3.06 du/ac	
Approximate Number of Lots	1 ACRE	± 12 lots
	18,OOO SF	± 16 lots
	45' X 120'	± 664 lots
	Total	± 692 lots
Open Space Required	40.77 acres	18%

PARCEL 12

PARCEL 1

PARCEL 2

PARCEL 3

PARCEL 4

PARCEL 5

PARCEL 6

PARCEL 7

PARCEL 8

PARCEL 9

PARCEL 10

PARCEL 11

PHASE 1

PHASE 2

PHASE 3

PHASE 4

N WARREN RD

W MILLER RD

SANTA ROSA CANAL

LEGEND

- 1 acre
- 18,000 SF
- 45’ x 120’
- Open Space
- Drainage Easement / Channel
- Trails

N

0’ 200’ 400’

1 June 2022

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DESERT GARDENS

OPEN SPACE & RECREATION PLAN

Open Space and Amenities Plan

Exhibit J

LEGEND

A — Primary Entry Monument
- Sign Wall With Integrated Raised Planters
- Colorful Accent Planting

B — Secondary Entry Signage
- Raised Planters
- Colorful Accent Planting

C — Community Park
- Picnic Pavilion
- Shade Ramada (2)
- Picnic Tables & BBQ
- Trash Receptacle
- Tree Shaded Benches
- 1/2 Basketball Court
- 2-5 Play Area
- 5-12 Play Area
- Sand Volleyball
- Open Turf Play Areas

D — Pocket Park
- Shade Ramada
- Picnic Table
- Trash Receptacle
- Bike Rack
- Tree Shaded Benches
- 5-12 Play Area
- Open Turf Play Areas

E — Pocket Park
- Shade Ramada
- Picnic Table
- Trash Receptacle
- Bike Rack
- Tree Shaded Benches
- Walking Paths
- Desert Maze
- Open Turf Play Areas

F — Pocket Park
- Shade Ramada
- Picnic Table
- Trash Receptacle
- Bike Rack
- Tree Shaded Benches
- 5-12 Music Themed Play Area
- Open Turf Play Areas
- Trail Marker To Future County Trail

G — Pocket Park
- Shade Ramada
- Picnic Table
- Trash Receptacle
- Bike Rack
- Tree Shaded Benches
- Water Garden Themed 5-12 Play Area
- Open Turf Play Areas

H — Pocket Park
- Shade Ramada
- Picnic Table
- Trash Receptacle
- Bike Rack
- Tree Shaded Benches
- Butterfly And Hummingbird Garden
- Open Turf Play Areas
- Trail Marker To Future County Trail

I — Pocket Park
- Shade Ramada
- Picnic Table
- Trash Receptacle
- Bike Rack
- Tree Shaded Benches
- Desert Wildlife Themed 5-12 Play Area
- Open Turf Play Areas

Trail System

N

0′ 200′ 400′

1 June 2022

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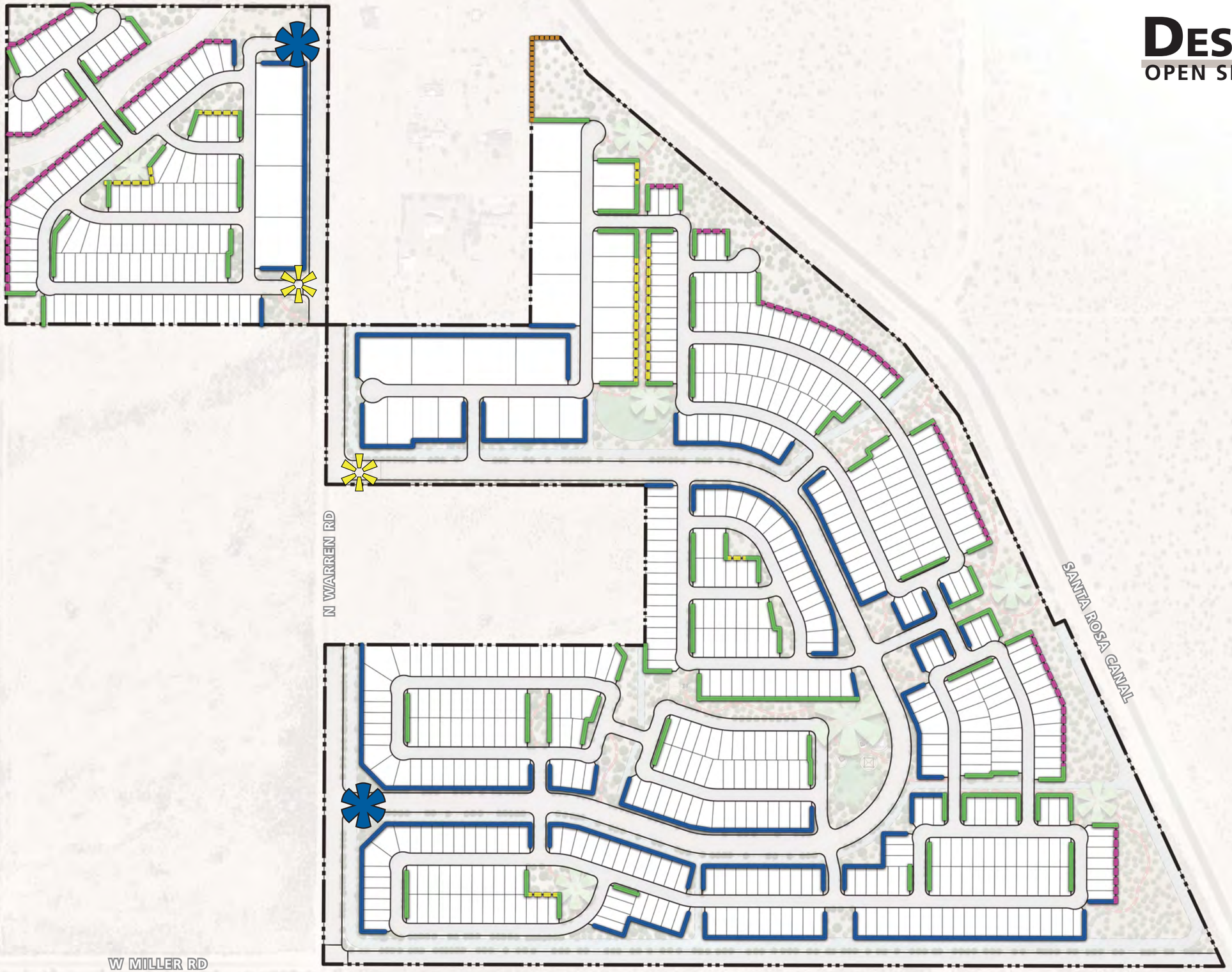
DESERT GARDENS

OPEN SPACE & RECREATION PLAN

Wall & Sign Plan

Exhibit K



LEGEND

- Primary Entry Monument
- Secondary Entry Monument
- Theme Wall
- Secondary Wall
- 2’ View Fence over 4’ CMU Wall
- 4’ View Fence over 2’ CMU Wall
- Full View Fence

N

0’ 200’ 400’

1 June 2022

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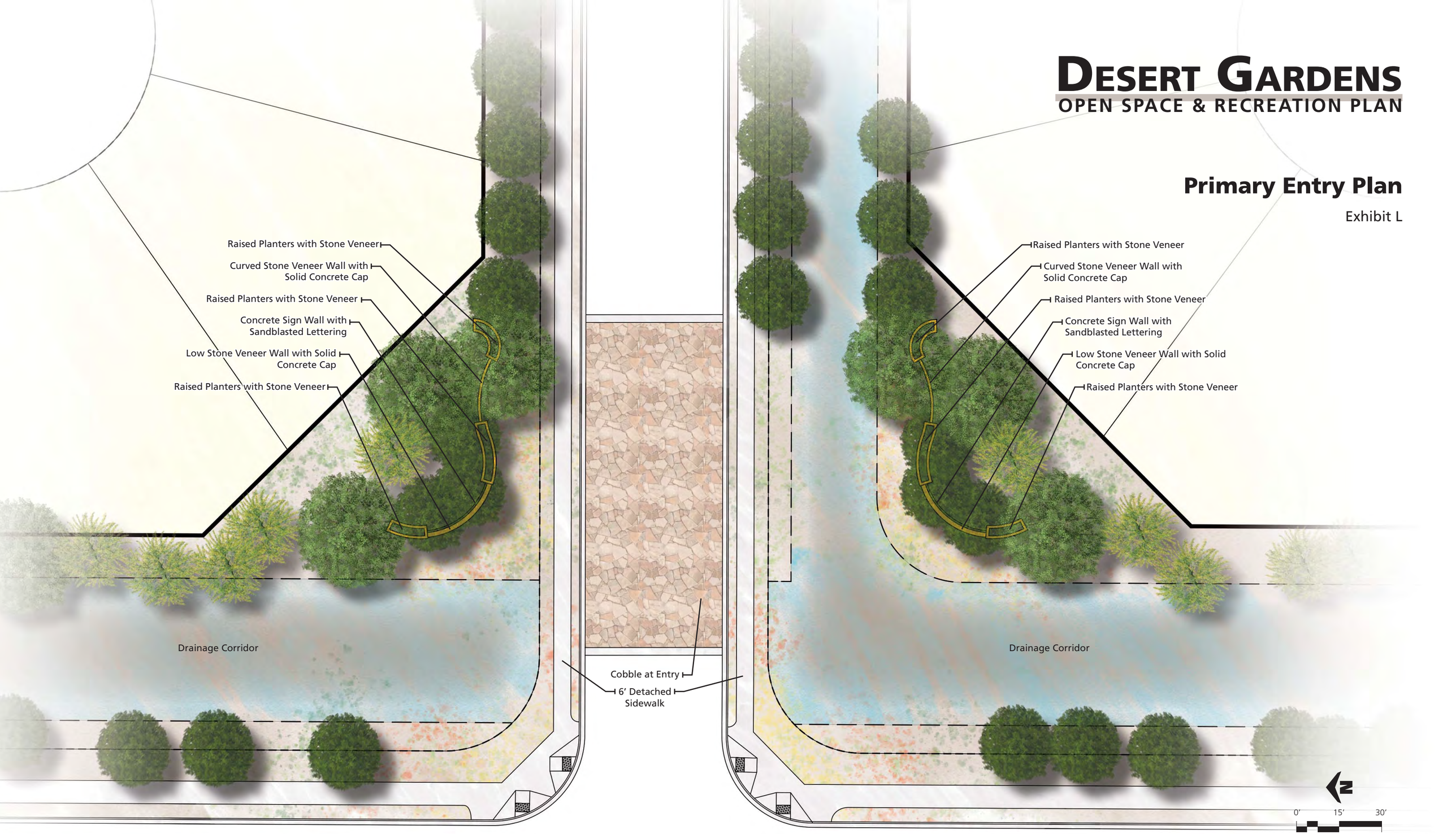
DESERT GARDENS
OPEN SPACE & RECREATION PLAN

Primary Entry Plan

Exhibit L



WARREN ROAD

1 June 2022

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DESERT GARDENS
OPEN SPACE & RECREATION PLAN

Central Community Park
Conceptual Landscape Plan

Exhibit M

1 June 2022

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OPEN SPACE & RECREATION PLAN

Primary Entry Elevation

Exhibit N

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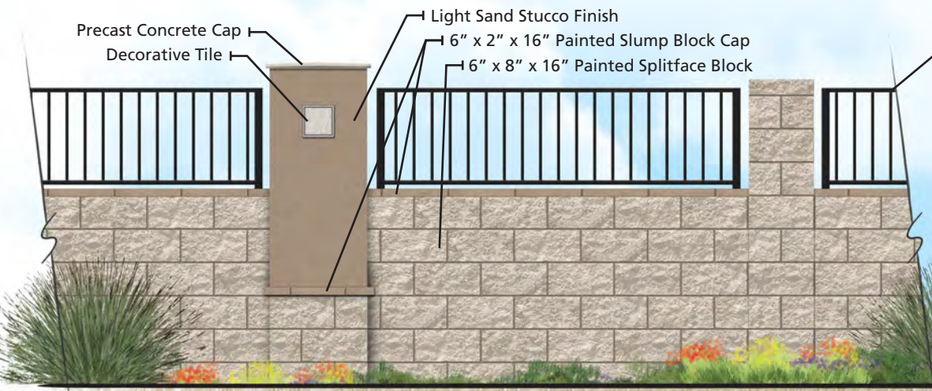
OPEN SPACE & RECREATION PLAN

Secondary Entry and Wall Elevations

Exhibit O

SECONDARY ENTRY MONUMENT



2' VIEW FENCE OVER 4' BLOCK WALL

4' VIEW FENCE OVER 2' BLOCK WALL

FULL VIEW FENCE

THEME WALL

SECONDARY WALL

1 June 2022

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DESERT GARDENS

OPEN SPACE & RECREATION PLAN

Landscape Master Plan

Exhibit P

PLANT LEGEND	
TREES	
Acacia sp.	Acacia
Celtis reticulata	Netleaf Hackberry
Chilopsis linearis 'lois adams'	Lois Adams Desert Willow
Ebenopsis ebano	Texas Ebony
Olneya tesota	Desert Ironwood
Parkinsonia sp.	Palo Verde
Pistacia chinensis	Chinese Pistache
Prosopis sp.	Mesquite
Quercus muehlenbergii	Chinkapin Oak
Vitex agnus-castus	Chaste Tree
SHRUBS AND ACCENTS	
Acacia greggii	Catclaw Acacia
Agave sp.	Agave
Aloe sp.	Aloe
Anisacanthus quadrifidus 'Wrightii'	Wright's Desert Honeysuckle
Asclepias subulata	Rush Milkweed
Berlandiera lyrata	Chocolate Daisy
Buddleja marrubiifolia	Wooly Butterfly Bush
Caesalpinia mexicana	Mexican Bird Of Paradise
Calliandra sp.	Fairy Duster
Carnegiea gigantea	Saguaro
Celtis pallida	Spiny Hackberry
Dalea sp.	Dalea
Dasylirion longissimum	Toothless Desert Spoon
Dodonaea viscosa 'Green'	Green Hopseed Bush
Echinocactus grusonii	Golden Barrel Cactus
Echinocereus engelmannii	Engelmann's Hedgehog Cactus
Encelia farinosa	Brittle Bush
Ferocactus cylindraceus	Compass Barrel Cactus
Fouquieria splendens	Ocotillo
Hesperaloe sp.	Yucca
Juniperus sabina 'Scandia'	Scandia Juniper
Justicia californica	Chuparosa
Larrea tridentata	Creosote Bush
Leucophyllum sp.	Sage
Muhlenbergia sp.	Muhly
Nolina sp.	Bear Grass
Opuntia sp.	Prickly Pear
Pedilanthus sp.	Slipper Plant
Penstemon sp.	Penstemon
Ruellia peninsularis	Desert Ruellia
Salvia clevelandii	Cleveland Sage
Senna covesii	Desert Senna
Simmondsia chinensis	Jojoba
Sphaeralcea ambigua	Desert Globemallow
Stenocereus thurberi	Organpipe Cactus
GROUNDCOVERS	
Acacia redolens	Bank Catclaw
Cynodon dactylon 'Arden 15'	Bermuda Grass
Dalea greggii	Trailing Indigo Bush
Lantana montevidensis	Purple Trailing Lantana
Rosmarinus officinalis 'Huntington Carpet'	Huntington Carpet Rosemary
Verbena rigida	Sandpaper Verbena
INERT MATERIALS	
Carmel Landscape Rock	
Carmel Natural Landscape Rock	
Carmel Rip Rap	
Painted Desert Stabilized Decomposed Granite	

1 June 2022

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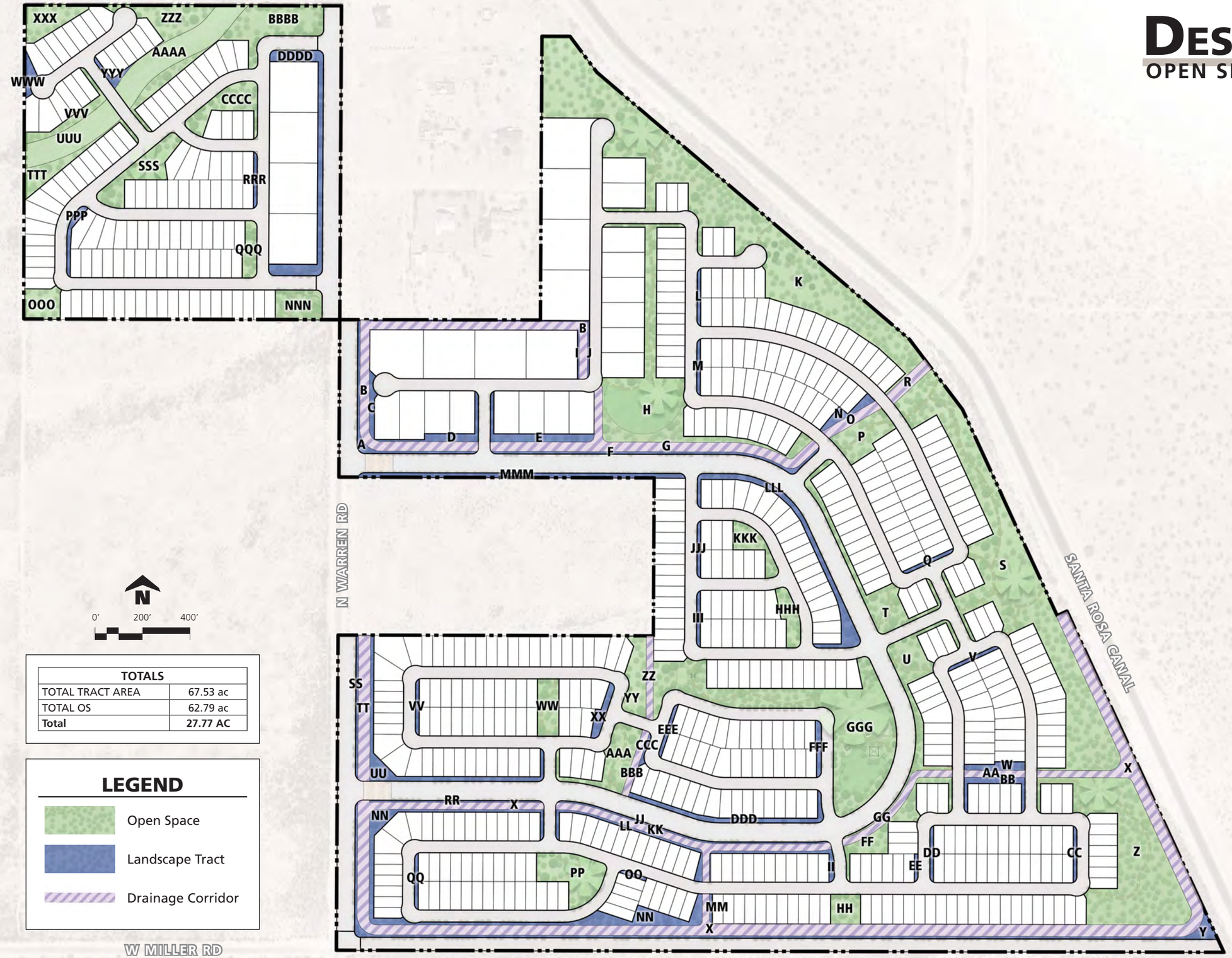
DESERT GARDENS
OPEN SPACE & RECREATION PLAN

Landscape Tract Plan
Phase 1

Exhibit Q.1



N

0′ 200′ 400′

TOTALS	
TOTAL TRACT AREA	67.53 ac
TOTAL OS	62.79 ac
Total	**27.77 AC**

LEGEND

- Open Space
- Landscape Tract
- Drainage Corridor

LANDSCAPE TRACTS		
TRACT	**AREA**	**DESCRIPTION**
TRACT A	0.27 ac	LANDSCAPE TRACT
TRACT C	0.13 ac	LANDSCAPE TRACT
TRACT D	0.28 ac	LANDSCAPE TRACT
TRACT E	0.39 ac	LANDSCAPE TRACT
TRACT F	0.34 ac	LANDSCAPE TRACT
TRACT I	0.03 ac	LANDSCAPE TRACT
TRACT J	0.15 ac	LANDSCAPE TRACT
TRACT L	0.08 ac	LANDSCAPE TRACT
TRACT M	0.08 ac	LANDSCAPE TRACT
TRACT N	0.18 ac	LANDSCAPE TRACT
TRACT Q	0.08 ac	LANDSCAPE TRACT
TRACT V	0.08 ac	LANDSCAPE TRACT
TRACT W	0.18 ac	LANDSCAPE TRACT
TRACT Y	1.11 ac	LANDSCAPE TRACT
TRACT BB	0.23 ac	LANDSCAPE TRACT
TRACT CC	0.08 ac	LANDSCAPE TRACT
TRACT DD	0.08 ac	LANDSCAPE TRACT
TRACT EE	0.04 ac	LANDSCAPE TRACT
TRACT II	0.19 ac	LANDSCAPE TRACT
TRACT JJ	0.21 ac	LANDSCAPE TRACT
TRACT LL	0.24 ac	LANDSCAPE TRACT
TRACT MM	0.03 ac	LANDSCAPE TRACT
TRACT OO	0.04 ac	LANDSCAPE TRACT
TRACT QQ	0.08 ac	LANDSCAPE TRACT
TRACT RR	0.13 ac	LANDSCAPE TRACT
TRACT SS	0.14 ac	LANDSCAPE TRACT
TRACT UU	0.68 ac	LANDSCAPE TRACT
TRACT VV	0.08 ac	LANDSCAPE TRACT
TRACT XX	0.18 ac	LANDSCAPE TRACT
TRACT CCC	0.04 ac	LANDSCAPE TRACT
TRACT DDD	0.43 ac	LANDSCAPE TRACT
TRACT EEE	0.08 ac	LANDSCAPE TRACT
TRACT FFF	0.12 ac	LANDSCAPE TRACT
TRACT III	0.08 ac	LANDSCAPE TRACT
TRACT JJJ	0.08 ac	LANDSCAPE TRACT
TRACT LLL	0.75 ac	LANDSCAPE TRACT
TRACT MMM	0.62 ac	LANDSCAPE TRACT
TRACT PPP	0.14 ac	LANDSCAPE TRACT
TRACT RRR	0.08 ac	LANDSCAPE TRACT
TRACT WWW	0.11 ac	LANDSCAPE TRACT
TRACT YYY	0.10 ac	LANDSCAPE TRACT
TRACT DDDD	0.91 ac	LANDSCAPE TRACT

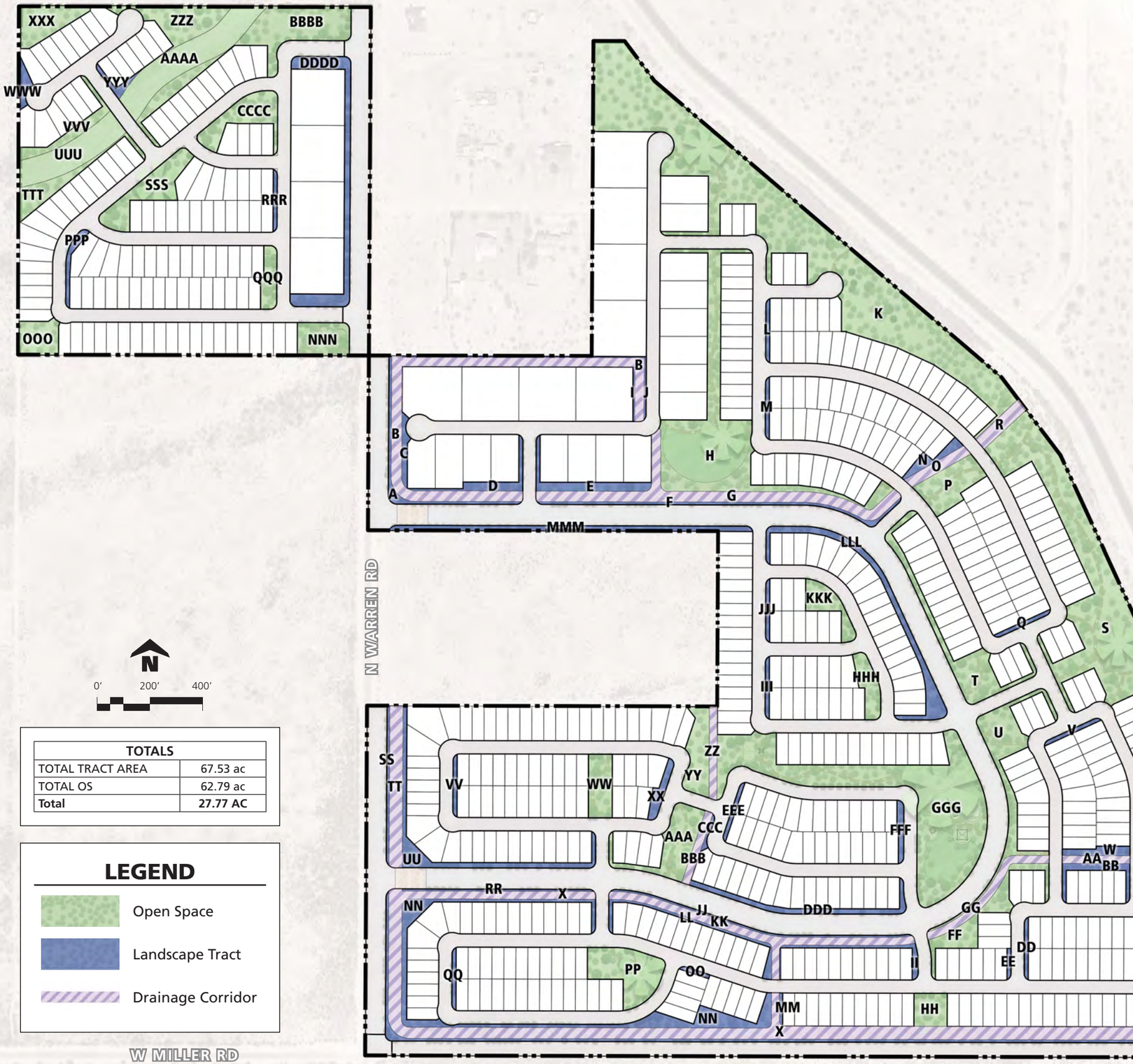
DESERT GARDENS

OPEN SPACE & RECREATION PLAN

Landscape Tract Plan

Phase 2

Exhibit Q.2



0′ 200′ 400′

TOTALS	
TOTAL TRACT AREA	67.53 ac
TOTAL OS	62.79 ac
Total	**27.77 AC**

LEGEND

- Open Space
- Landscape Tract
- Drainage Corridor

OPEN SPACE		
TRACT	**AREA**	**DESCRIPTION**
TRACT H	3.27 ac	OPEN SPACE/RETENTION/LANDSCAPE TRACT
TRACT K	8.37 ac	OPEN SPACE/RETENTION/LANDSCAPE TRACT
TRACT P	0.70 ac	OPEN SPACE/RETENTION/LANDSCAPE TRACT
TRACT S	6.65 ac	OPEN SPACE/RETENTION/LANDSCAPE TRACT
TRACT T	1.00 ac	OPEN SPACE/RETENTION/LANDSCAPE TRACT
TRACT U	1.08 ac	OPEN SPACE/RETENTION/LANDSCAPE TRACT
TRACT Z	3.97 ac	OPEN SPACE/RETENTION/LANDSCAPE TRACT
TRACT FF	0.70 ac	OPEN SPACE/RETENTION/LANDSCAPE TRACT
TRACT HH	0.36 ac	OPEN SPACE/RETENTION/LANDSCAPE TRACT
TRACT NN	1.45 ac	OPEN SPACE/RETENTION/LANDSCAPE TRACT
TRACT PP	0.99 ac	OPEN SPACE/RETENTION/LANDSCAPE TRACT
TRACT WW	0.50 ac	OPEN SPACE/RETENTION/LANDSCAPE TRACT
TRACT YY	0.60 ac	OPEN SPACE/RETENTION/LANDSCAPE TRACT
TRACT AAA	0.84 ac	OPEN SPACE/RETENTION/LANDSCAPE TRACT
TRACT GGG	4.67 ac	OPEN SPACE/RETENTION/LANDSCAPE TRACT
TRACT HHH	0.36 ac	OPEN SPACE/RETENTION/LANDSCAPE TRACT
TRACT KKK	0.41 ac	OPEN SPACE/RETENTION/LANDSCAPE TRACT
TRACT NNN	0.56 ac	OPEN SPACE/RETENTION/LANDSCAPE TRACT
TRACT OOO	0.44 ac	OPEN SPACE/RETENTION/LANDSCAPE TRACT
TRACT QQQ	0.30 ac	OPEN SPACE/LANDSCAPE TRACT
TRACT SSS	0.81 ac	OPEN SPACE/LANDSCAPE TRACT
TRACT TTT	0.45 ac	OPEN SPACE/LANDSCAPE TRACT
TRACT VVV	0.35 ac	OPEN SPACE/LANDSCAPE TRACT
TRACT XXX	0.60 ac	OPEN SPACE/LANDSCAPE TRACT
TRACT ZZZ	0.80 ac	OPEN SPACE/RETENTION/LANDSCAPE TRACT
TRACT BBBB	1.65 ac	OPEN SPACE/RETENTION/LANDSCAPE TRACT
TRACT CCCC	0.71 ac	OPEN SPACE/RETENTION/LANDSCAPE TRACT

DRAINAGE CORRIDOR (LANDSCAPE TRACT)		
TRACT	**AREA**	**DESCRIPTION**
TRACT B	1.79 ac	DRAINAGE CORRIDOR
TRACT G	1.48 ac	DRAINAGE CORRIDOR
TRACT O	0.24 ac	DRAINAGE CORRIDOR
TRACT R	0.25 ac	DRAINAGE CORRIDOR
TRACT X	6.87 ac	DRAINAGE CORRIDOR
TRACT AA	0.18 ac	DRAINAGE CORRIDOR
TRACT GG	0.40 ac	DRAINAGE CORRIDOR
TRACT KK	0.91 ac	DRAINAGE CORRIDOR
TRACT TT	0.70 ac	DRAINAGE CORRIDOR
TRACT ZZ	0.24 ac	DRAINAGE CORRIDOR
TRACT BBB	0.20 ac	DRAINAGE CORRIDOR
TRACT UUU	0.98 ac	DRAINAGE CORRIDOR
TRACT AAAA	1.42 ac	DRAINAGE CORRIDOR

1 June 2022

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CVL CONSULTANTS

THE UNIVERSITY OF ARIZONA
ARIZONA STATE MUSEUM

Arizona State Museum
PO Box 210026
Tucson AZ 85721-0026
(520) 621-6281
www.statemuseum.arizona.edu

Chris Pomrening
Coe & Van Loo Consultants, Inc.
4550 N. 12th Street
Phoenix, Arizona 85014

March 28, 2022

RE: Desert Gardens
Parcels 510-67-004A & 510-67-004B

Dear Chris,

The Arizona State Museum (ASM) has reviewed archaeological project and site records in support of the following project:

> Coe & Van Loo's Desert Gardens project (Coe & Van Loo Project No. 1-01-0368701; ASM Job No. 004536)

Correspondence indicates this project will involve the development of privately-owned land. The project area is located west of the Warren Road and Lacy Road intersection in Pinal County, and encompasses parcels 510-67-004A and 510-67-004B within Township 5 South, Range 2 East, Section 34.

I invite you to review the results of ASM's research, which are summarized below.

Search Results:

According to a search of the archaeological site records and reports held in ASM collections, eleven archaeological investigations were conducted within a one-mile radius of the project area between 1984 and 2011. Of these eleven archaeological investigations, none intersect the project area.

Additionally, four archaeological sites have been identified within a one-mile radius of the project area. Of these four archaeological sites, none intersect the project area.

Recommendations and Responsibilities:

1. Since the project area has not been subject to prior archaeological survey, ASM recommends—but does not require—that a qualified archaeological contractor be consulted before any ground-disturbing activity begins. A list of archaeological contractors is available on the ASM website at:

https://statemuseum.arizona.edu/crm/document/aaa-qualified-consultants

2. Pursuant to Arizona Revised Statute §41-865, if any human remains or funerary objects are discovered during project work, all work must stop within the area of the remains and the ASM Repatriation Office must be contacted at 520-626-0320.

3. City, county, or municipal governments may have their own requirements; therefore, ASM recommends that the relevant jurisdiction(s) be consulted.

If you have any questions about the results of this records search, please feel free to contact me at jknightonwisor@arizona.edu or 520-621-4011.

Sincerely,

Jonathan Knighton-Wisor
Research Specialist
Archaeological Records Office
Arizona State Museum
520-621-4011
jknightonwisor@arizona.edu

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Julie Vermillion
Coe & Van Loo Consultants, Inc.
4550 N 12th Street
Phoenix, AZ 85014

March 4, 2022

RE: Desert Gardens
Parcels 51072005D, 51072008D, 51072008E, and 51072008F

Dear Julie,

The Arizona State Museum (ASM) has reviewed archaeological project and site records in support of the following project:

> Coe & Van Loo Consultants, Inc.'s Desert Gardens project (Coe & Van Loo Consultants, Inc. Project No. 1-01-0368701; ASM Job No. 004440)

Correspondence indicates this project will involve the proposed PAD development of privately-owned land. The project area is located at the NEC of Warren Road and the Miller Road alignment near the city of Maricopa, Pinal County, and encompasses parcels 51072005D, 51072008D, 51072008E, and 51072008F within Township 5 South, Range 2 East, Section 35.

I invite you to review the results of ASM's research, which are summarized below.

Search Results:

According to a search of the archaeological site records and reports held in ASM collections, 14 archaeological investigations were conducted within a one-mile radius of the project area between 1984 and 2014. Of these 14 archaeological investigations, one intersects a portion of the project area.

For the one archaeological investigation that intersects the project area, Table 1 summarizes its basic information and scope.

Additionally, seven archaeological sites have been identified within a one-mile radius of the project area. Of these seven archaeological sites, none intersects the project area.

ASM Reference Number (AZProj/Accession)	Report Author(s)	Year(s) Conducted	Scope of Project
1985-0230	Marmaduke (1984, 1993); Mayberry and Marmaduke	1984-1985	Survey and excavation for Central Arizona Project canal clearance

Table 1. ASM archaeological investigations that intersect the project area

Recommendations and Responsibilities:

1. Since a portion of the project area has not been subject to prior archaeological survey, ASM recommends—but does not require—that a qualified archaeological contractor be consulted before any ground-disturbing activity begins.

Additionally, in the portions of the project area that have been previously surveyed, the work was conducted 37 to 38 years ago. It is standard archaeological practice for a property to be re-surveyed if the previous survey was conducted 10 or more years ago, as there is a possibility for previously unidentified archaeological sites to have since been exposed. For this reason, ASM recommends—but does not require—that a qualified archaeological contractor be consulted before any ground-disturbing activity begins.

A list of archaeological contractors is available on the ASM website at:
https://statemuseum.arizona.edu/crm/document/aaa-qualified-consultants

2. Pursuant to Arizona Revised Statute §41-865, if any human remains or funerary objects are discovered during project work, all work must stop within the area of the remains and the ASM Repatriation Office must be contacted at 520-626-0320.

3. City, county, or municipal governments may have their own requirements; therefore, ASM recommends that the relevant jurisdiction(s) be consulted.

If you have any questions about the results of this records search, please feel free to contact me at efioccop@arizona.edu or 520-621-4011.

Kind regards,

Emily Fioccoprile, PhD
Assistant Manager
Archaeological Records Office
Arizona State Museum
520-621-4011
efioccop@arizona.edu

References:

Marmaduke WS (1984) Untitled letter report to Tom Lincoln, Bureau of Reclamation, Arizona Projects Office. Dated October 15, 1984. Flagstaff, AZ: Northland Research, Inc.

Marmaduke WS (1993) *Small sites on the Santa Cruz Flats: the results of the investigations along the Santa Rosa Canal in the Distribution Division of the Central Arizona Project*. Flagstaff, AZ: Northland Research, Inc.

Mayberry JD and Marmaduke WS (1985) *Research design and mitigation plan for significant cultural resources Santa Rosa Canal, Division B Central Arizona Project*. Flagstaff, AZ: Northland Research, Inc.

DESERT GARDENS
OPEN SPACE & RECREATION PLAN

Phasing Plan

Exhibit S

PHASE 4

PHASE 3

PHASE 1

PHASE 2

N WARREN RD

SANTA ROSA CANAL

W MILLER RD

N

0′ 200′ 400′

1 June 2022

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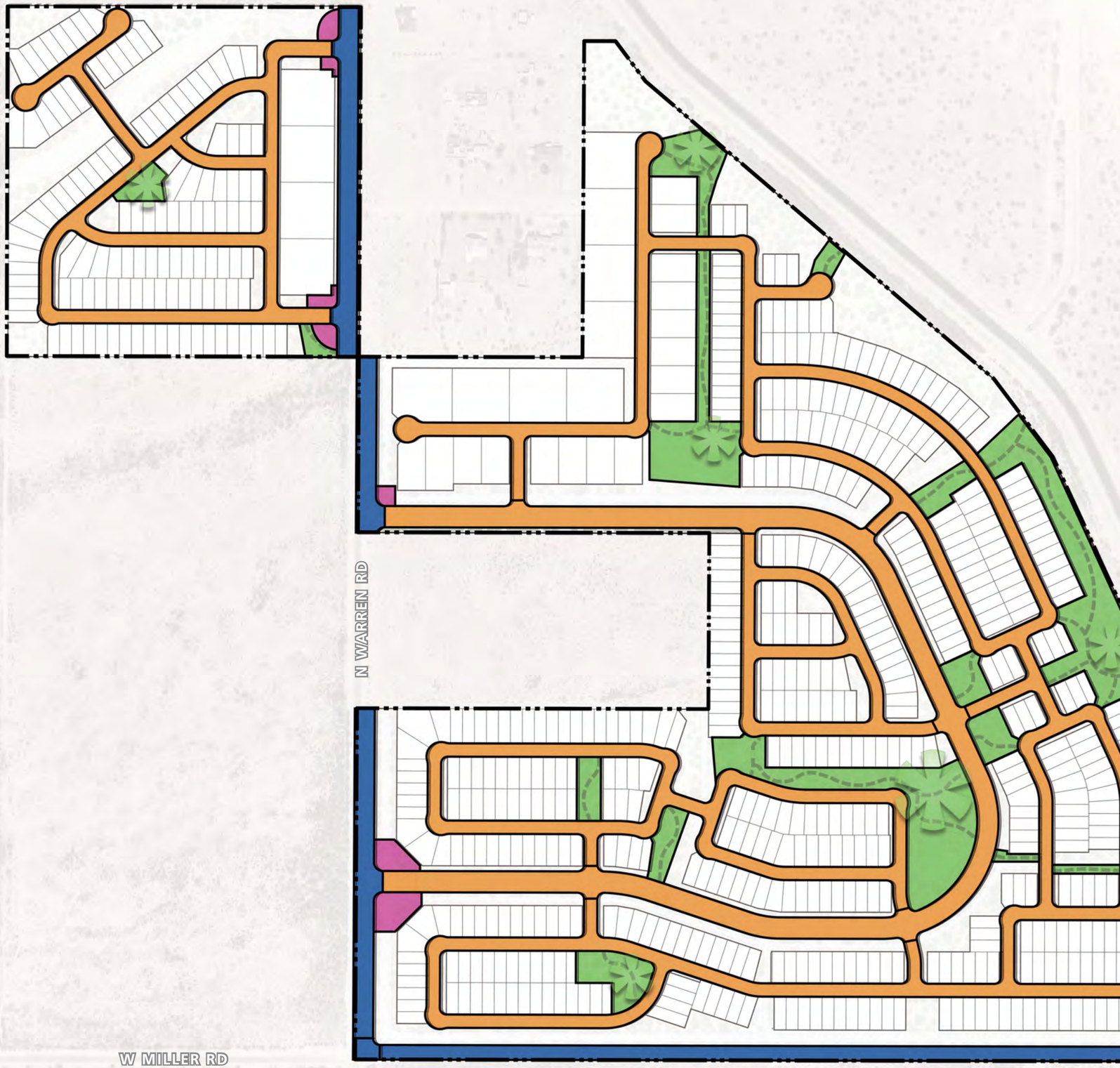
CVL CONSULTANTS

DESERT GARDENS
OPEN SPACE & RECREATION PLAN

Lighting Plan

Exhibit T



LEGEND

Perimeter Roads
- No Lighting Along Roadway (Except Street Lights If Provided)

Residential Light Zone
- Low Intensity Shielded Lights

Entry Zone
- Monument Lights
- Accent Lighting At Theme Features
- Bollard Lighting Along Entry

Open Space Zone
- Bollards Along Path When Outside Of Retention (Fully shielded bollards where adjacent to the Santa Rosa Canal)
- Area lighting at amenity areas (Fully shielded lighting in areas where adjacent to the Santa Rosa Canal)

N

0′ 200′ 400′

1 June 2022

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CVL CONSULTANTS

TRAFFIC IMPACT ANALYSIS

Desert Gardens
NEC of Warren Road and Miller Road
Pinal County, Arizona

PREPARED FOR
CVL Consultants
4550 North 12th Street
Phoenix, Arizona 85014

PREPARED BY

UCG
United Civil Group

APPROVED BY:

PINAL COUNTY ENGINEER — DATE
PINAL COUNTY DEPARTMENT OF PUBLIC WORKS

APPROVAL EXPIRES: — DATE

County Case Number: x-xxx-xx

TRAFFIC IMPACT ANALYSIS

Desert Gardens

NEC of Warren Road and Miller Road
Pinal County, Arizona

June 2, 2022

UCG Project Number: TR22014

PREPARED FOR
CVL Consultants
4550 North 12th Street
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PREPARED BY

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CONDUCTED BY _____
Sarah Simpson, PhD, PE
President

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I. INTRODUCTION AND SUMMARY

A. PURPOSE OF THE REPORT

United Civil Group was retained by CVL Consultants to perform this Traffic Impact Analysis (TIA) for the proposed Desert Gardens development. Desert Gardens is located on the east and west sides of Warren Road north of Miller Road in Pinal County, Arizona. The development is planned on approximately 226 acres of land to include 692 single family homes.

United Civil Group performed this TIA in general accordance with the requirements as specified in the Pinal County *Traffic Impact Assessment Guidelines & Procedures* dated January 2007, locally accepted standards, and industry practice. Based on the Pinal County TIA Guidelines, this development falls under a Category IIa – Moderate Development with more than 500 peak hour trips but less than 1,000 peak hour trips. The study horizons for this development include opening year plus 5 years after opening. The minimum study are limits include all site accesses, all state highways, signalized intersections, and/or major unsignalized street intersections within 1 mile of the site boundary.

B. STUDY OBJECTIVES

This study is intended to investigate the existing and future traffic conditions and identify any potential roadway improvements necessary to serve the Desert Gardens Development. Major study objectives of this traffic report are as follows:

- Determine the existing morning and evening peak hour traffic volumes at the study area intersections of Warren Road/Teel Road, Thunderbird Road/Teel Road, Ralston Road/Teel Road, Warren Road/Miller Road and Warren Road/Barnes Road.

- Analyze the existing study area intersections as well as the planned site access intersections for the development.

- Where applicable, recommend safety, intersection and/or roadway improvements sufficient to meet the needs of the development and adjacent roadway network due to the additional site generated traffic volumes.

C. Conclusions and Recommendations

The proposed Desert Gardens Development is a single-family residential development. Desert Gardens will include 692 single family homes and is planned to be constructed in one phase.

The development will be constructed and occupied by 2028. One additional horizon year, 5 years after full buildout (2033) was analyzed based on Pinal County Traffic Impact Analysis Guidelines & Procedures to identify any foreseen traffic impacts 5 years after the site is fully constructed and occupied.

The proposed Desert Gardens Development will have four accesses on Warren Road. All the site accesses are planned as full movement accesses.

After full build-out of the development, per ITE's *Trip Generation Manual 11th Edition,* Desert Gardens is forecasted to generate 6,526 total daily trips, with 484 trips in the morning peak hour and 650 trips in the evening peak hour.

Half street improvements are planned along the site's eastern and western boundaries on Warren Road and on the site's southern boundary on Miller Road. Warren Road should be constructed as an arterial cross section with 75 feet of right of way, measured centerline to right of way line. Fifty-five feet of right of way, measured centerline to right of way line, should be reserved on Miller Road, the site's southern boundary for future widening.

Through the 2033 total traffic conditions, all study area intersections operate at an acceptable LOS C or better when the improvements by Desert Gardens are taken into consideration.

A traffic signal is not warranted at the intersections of Warren Road/Teel Road, Warren Road/Miller Road or Warren Road/Barnes Road by year 2033 using projected traffic volumes from this study. However, if new development is planned in the area, then these warrants should be reanalyzed using the newly projected traffic volumes that take the new development traffic needs into consideration.

Proper intersection sight distance and sight triangles shall be provided and maintained at all site access driveways of the proposed development to give drivers exiting the site a clear view of oncoming traffic. The landscape and hardscape (monument signs) within the sight triangles must not obstruct the driver's view of the adjacent travel lanes.

Based on this TIA, the following roadway and intersection improvements are proposed.

BUILDOUT – 2028
By Desert Gardens Development

- Construct half street improvements on Warren Road along the site's western and eastern boundary. This improvement should provide 75 feet of right of way, measured from centerline to right of way line.
- Reserve 55 feet of right of way, measured from centerline to right of way line, for a future Miller Road on the site's southern boundary.
- Install right and left turn lanes on Warren Road at Accesses A, B, C and D. Turn lane lengths are specified in Tables 9 and 10.

II. PROPOSED DEVELOPMENT

A. Site Location

The Desert Gardens Development is planned for two vacant parcels of land located on the east and west sides of Warren Road north of Miller Road in Pinal County, Arizona. **Figures 1 and 2** present the location of the proposed Desert Gardens Development within the context of the immediate area and its location within Pinal County.

B. Land Use

The approximate 226-acre development is currently vacant land. In the future, the Desert Gardens Development is planned as a residential single-family home community with 692 single family homes.

C. Phasing and Timing

Desert Gardens Development is planned to be constructed in one phase.

D. Site Accessibility

The Desert Gardens Development is planned to have four accesses as follows:

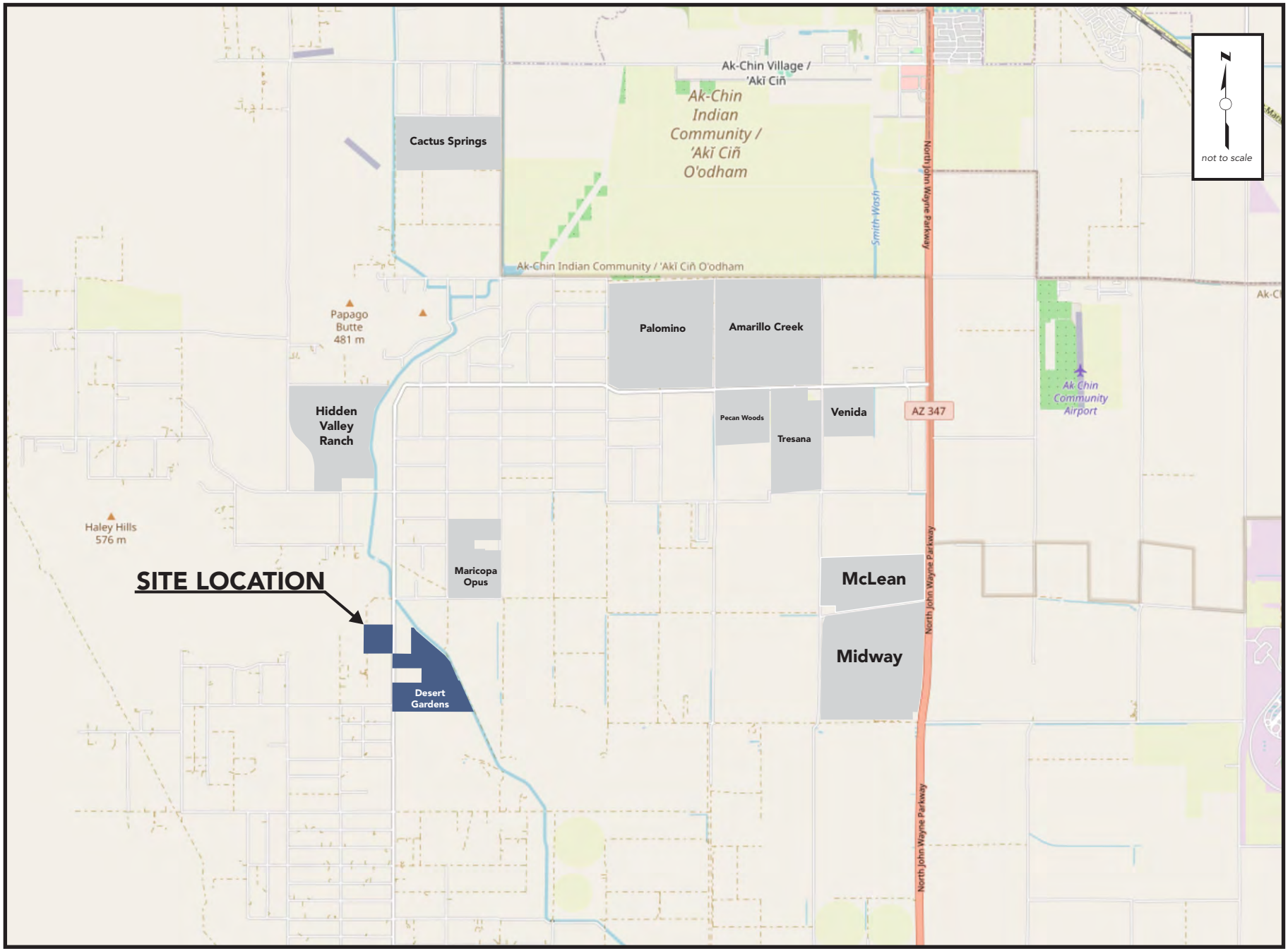
- **Access A** will be constructed as a collector road into the Desert Gardens single-family residential community east of Warren Road. Access A is located on Warren Road approximately an eighth mile north of Miller Road.

- **Access B** will be constructed as a collector road into the Desert Gardens single-family residential community east of Warren Road. Access B is located on Warren Road approximately ¼ mile north of Access A.

- **Access C** will be constructed as a local road into the Desert Gardens single-family residential community west of Warren Road. Access C is located on Warren Road approximately 930 feet north of Access B.

- **Access D** will be constructed as a local road into the Desert Gardens single-family residential community west of Warren Road.

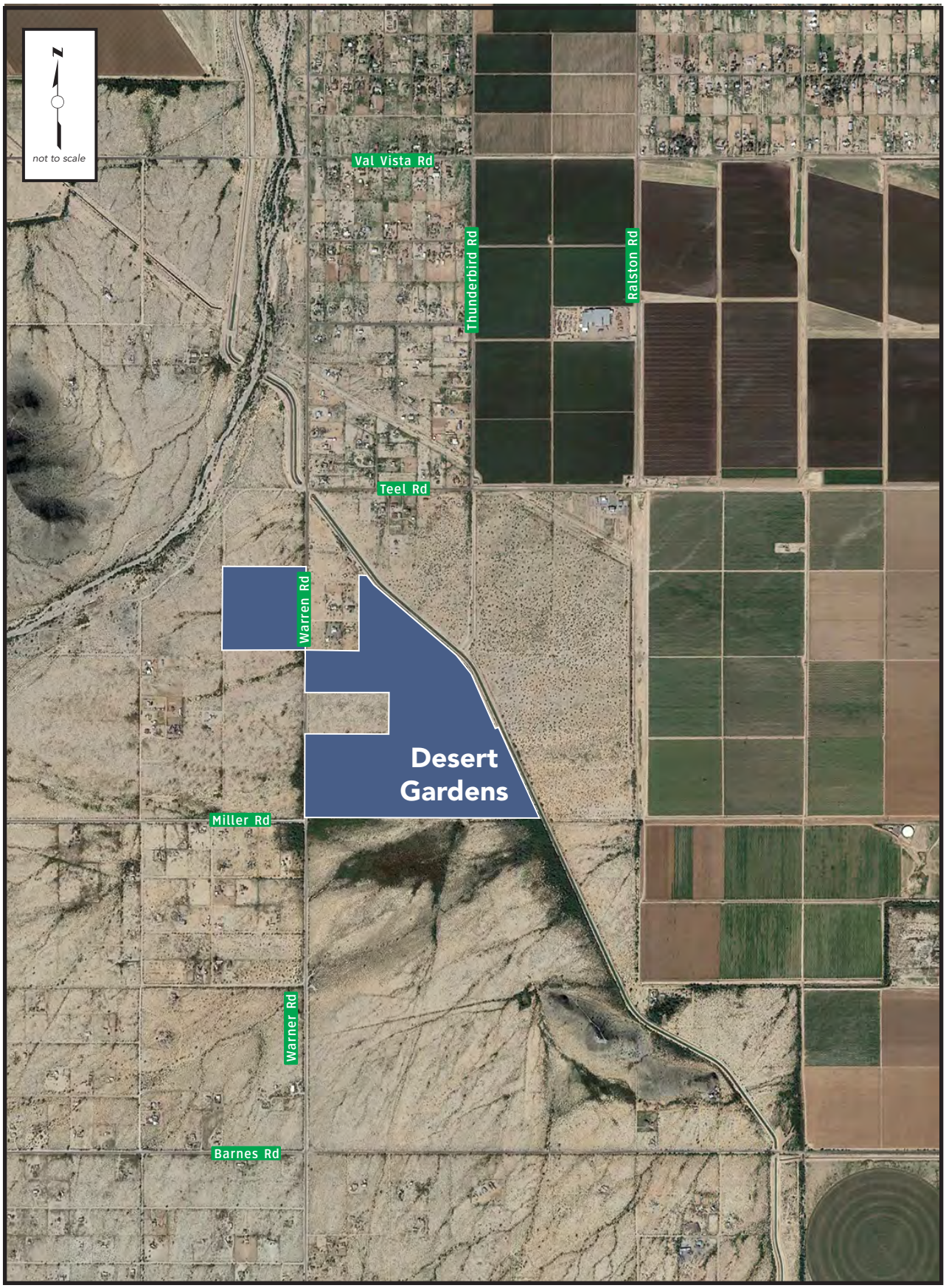
Figure 3 illustrates the layout of the proposed Desert Gardens Development in relation to the location of the site access points.



ArcGIS - 2022

Figure 1: Vicinity Map

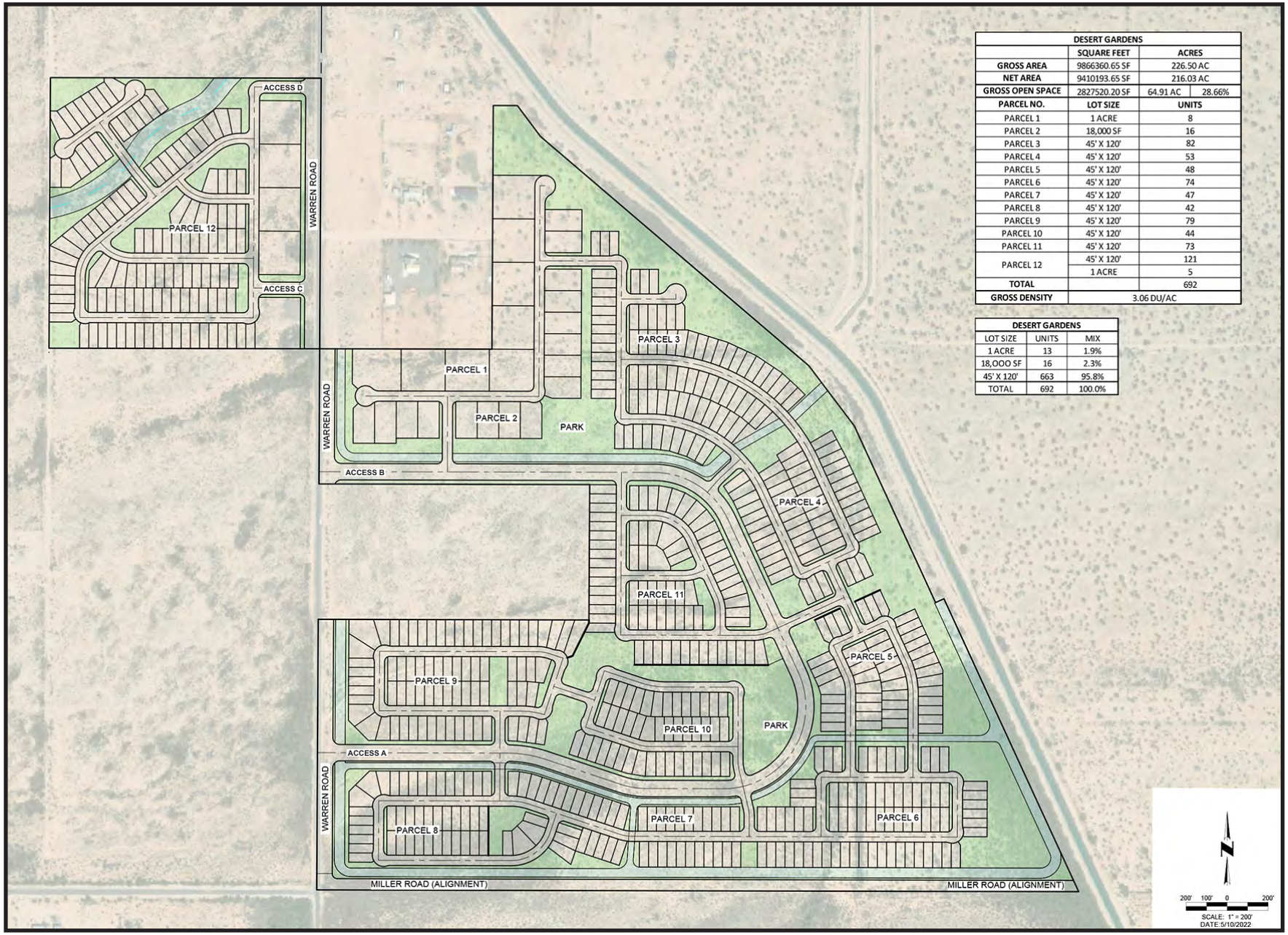
United Civil Group



Permission for commercial use granted by Google Earth

Figure 2: Aerial View

United Civil Group



DESERT GARDENS		
	SQUARE FEET	ACRES
GROSS AREA	9866360.65 SF	226.50 AC
NET AREA	9410193.65 SF	216.03 AC
GROSS OPEN SPACE	2827520.20 SF	64.91 AC 28.66%
PARCEL NO.	LOT SIZE	UNITS
PARCEL 1	1 ACRE	8
PARCEL 2	18,000 SF	16
PARCEL 3	45' X 120'	82
PARCEL 4	45' X 120'	53
PARCEL 5	45' X 120'	48
PARCEL 6	45' X 120'	74
PARCEL 7	45' X 120'	47
PARCEL 8	45' X 120'	42
PARCEL 9	45' X 120'	79
PARCEL 10	45' X 120'	44
PARCEL 11	45' X 120'	73
PARCEL 12	45' X 120'	121
	1 ACRE	5
TOTAL		692
GROSS DENSITY	3.06 DU/AC	

DESERT GARDENS		
LOT SIZE	UNITS	MIX
1 ACRE	13	1.9%
18,000 SF	16	2.3%
45' X 120'	663	95.8%
TOTAL	692	100.0%

Figure 3: Site Plan

United Civil Group

III. STUDY AREA CONDITIONS

A. Study Area

Based on the forecasted trip generation of Desert Gardens, the proposed development falls under a Category IIa – Moderate Development with more than 500 peak hour trips but less than 1,000 peak hour trips. The minimum study are limits include all site accesses, all state highways, signalized intersections, and/or major unsignalized street intersections within 1 mile of the site boundary.

According to these guidelines and through discussions with the Pinal County staff, the study area includes the existing intersections of:

- Warren Road/Teel Road
- Thunderbird Road/Teel Road
- Ralston Road/Teel Road
- Warren Road/Miller Road
- Warren Road/Barnes Road
- All site access intersections

B. Study Area Land Use

The following describes the existing land uses near the subject site.
SUBJECT SITE: vacant land
NORTH: vacant land and single-family residential homes
SOUTH: vacant land and single-family residential homes
EAST: vacant land and agricultural land
WEST: vacant land and single-family residential homes

C. Anticipated Future Development and Planned Improvements

Seven new residential developments are planned within the vicinity of the Desert Gardens Development.

Hidden Valley Ranch – Unit 1 development is a single-family residential community that includes an elementary school site. Hidden Valley Ranch-Unit 1 is located north of Val Vista Road, south of the Papago Road alignment, west of Warren Road and east of Hidden Valley Road in Pinal County, Arizona. Hidden Valley Ranch will include 1,246 single family homes and an approximate 12-acre elementary school site with 600 students. The Hidden Valley Ranch-Unit 1 development is planned to be constructed in two phases. Phase I includes 559 single family homes. Phase II is planned to include 687 homes plus the elementary school.

Maricopa Opus development is a single-family residential community located north of Teel Road, south of the Flamingo Avenue alignment, west of Ralston Road and east of Thunderbird Road in Pinal County, Arizona. Maricopa Opus will include 686 single family homes that are planned to be developed in one phase.

Amarillo Creek is located north of Papago Road, south of the Peters and Nall Road alignment, east of Amarillo Valley Road and west of Green Road in Pinal County, Arizona. The development is planned to include 2,149 single family homes, an approximate 12-acre elementary school site with 600 students, and an approximate 14-acre junior high school site with 600 students.

Tresana is located north of Val Vista Road, south of Papago Road, east of the Liebre Road alignment and west of Green Road in Pinal County, Arizona. The development is planned to include 1,140 single family homes and an approximate 7-acre school site with 600 students.

Pecan Woods is located on the southeast corner of Papago Road and Amarillo Valley Road in Pinal County, Arizona. The development is planned to include 581 single-family detached homes.

Palomino Ranch is located on the northwest corner of Papago Road and Amarillo Valley Road in Pinal County, Arizona. The development is planned to include 2,102 single-family detached homes, an approximate 12-acre elementary school site with 600 students and an approximate 14-acre junior high school site with 600 students.

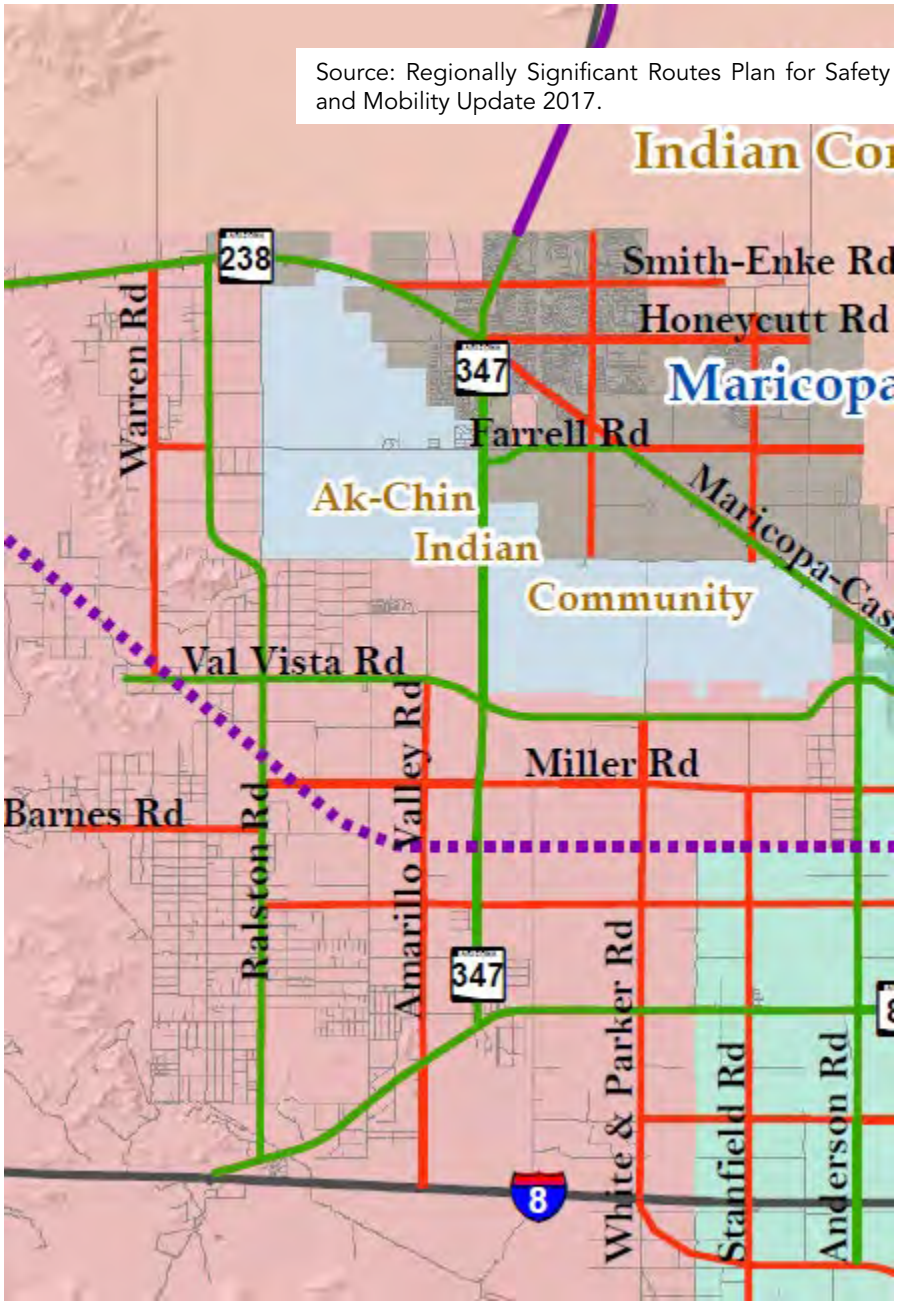
Venida is located on the southeast corner of Green Road and Papago Road in Pinal County, Arizona. The development is planned to include 554 single-family detached homes.

Trip generation and recommendations from these developments are included in the background traffic for this Desert Gardens TIA and shown in Appendix D.

IV. EXISTING ROADWAY CONDITIONS

A. Physical Characteristics

Warren Road, located on the mile section, is a north-south roadway. Within the Pinal County Small Area Transportation Study 2006 and the Regionally Significant Routes Report for Safety and Mobility Update 2017, Warren Road is shown as a route of regional significance and classified as a major arterial. Within the vicinity of the site, Warren Road is paved with one lane in each direction. Warren Road is not constructed with curb, gutter, or sidewalk. The posted speed limit on Warren Road is 40 mph. Pinal County controls, operates, and maintains Warren Road within the vicinity of the site.



Source: Regionally Significant Routes Plan for Safety and Mobility Update 2017.

Miller Road within the vicinity of the site is a paved two-lane roadway west of Warren Road with a posted speed limit of 35 miles per hour. Because Miller Road is located on the one-mile section, Miller Road should be classified as a minor arterial route. Pinal County controls, operates, and maintains Miller Road within the vicinity of the site.

Teel Road within the vicinity of the site is an unpaved two-lane roadway. Because Teel Road is located on the mile section, Teel Road should be classified as a major collector route given its geographic

location between the mountain range to the west and the planned shift in alignment of Val Vista Road in the future, there will be no regional connectivity.

Thunderbird Road within the vicinity of the site is a paved two-lane roadway north of Teel Road with a posted speed limit of 35 miles per hour. Because Thunderbird Road is located on the half-mile section, Thunderbird Road should be classified as a major collector route. Pinal County controls, operates, and maintains Thunderbird Road within the vicinity of the site.

Ralston Road, located on the 2-mile section is a north-south roadway. Within the Pinal County Small Area Transportation Study 2006 and the Regionally Significant Routes Report for Safety and Mobility Update 2017, Ralston Road is shown as a route of regional significance and classified as a parkway. Within the vicinity of the site, Ralston Road is paved with one lane in each direction. Ralston Road is not constructed with curb, gutter, or sidewalk. The posted speed limit on Ralston Road is 35 mph. Pinal County controls, operates, and maintains Ralston Road within the vicinity of the site.

Barnes Road, located on the mile section, is an east-west roadway. Within the Pinal County Small Area Transportation Study 2006 and the Regionally Significant Routes Report for Safety and Mobility Update 2017, Barnes Road is shown as a route of regional significance west of Ralston Road and classified as an arterial. Within the vicinity of the site, Barnes Road is paved with one lane in each direction and is not constructed with curb, gutter, or sidewalk. The posted speed limit on Barnes Road is 35 mph. Pinal County controls, operates, and maintains Barnes Road within the vicinity of the site.

The T-intersection of Warren Road/Teel Road operates as a one way stop controlled intersection with stop control on the westbound approach. All approaches consist of a shared left-through-right lane. Pinal County controls and maintains this intersection.

The T-intersection of Thunderbird Road/Teel Road operates as a one way stop controlled intersection with stop control on the southbound approach. All approaches consist of a shared left-through-right lane. Pinal County controls and maintains this intersection.

The intersection of Ralston Road/Teel Road operates as two a way stop controlled intersection with stop control on the north- and southbound approaches. The intersection is offset by approximately 140 feet. The south and east legs of the intersection are unpaved. The north and west legs of the intersection are paved and consist of one shared left-through-right lane. West of Ralston Road on Teel Road, the roadway is widened on the southern half of the road by development. Pinal County controls and maintains this intersection.

The T-intersection of **Warren Road/Miller Road** operates as a one way stop controlled intersection with stop control on the eastbound approach. All approaches consist of a shared left-through-right lane. Pinal County controls and maintains this intersection.

The intersection of **Warren Road/Barnes Road** operates as two a way stop controlled intersection with stop control on the east- and westbound approaches. All approaches consist of a shared left-through-right lane. Pinal County controls and maintains this intersection.

Figure 4 graphically depicts the existing intersection geometry.

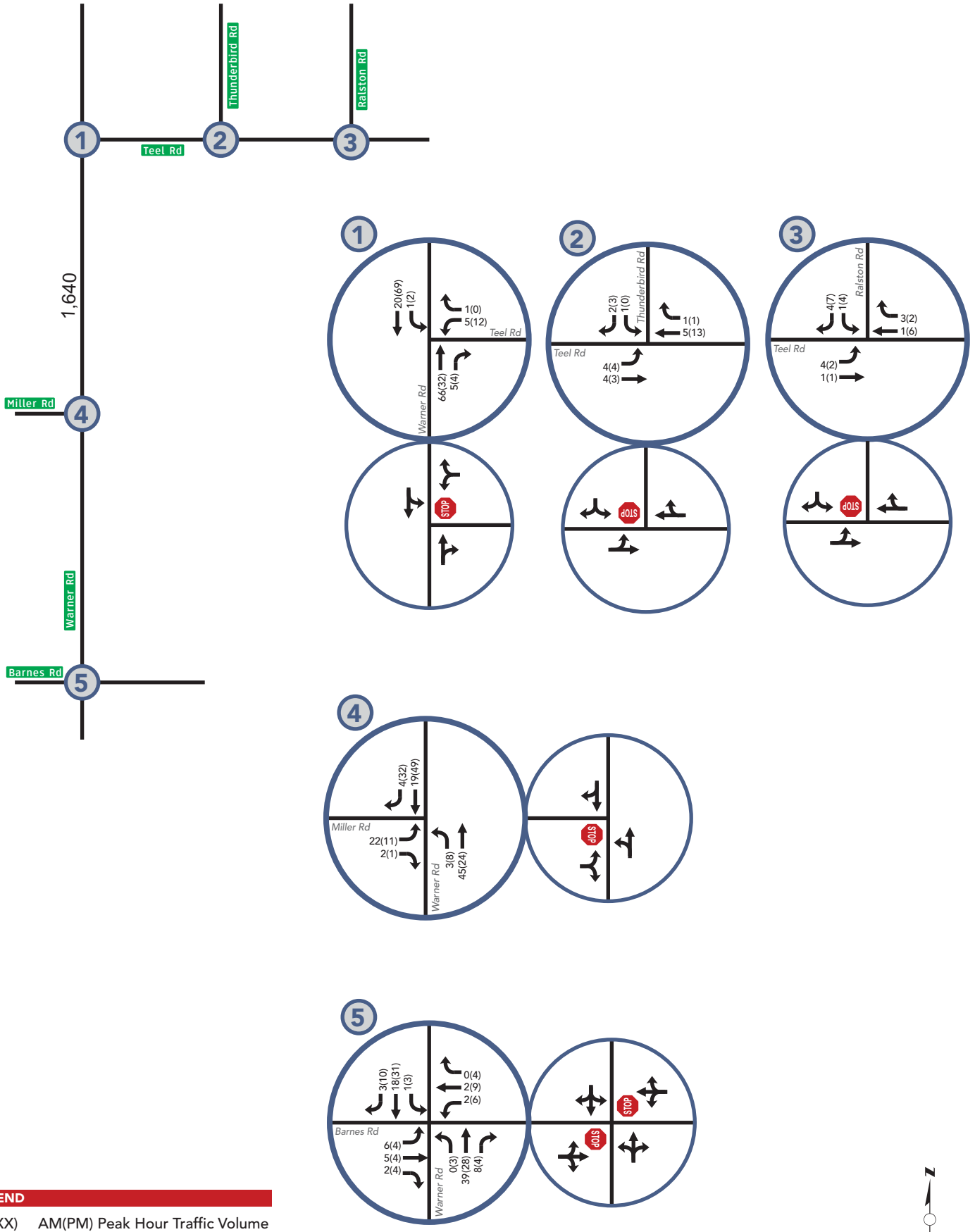
B. Existing Traffic Volumes

Existing turning movement counts in 15-minute intervals were collected at the study area intersections on Wednesday April 6, 2022, during the morning peak period (7:00AM – 9:00AM) and evening peak period (4:00PM – 6:00PM).

Existing average daily traffic volumes were determined from ADOT's Transportation Data Management System (TDMS), accessed May 30, 2022.

The resulting morning and evening peak hour traffic volumes at the study area intersections are presented in **Figure 4** along with the average daily traffic volumes. Complete traffic volume data can be found in **Appendix A.**

Figure 5 presents the existing traffic volumes at the study area intersections.



LEGEND

XX(XX)	AM(PM) Peak Hour Traffic Volume
XX	ADT

not to scale

United Civil Group

Figure 4: Existing Conditions

C. Existing Traffic Observations and Issues

Traffic conditions and operations were observed during the study's morning and evening peak periods and no traffic issues were noted.

D. Crash Data

Three years of crash data (January 2019 – December 2021) were obtained from the Arizona Department of Transportation (ADOT) Arizona Crash Information System (ACIS). An offset of 200 feet was used on all legs of each intersection. The data was queried for the intersections of:

- Warren Road/Teel Road
- Thunderbird Road/Teel Road
- Ralston Road/Teel Road
- Warren Road/Miller Road
- Warren Road/Barnes Road

The crash data are summarized in **Tables 1 and 2** for the study intersections. Table 1 summarizes the total number of crashes at the intersection by severity. Crash severity is determined by the reporting officer at the time of the crash or soon thereafter based on the most severe injury sustained by an involved party. Crashes are shown from most severe (Fatal) to least severe (No Injury). Table 2 summarizes the crashes by collision type reported by the officer. No crashes were reported over the three-year period at: Warren Road/Teel Road, Thunderbird Road/Teel Road, Ralston Road/Teel Road and Warren Road/Miller Road

Table 1: Injury Severity

Year	Fatal	Suspected Serious Injury	Suspected Minor Injury	Possible Injury	No Injury	Total
Warren Road/Barnes Road						
2018						0
2019					1	1
2020					1	1
Total	0	0	0	0	2	2

Table 2: Collision Manner

Year	Single Vehicle	Angle	Left Turn	Rear End	Head On	Sideswipe Same Direction	Sideswipe Opposite Direction	Rear to Side	Unknown /Other	Total
Warren Road/Barnes Road										
2018										0
2019		1								1
2020		1								1
Total	0	2	0	0	0	0	0	0	0	2

E. Intersection Level of Service Analyses

E.1 HCM Capacity Analyses and Levels of Service

Intersection capacity analysis is a principal tool used in traffic engineering. Operation is characterized according to the amount of delay at an intersection approach and quantified into a level of service (LOS). The intersection LOS was determined using the methodologies presented in the Transportation Research Board's Highway Capacity Manual (HCM). The LOS grades quantify and categorize a driver's discomfort, frustration, fuel consumption, and travel times experienced as a result of intersection control and the resulting traffic queuing. Per the HCM, the signalized and unsignalized (all-way stop controlled or two-way stop-controlled intersection) delay and associated LOS is presented in **Table 3**. Pinal County strives to obtain a level of service C or better for both signalized and unsignalized intersection overall operations. Intersections having a LOS D, E, or F may warrant improvements or traffic reductions.

Table 3: Intersection Levels of Service and Delay

Level of Service	Description	Signalized Delay (Sec/Veh)	Unsignalized Delay (Sec/Veh)
A	Minimal control delay, traffic operates at primary free flow conditions, unimpeded movement within traffic stream	≤ 10	≤ 10
B	Minor control delay at signalized intersections, traffic operates at a fairly unimpeded level with slightly restricted movement within traffic stream	> 10 and ≤ 20	> 10 and ≤ 15
C	Moderate control delay, movement within traffic stream more restricted than LOS B, formation of queues contributes to lower average travel speeds	> 20 and ≤ 35	> 15 and ≤ 25
D	Considerable control delay that may be substantially increased by small increases in flow, average travel speeds continue to decrease.	> 35 and ≤ 55	> 25 and ≤ 35
E	High control delay, average travel speed no more than 22 percent of free flow speed	> 55 and ≤ 80	> 35 and ≤ 50
F	Extremely high control	> 80	> 50

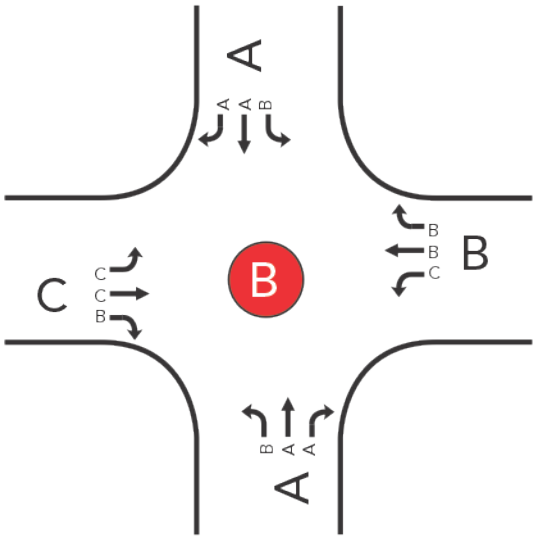
Source: Highway Capacity Manual 2010

For signalized and all-way stop controlled intersections, LOS is calculated for a movement (e.g., left, through, right), for the approach (e.g., northbound, southbound, eastbound, westbound) and for the overall intersection.

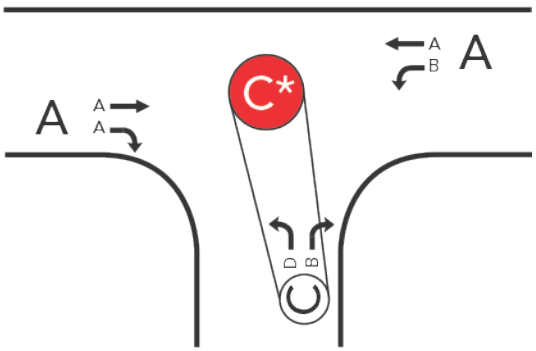
For two-way stop-controlled intersections, LOS is calculated for a movement and for the approach. However, for the overall intersection, LOS is reported as the lowest approach within the intersection. This is because most drivers are on the major roadway and do not experience delay traversing through the intersection. The example below illustrates the various LOS calculations completed for intersections.

EXAMPLE:

Signalized & All-Way Stop Controlled



Two-Way Stop Controlled



*Reported as approach LOS

Source: United Civil Group, 2021

E.2 Existing Intersection Level of Service

The level of service (LOS) and average delay at the existing study area intersections were evaluated using the 2022 intersection volumes, lane geometry, and existing traffic control as presented in Figure 4. PTV Vistro traffic modeling software, employing the methodologies as presented in the Highway Capacity Manual (HCM), was utilized for the capacity analyses to obtain the existing conditions levels of service. Summaries of the Vistro output calculations are included in *Appendix B: Capacity Analyses*.

The results of the existing levels of service analysis are presented in Table 4.

Table 4: 2022 Existing Conditions Intersection Levels of Service

Intersection Location	NB LOS				SB LOS				EB LOS				WB LOS				Overall Intersection
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	AvgDelay/ LOS*
Warren Road/Teel Road – Two-Way Stop Controlled																	
AM Peak Hour	-	A	A	A	A	A	-	A	-	-	-	-	A	-	A	A	8.99 A*
PM Peak Hour	-	A	A	A	A	A	-	A	-	-	-	-	A	-	-	A	9.17 A*
Thunderbird Road/Teel Road – One-Way Stop Controlled																	
AM Peak Hour	-	-	-	-	A	-	A	A	A	A	-	A	-	A	A	A	8.44 A*
PM Peak Hour	-	-	-	-	-	-	A	A	A	A	-	A	-	A	A	A	8.39 A*
Ralston Road/Teel Road – One-Way Stop Controlled																	
AM Peak Hour	-	-	-	-	A	-	A	A	A	A	-	A	-	A	A	A	8.39 A*
PM Peak Hour	-	-	-	-	A	-	A	A	A	A	-	A	-	A	A	A	8.47 A*
Warren Road/Miller Road – One-Way Stop Controlled																	
AM Peak Hour	A	A	-	A	-	A	A	A	A	-	A	A	-	-	-	-	8.98 A*
PM Peak Hour	A	A	-	A	-	A	A	A	A	-	A	A	-	-	-	-	9.14 A*
Warren Road/Barnes Road – Two-Way Stop Controlled																	
AM Peak Hour	-	A	A	A	A	A	A	A	A	A	A	A	A	A	-	A	9.21 A*
PM Peak Hour	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	9.27 A*

*The overall LOS letter grade for two-way stop-controlled intersections is shown as the worst approach.

As shown in Table 4 above, the study area intersections currently operate at acceptable levels of service, LOS A, in the morning and evening peak hours.

V. PROJECTED TRAFFIC

A. TRIP GENERATION

Estimates of the traffic volumes that will be generated by the development were determined from transportation planning data taken from the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 11th Edition, 2021*. The ITE rates are based on studies that measure trip generation characteristics for various types of land uses. The rates are expressed in terms of trips per unit of land use type.

The ITE land use code utilized for the Desert Gardens Development was **Single-family Detached Housing (210)** that includes all single-family detached homes on individual lots. A typical site surveyed is a suburban subdivision.

Table 5 presents the estimated daily and peak hour vehicle trips generated by the Desert Gardens development for a typical weekday after full build out.

TABLE 5: PROPOSED DEVELOPMENT TRIP GENERATION

Land Use	ITE Code	Units	Total Size	Daily	AM Peak			PM Peak		
					Total	In	Out	Total	In	Out
Single-Family Detached Housing	210	Dwelling Units	692	6,526	484	126	358	650	409	241

Single-Family Detached Housing – ITE LUC 210		
Daily	T = 9.43 x (DU)	50% entering, 50% exiting
AM Peak Hour	T = 0.70 x (DU)	26% entering, 74% exiting
PM Peak Hour	T = 0.94 x (DU)	63% entering, 37% exiting

On a typical weekday, after full build-out, the development is forecasted to generate 6,526 total daily trips, with 484 trips in the morning peak hour and 650 trips in the evening peak hour.

B. Trip Distribution

The trip distribution procedure determines the general pattern of travel for vehicles entering and leaving the subject site and the study area. The assumed trip distribution percentages for the development are shown in **Table 6**. For a development of this type, these percentages are mainly based on the type of land uses of the development, the location of the site within Pinal County, and the connectivity of the site to the region.

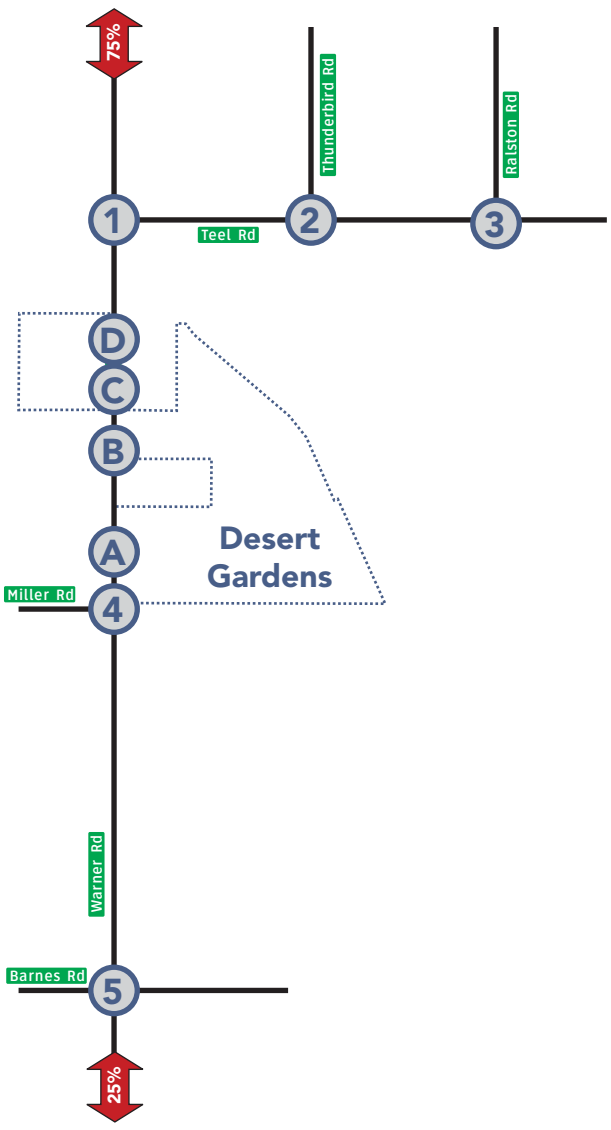
For the residential development, distribution of the home-to-work trips is generally based on the roadway connectivity and employment centers within 15 miles of the development. Pinal County's Small Area Study was utilized to determine future employment surrounding the Desert Gardens development. Trips generated from the single-family residential component of the development were routed to and from future employment areas.

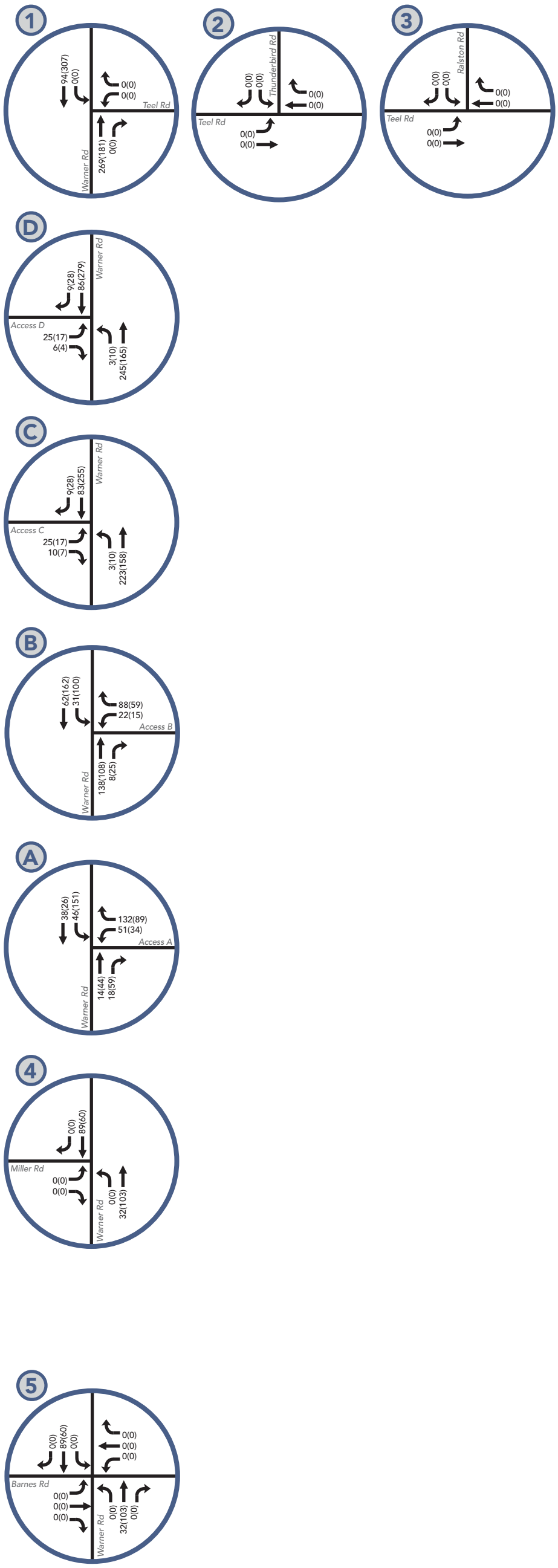
According to the City of Maricopa Future Land Use Map as presented in *Appendix C*, low density residential, industrial/manufacturing, and open space is planned near Desert Gardens.

Table 6: Trip Distribution Percentages

Direction	Distribution
Warren Road north of Teel Road	75%
Warren Road south of Miller Road	25%

Figure 6 presents the assigned site generated traffic to and from Desert Gardens for full buildout of the proposed development.





LEGEND

XX(XX) AM(PM) Peak Hour Traffic Volume

X% Trip Distribution Percentage

not to scale

Figure 5: Site Generated Traffic and Trip Distribution

United Civil Group

C. Projected Background Traffic

Non-site or background traffic volumes representing the amount of traffic estimated to be on the area roadway network without the proposed development within the study area were projected for buildout of the development, year 2028 and year 2033 (5 years after full build-out). A yearly ambient growth rate for the area of two percent was assumed through each horizon year.

In addition to the yearly ambient growth rate, the assumed trip generation for the Hidden Valley Ranch, Amarillo Creek, Tresana, Pecan Woods, Palomino Ranch, Venida and Maricopa Opus developments located within the vicinity of the site were included within the background traffic analyses. The estimated site generated trips for the other developments are included in *Appendix D*.

Capacity analyses at the existing study area intersections were performed for the forecasted background traffic for the horizon years of the study, as presented in Figures 7 and 8. Tables 7 and 8 below present the background levels of service at the study area intersection without the proposed Desert Gardens development. Complete capacity analyses are provided in Appendix B.

TABLE 7: 2028 BACKGROUND CONDITIONS INTERSECTION LEVELS OF SERVICE

Intersection Location	NB LOS				SB LOS				EB LOS				WB LOS				Overall Intersection
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	AvgDelay/ LOS*
Warren Road/Teel Road – Two-Way Stop Controlled																	
AM Peak Hour	-	A	A	A	A	A	-	A	-	-	-	-	A	-	A	A	9.69 A*
PM Peak Hour	-	A	A	A	A	A	-	A	-	-	-	-	B	-	A	B	10.08 B*
Thunderbird Road/Teel Road – One-Way Stop Controlled																	
AM Peak Hour	-	-	-	-	A	-	A	A	A	A	-	A	-	A	A	A	8.93 A*
PM Peak Hour	-	-	-	-	A	-	A	A	A	A	-	A	-	A	A	A	9.14 A*
Ralston Road/Teel Road – One-Way Stop Controlled																	
AM Peak Hour	-	-	-	-	B	-	A	A	A	A	-	A	-	A	A	A	8.58 A*
PM Peak Hour	-	-	-	-	B	-	A	A	A	A	-	A	-	A	A	A	8.98 A*
Warren Road/Miller Road – One-Way Stop Controlled																	
AM Peak Hour	A	A	-	A	-	A	A	A	A	-	A	A	-	-	-	-	9.72 A*
PM Peak Hour	A	A	-	A	-	A	A	A	B	-	A	B	-	-	-	-	10.11 B*
Warren Road/Barnes Road – Two-Way Stop Controlled																	
AM Peak Hour	-	A	A	A	A	A	A	A	A	B	A	A	A	B	-	A	9.99 A*
PM Peak Hour	A	A	A	A	A	A	A	A	B	B	A	A	B	B	A	B	10.21 B*

*The overall LOS letter grade for two-way stop-controlled intersections is shown as the worst approach.

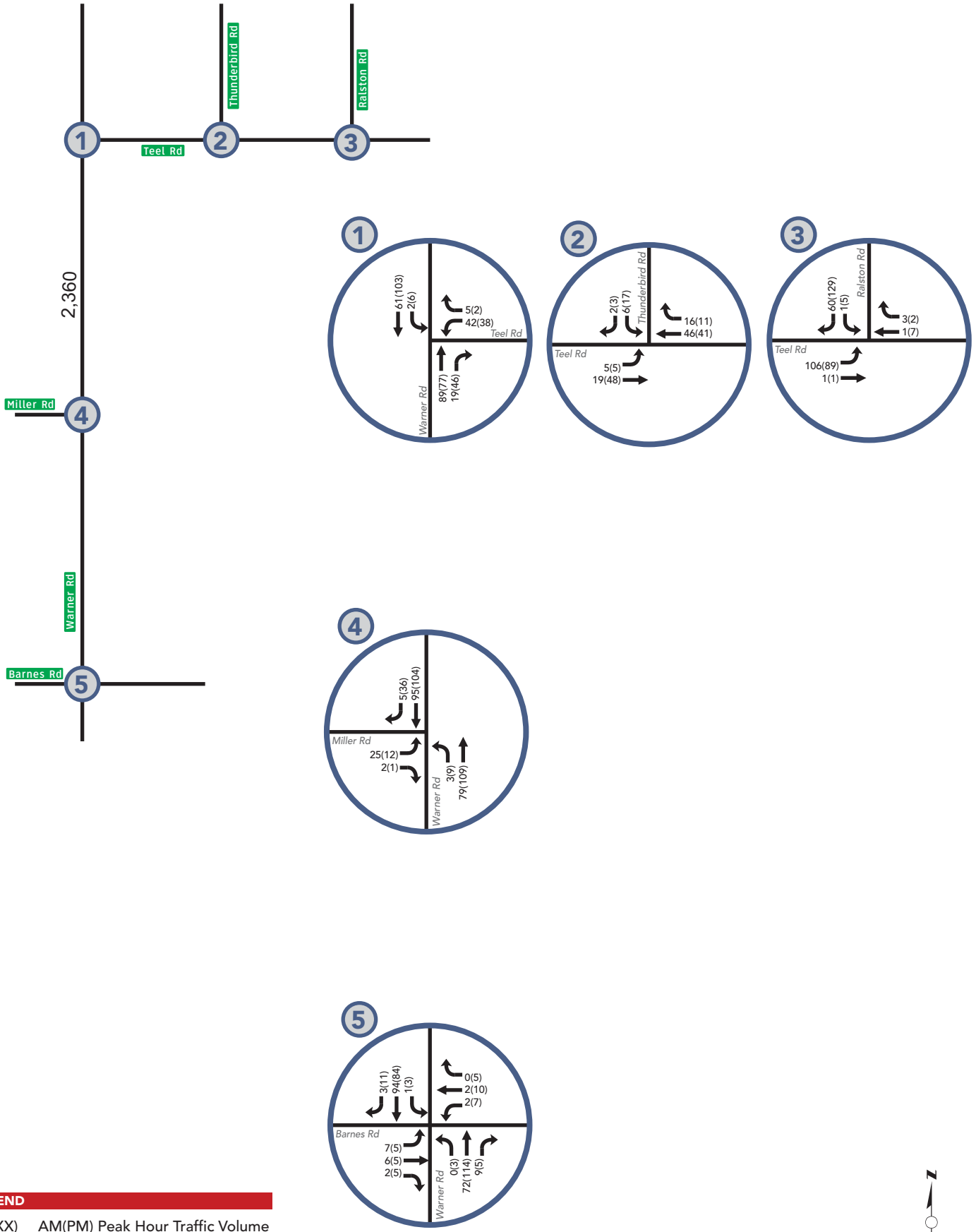
As shown in Table 7, the existing study area intersections are projected to operate at acceptable levels of service, LOS B or better, during the morning and evening peak hours of the 2028 background condition year.

Table 8: 2033 Background Conditions Intersection Levels of Service

Intersection Location	NB LOS				SB LOS				EB LOS				WB LOS				Overall Intersection
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	AvgDelay/ LOS*
Warren Road/Teel Road – Two-Way Stop Controlled																	
AM Peak Hour	-	A	A	A	A	A	-	A	-	-	-	-	B	-	A	B	10.49 B*
PM Peak Hour	-	A	A	A	A	A	-	A	-	-	-	-	B	-	A	B	10.93 B*
Thunderbird Road/Teel Road – One-Way Stop Controlled																	
AM Peak Hour	-	-	-	-	A	-	A	A	A	A	-	A	-	A	A	A	8.93 A*
PM Peak Hour	-	-	-	-	A	-	A	A	A	A	-	A	-	A	A	A	9.14 A*
Ralston Road/Teel Road – One-Way Stop Controlled																	
AM Peak Hour	-	-	-	-	B	-	A	A	A	A	-	A	-	A	A	A	8.59 A*
PM Peak Hour	-	-	-	-	B	-	A	A	A	A	-	A	-	A	A	A	8.99 A*
Warren Road/Miller Road – One-Way Stop Controlled																	
AM Peak Hour	A	A	-	A	-	A	A	A	B	-	A	B	-	-	-	-	10.55 B*
PM Peak Hour	A	A	-	A	-	A	A	A	B	-	A	B	-	-	-	-	10.95 B*
Warren Road/Barnes Road – Two-Way Stop Controlled																	
AM Peak Hour	-	A	A	A	A	A	A	A	B	B	A	B	B	B	-	B	10.86 B*
PM Peak Hour	A	A	A	A	A	A	A	A	B	B	A	B	B	B	A	B	10.92 B*

*The overall LOS letter grade for two-way stop-controlled intersections is shown as the worst approach.

As background volumes continue to grow, the study area intersections operate at an acceptable LOS B or better in the morning and evening peak hours of the 2033 background condition year.



LEGEND

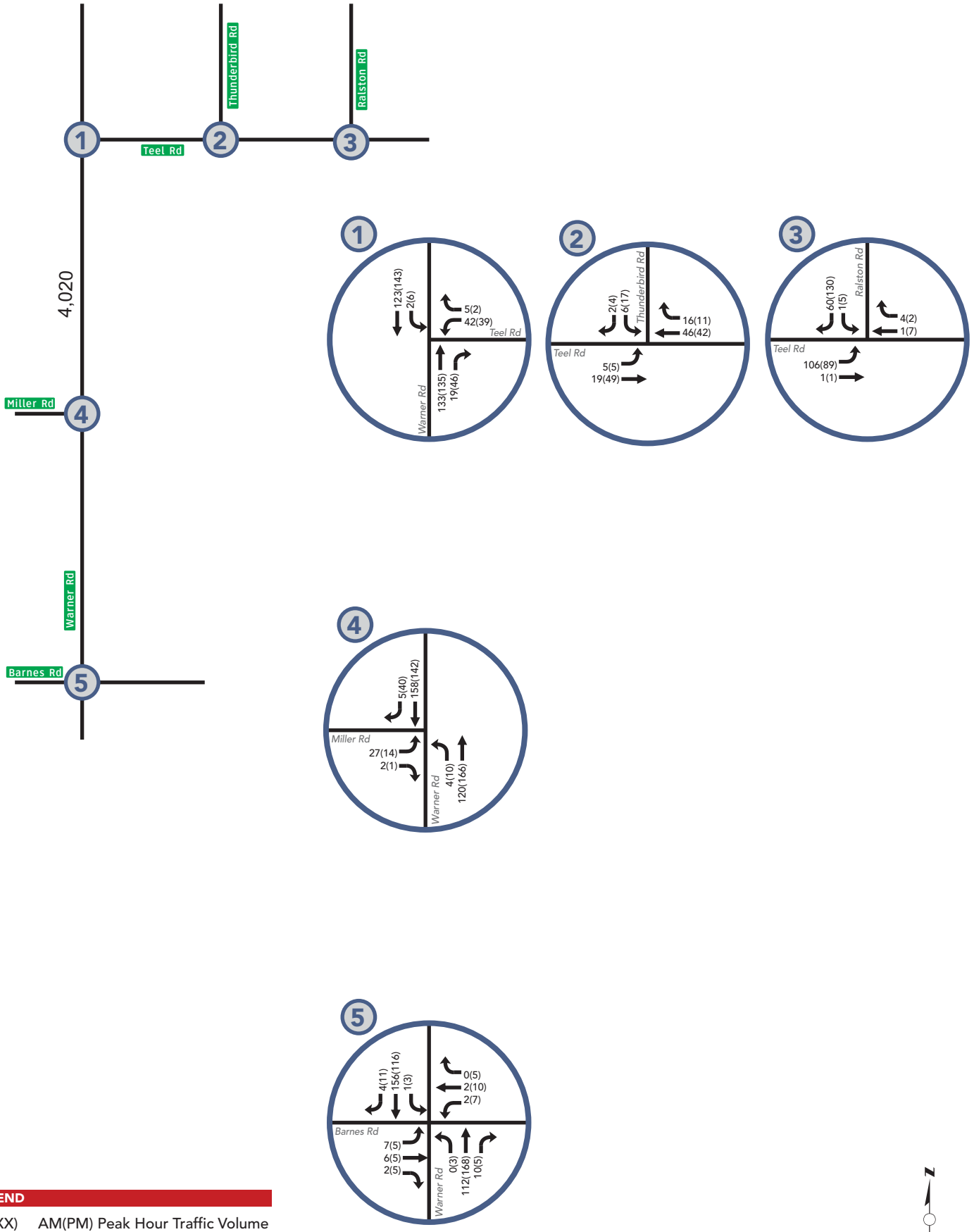
XX(XX)	AM(PM) Peak Hour Traffic Volume
XX	ADT

N

not to scale

Figure 6: Background Traffic - Year 2028

United Civil Group



LEGEND

XX(XX)	AM(PM) Peak Hour Traffic Volume
XX	ADT

not to scale

Figure 7: Background Traffic - Year 2033

United Civil Group

VI. TRAFFIC AND IMPROVEMENT ANALYSIS

The purpose of this section is to show the relations between traffic operations and roadway geometrics; identify needs pertaining to progressive traffic flow and safety; and identify alternatives for further consideration, where applicable.

Based on the findings within this report, **Figure 12** presents an illustration of the recommendations.

A. ACCESSIBILITY TO DESERT GARDENS

Access to the Desert Gardens single family residential homes is provided by Warren Road, through the new collector within the development and local streets that make up the roadway network within the vicinity of the site.

- **Access A** will be constructed as a collector road into the Desert Gardens single-family residential community east of Warren Road. Access A is located on Warren Road approximately an eighth mile north of Miller Road. Access A/Warren Road is planned as a full movement intersection in the interim conditions. In the future, Access A may need to be limited to a ¾ access (right in, left in, right out) once Warren Road is built to its ultimate 6-lane section with raised medians.
- **Access B** will be constructed as a collector road into the Desert Gardens single-family residential community east of Warren Road. Access B is located on Warren Road approximately ¼ mile north of Access A. Access B/Warren Road is planned as a full movement intersection.
- **Access C** will be constructed as a local road into the Desert Gardens single-family residential community west of Warren Road. Access C is located on Warren Road approximately 930 feet north of Access B. Access C/Warren Road is planned as a full movement intersection in the interim conditions. In the future, Access C may need to be limited to a ¾ access (right in, left in, right out) once Warren Road is built to its ultimate 6-lane section with raised medians.
- **Access D** will be constructed as a local road into the Desert Gardens single-family residential community west of Warren Road. Access D is located on Warren Road approximately 990 feet north of Access C. Access D/Warren Road is planned as a full movement intersection.

All site access points should be designed per Pinal County Subdivision & Infrastructure Design Manual. Per the Pinal County Access Management Manual Final Report dated February 2017, driveway spacing criteria per Table 1 (Access Management Manual) all full movement accesses should be spaced at least 1,320 feet (1/4 mile) from other roadways while partial accesses should be spaced at least 660 feet from other roadways. In the future, when Warren Road is constructed to its ultimate cross section with a raised median, the proposed accesses will meet the Pinal

County Guidelines when Accesses A and C are limited to ¾ accesses (right in, left in, right out).

In the interim condition, all accesses on Warren Road are planned as full movement accesses.

Figure 3 illustrates the layout of the proposed Desert Gardens development in relation to the location of the site access points. In addition, Figure 11 shows the driveway spacing dimensions from approximate centerline to centerline of the driveways or roadways.

B. Roadway and Intersection Geometric Improvements

Half-street sections along Warren Road, adjacent to the Desert Gardens development should be constructed as part of the development.

Warren Road is noted as an arterial adjacent to the site. Per the Pinal County Subdivision and Infrastructure Design Manual, Warren Road should provide 75 feet of right-of-way measured centerline to right of way line. With the interim widening of Warren Road, tapers and/or interim striping may be required outside the site boundary to transition the roadway back to its existing configuration.

Miller Road should be classified as a minor arterial roadway. Therefore, 55 feet of right of way should be reserved, measured centerline to right of way line, for future roadway improvements.

Roadway cross sections for each roadway classification are provided in Pinal County's Subdivision and Infrastructure Design Manual.

With the construction of all new accesses, sight triangles shall be provided and maintained at all site accesses per the most current edition of the American Association of State Highway and Transportation Officials, A Policy on Geometric Design of Highways and Streets and the Pinal County TIA Guidelines.

C. Auxiliary Lane Analyses

C.1. Right Turn Lane Warrants

Per Pinal County Traffic Impact Assessment Guidelines & Procedures dated January 2007, right-turn lanes are warranted based on the right lane warrant chart which incorporates the right turn volume, the design hourly volume of the roadway and the posted speed.

Utilizing 2033 total traffic volumes, exclusive right turn lanes are recommended at the following locations:

NB on Warren Road at Access A
NB on Warren Road at Access B
SB on Warren Road at Access C
SB on Warren Road at Access D

In the future, a right turn lane should be considered on Teel Road westbound at Thunderbird Road. Therefore, 10 feet of additional right of way should be reserved for future use.

C.2. Right Lane Queue and Storage Length Analysis

Per *Section 5.12 Queuing Analysis* of the Pinal County Traffic Impact Assessment Guidelines & Procedures dated January 2007, desirable minimum storage lengths for right turn lanes on parkways, arterials and major collectors were calculated per Pinal County requirements. The queuing analysis was conducted for all turn lanes under stop or signal control using the methodology presented by the County.

Table 9 presents the calculated minimum queue lengths and recommended storage lane lengths for the right turn deceleration lanes at the study intersections and site accesses.

Table 9: Right Turn Lane Analysis

Location		Turn Volume 2033	Calculated Storage (feet)	Recommended Storage (feet)	Taper (feet)
On	At				
Warren Road	Access A	NB Right: 59	74	100	120
Warren Road	Access B	NB Right: 25	32	100	120
Warren Road	Access C	SB Right: 28	35	100	120
Warren Road	Access D	SB Right: 28	35	100	120

C.3. Left Turn Lane Warrants

Per Pinal County Traffic Impact Assessment Guidelines & Procedures dated January 2007, left-turn lanes are warranted based on the left lane warrant chart which incorporates the left turn volume, the design hourly volume of the roadway and the posted speed.

Utilizing 2033 total traffic volumes, exclusive left turn lanes are recommended in the following locations:

SB on Warren Road at Access A
SB on Warren Road at Access B
NB on Warren Road at Access C
NB on Warren Road at Access D

C.4. Left Lane Queue and Storage Length Analysis

Per *Section 5.12 Queuing Analysis* of the Pinal County Traffic Impact Assessment Guidelines & Procedures dated January 2007, desirable minimum storage lengths for left turn lanes on parkways, arterials, and major collectors were calculated per Pinal County requirements. The queuing analysis was conducted for all turn lanes under stop or signal control using the methodology presented by the County.

Table 10 presents the calculated minimum queue lengths and recommended storage lane lengths for the left turn deceleration lanes at the study intersections and site accesses.

Table 10: Left Turn Lane Analysis

Location		Turn Volume	Calculated Storage (feet)	Recommended Storage (feet)	Opening (feet)
On	At				
Warren Road	Access A	SB Left: 151	252	275	90
Warren Road	Access B	SB Left: 100	167	175	90
Warren Road	Access C	NB Left: 10	17	100	90
Warren Road	Access D	NB Left: 10	17	100	90

To accommodate the left turn lanes, pavement tapers may be required that are outside the project boundary.

D. Traffic Signal Warrant Analysis

The 2009 *Manual on Uniform Traffic Control Devices* (MUTCD) was used as the primary tool to determine if a traffic signal is warranted at the intersections of Warren Road/Teel Road, Warren Road/Miller Road and Warren Road/Barnes Road.

There are nine specific signal warrants in the MUTCD; however, not all warrants are applicable to this study. The warrants used in this analysis include:

Warrant 1 – Eight-Hour Vehicular Volume
Warrant 2 – Four-Hour Vehicular Volume

Appendix E presents the results of the signal warrant analyses.

Warrant 1 – Eight-Hour Vehicular Volume

The Minimum Vehicular Volume, Condition A, is intended for application where the volume of intersecting traffic from a side street or driveway is the principal reason for considering installation of a traffic signal. In this condition, the warrant would be satisfied when, for each of any eight hours of an average day, the traffic volumes on the major and minor approach are equal to or exceeds specified limits located on *Table 4C-1 Warrant 1 Eight-Hour Vehicular Volume* in the *MUTCD 2009*.

The Interruption of Continuous Traffic, Condition B, is intended for application where the traffic volume on a major street is so heavy that the traffic on a minor intersection street or driveway has excessive delay or hazard in entering or crossing the major street. This warrant is met when, for each of any eight hours of an average day, the traffic volumes on the major and minor approach is equal to or exceeds specified limits located on *Table 4C-1 Warrant 1, Eight-Hour Vehicular Volume* in the *MUTCD 2009*.

Volume projections for the eight highest hours on an average day were determined by applying hourly adjustment factors calculated from the available peak hour turning movement count data.

Warrant 1 Results:

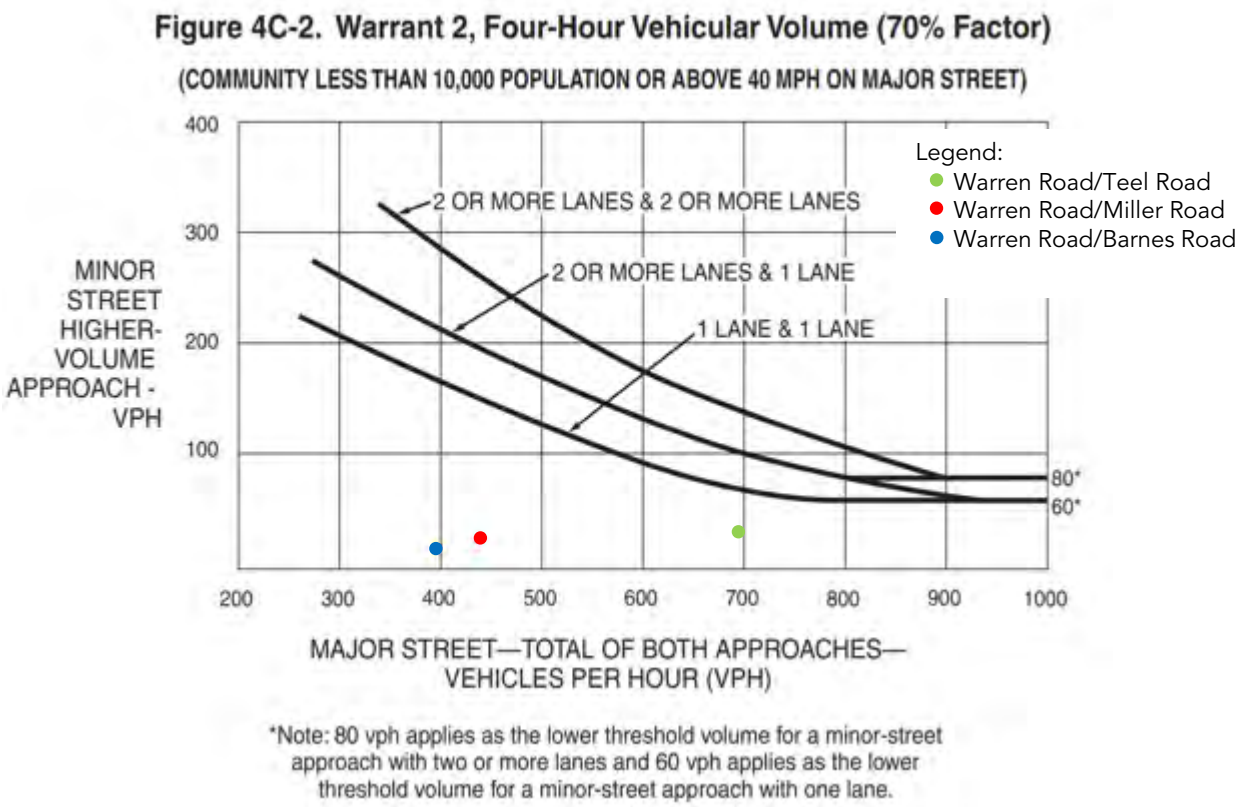
Warren Road/Teel Road – Warrant 1 is **not met** for both Condition A and Condition B by year 2033.

Warren Road/Miller Road – Warrant 1 is **not met** for both Condition A and Condition B by year 2033.

Warren Road/Barnes Road – Warrant 1 is **not met** for both Condition A and Condition B by year 2033.

Warrant 2 – Four-Hour Vehicular Volume

The four-hour vehicular volume signal warrant conditions are intended to be applied where the volume of intersecting traffic is the principal reason to consider installing a traffic control signal. This warrant is satisfied when, for each of any four hours of an average day, plotted points representing vehicles per hour on the major street (total of both approaches) and the vehicles per hour on the minor street approach (one direction only) all fall above the appropriate curve located on *Figure 4C-2 Warrant 2, Four-Hour Vehicular Volume* in the *MUTCD 2009*.



Warrant 2 Results:

Warren Road/Teel Road – Warrant 2 is **not met** by year 2033.

Warren Road/Miller Road – Warrant 2 is **not met** by year 2033.

Warren Road/Barnes Road – Warrant 2 is **not met** by year 2033.

Signal Warrant Summary

Using total traffic projected volumes for 2033 a traffic signal is not warranted at the intersections of Warren Road/Teel Road, Warren Road/Miller Road and Warren Road/Barnes Road. However, if additional development occurs within the study area, these warrants should be reapplied using projected traffic.

E. Intersection Sight Distance

Proper intersection sight distance and sight triangles shall be provided and maintained at all site access driveways of the proposed development to give drivers exiting the site a clear view of oncoming traffic. The landscape and hardscape within the sight triangles must not obstruct the driver's view of the adjacent travel lanes. To ensure adequate sight distances and sight distance triangles are provided at the site access driveways per the most current edition of the American Association of State Highway and Transportation Officials, A Policy on Geometric Design of Highways and Streets and the Pinal County TIA Guidelines.

F. Total Traffic

Total traffic projections for the horizon years were determined by adding the proposed development's site generated traffic to the forecasted background traffic volumes for the corresponding phase. **Figures 9 and 10** present the total traffic volumes during the morning and evening peak hours.

Capacity analyses at the study area intersections and site access intersections were performed using the recommended geometric infrastructure and forecasted total traffic for each horizon year of the study.

Tables 11 and 12 on the following pages present the total levels of service utilizing the recommended improvements. Complete capacity analyses are provided in **Appendix B**.

TABLE 11: 2028 TOTAL CONDITIONS INTERSECTION LEVELS OF SERVICE

Intersection Location	NB LOS				SB LOS				EB LOS				WB LOS				Overall Intersection
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	AvgDelay/ LOS*
Warren Road/Teel Road – One-Way Stop Controlled																	
AM Peak Hour	-	A	A	A	A	A	-	A	-	-	-	-	B	-	B	B	13.29 B*
PM Peak Hour	-	A	A	A	A	A	-	A	-	-	-	-	C	-	B	C	16.10 C*
Thunderbird Road/Teel Road – One-Way Stop Controlled																	
AM Peak Hour	-	-	-	-	A	-	A	A	A	A	-	A	-	A	A	A	8.93 A*
PM Peak Hour	-	-	-	-	A	-	A	A	A	A	-	A	-	A	A	A	9.14 A*
Ralston Road/Teel Road – One-Way Stop Controlled																	
AM Peak Hour	-	-	-	-	B	-	A	A	A	A	-	A	-	A	A	A	8.58 A*
PM Peak Hour	-	-	-	-	B	-	A	A	A	A	-	A	-	A	A	A	8.98 A*
Warren Road/Miller Road – One-Way Stop Controlled																	
AM Peak Hour	A	A	-	A	-	A	A	A	B	-	A	B	-	-	-	-	10.65 B*
PM Peak Hour	A	A	-	A	-	A	A	A	B	-	A	B	-	-	-	-	11.48 B*
Warren Road/Barnes Road – Two-Way Stop Controlled																	
AM Peak Hour	-	A	A	A	A	A	A	A	B	B	A	B	B	B	-	B	11.03 B*
PM Peak Hour	A	A	A	A	A	A	A	A	B	B	A	B	B	B	A	B	11.64 B*
Warren Road/Access A – One-Way Stop Controlled																	
AM Peak Hour	-	A	A	A	A	A	-	A	-	-	-	-	B	-	B	B	11.11 B*
PM Peak Hour	-	A	A	A	A	A	-	A	-	-	-	-	C	-	B	B	12.58 B*
Warren Road/Access B – One-Way Stop Controlled																	
AM Peak Hour	-	A	A	A	A	A	-	A	-	-	-	-	B	-	B	B	11.29 B*
PM Peak Hour	-	A	A	A	A	A	-	A	-	-	-	-	C	-	B	B	11.95 B*
Warren Road/Access C – One-Way Stop Controlled																	
AM Peak Hour	A	A	-	A	-	A	A	A	B	-	A	B	-	-	-	-	12.17 B*
PM Peak Hour	A	A	-	A	-	A	A	A	C	-	B	B	-	-	-	-	14.25 B*
Warren Road/Access D – One-Way Stop Controlled																	
AM Peak Hour	A	A	-	A	-	A	A	A	B	-	A	B	-	-	-	-	12.68 B*
PM Peak Hour	A	A	-	A	-	A	A	A	C	-	B	C	-	-	-	-	15.21 C*

*The overall LOS letter grade for two-way stop-controlled intersections is shown as the worst approach.

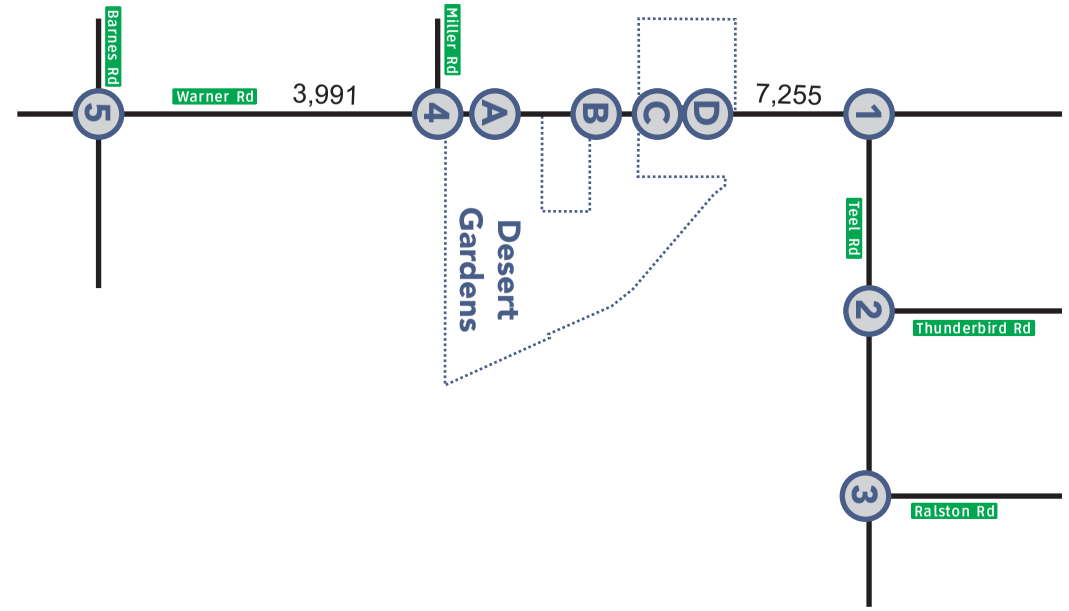
Using the projected total traffic volumes for 2028 and the improvements proposed for the development, all the study intersections will operate at an acceptable LOS C or better after the construction and occupancy of the Desert Gardens development.

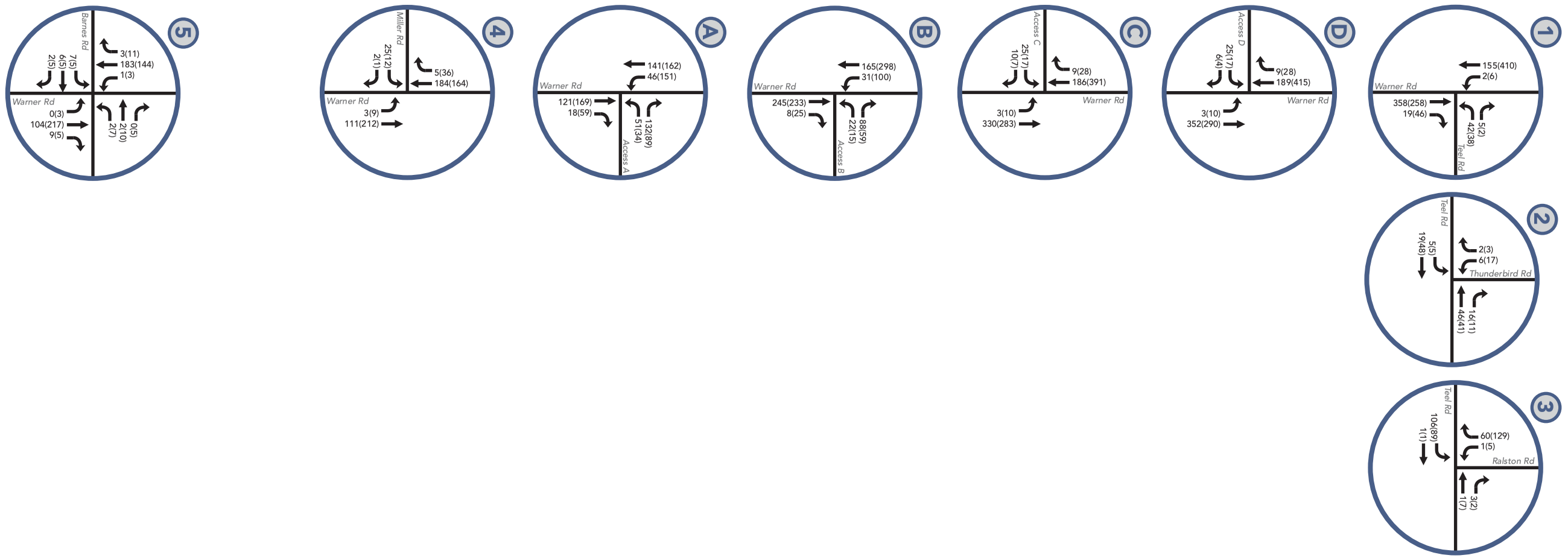
TABLE 12: 2033 TOTAL CONDITIONS INTERSECTION LEVELS OF SERVICE

Intersection Location	NB LOS				SB LOS				EB LOS				WB LOS				Overall Intersection
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	AvgDelay/ LOS*
Warren Road/Teel Road – One-Way Stop Controlled																	
AM Peak Hour	-	A	A	A	A	A	-	A	-	-	-	-	B	-	B	B	13.29 B*
PM Peak Hour	-	A	A	A	A	A	-	A	-	-	-	-	C	-	B	C	16.10 C*
Thunderbird Road/Teel Road – One-Way Stop Controlled																	
AM Peak Hour	-	-	-	-	A	-	A	A	A	A	-	A	-	A	A	A	8.93 A*
PM Peak Hour	-	-	-	-	A	-	A	A	A	A	-	A	-	A	A	A	9.14 A*
Ralston Road/Teel Road – One-Way Stop Controlled																	
AM Peak Hour	-	-	-	-	B	-	A	A	A	A	-	A	-	A	A	A	8.58 A*
PM Peak Hour	-	-	-	-	B	-	A	A	A	A	-	A	-	A	A	A	8.98 A*
Warren Road/Miller Road – One-Way Stop Controlled																	
AM Peak Hour	A	A	-	A	-	A	A	A	B	-	A	B	-	-	-	-	10.65 B*
PM Peak Hour	A	A	-	A	-	A	A	A	B	-	A	B	-	-	-	-	11.48 B*
Warren Road/Barnes Road – Two-Way Stop Controlled																	
AM Peak Hour	-	A	A	A	A	A	A	A	B	B	A	B	B	B	-	B	11.03 B*
PM Peak Hour	A	A	A	A	A	A	A	A	B	B	A	B	B	B	A	B	11.64 B*
Warren Road/Access A – One-Way Stop Controlled																	
AM Peak Hour	-	A	A	A	A	A	-	A	-	-	-	-	B	-	B	B	11.11 B*
PM Peak Hour	-	A	A	A	A	A	-	A	-	-	-	-	C	-	B	B	12.58 B*
Warren Road/Access B – One-Way Stop Controlled																	
AM Peak Hour	-	A	A	A	A	A	-	A	-	-	-	-	B	-	B	B	11.29 B*
PM Peak Hour	-	A	A	A	A	A	-	A	-	-	-	-	C	-	B	B	11.95 B*
Warren Road/Access C – One-Way Stop Controlled																	
AM Peak Hour	A	A	-	A	-	A	A	A	B	-	A	B	-	-	-	-	12.17 B*
PM Peak Hour	A	A	-	A	-	A	A	A	C	-	B	B	-	-	-	-	14.25 B*
Warren Road/Access D – One-Way Stop Controlled																	
AM Peak Hour	A	A	-	A	-	A	A	A	B	-	A	B	-	-	-	-	12.68 B*
PM Peak Hour	A	A	-	A	-	A	A	A	C	-	B	C	-	-	-	-	15.21 C*

*The overall LOS letter grade for two-way stop-controlled intersections is shown as the worst approach.

Through the 2033 study area period, all the study area intersections operate at an LOS C or better, when the improvements by the Desert Gardens Development and by others are taken into consideration.





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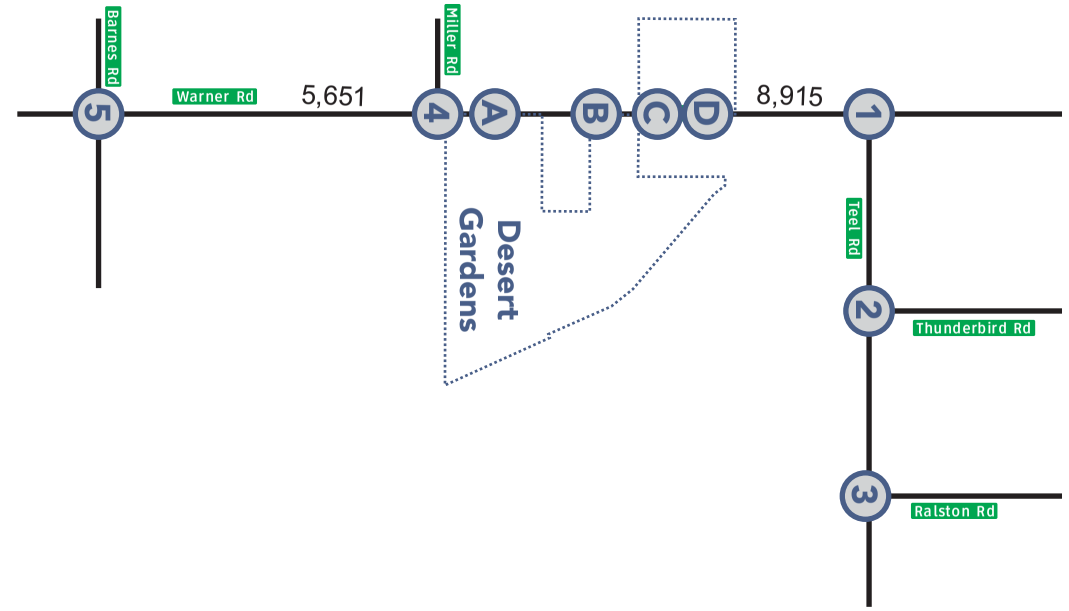
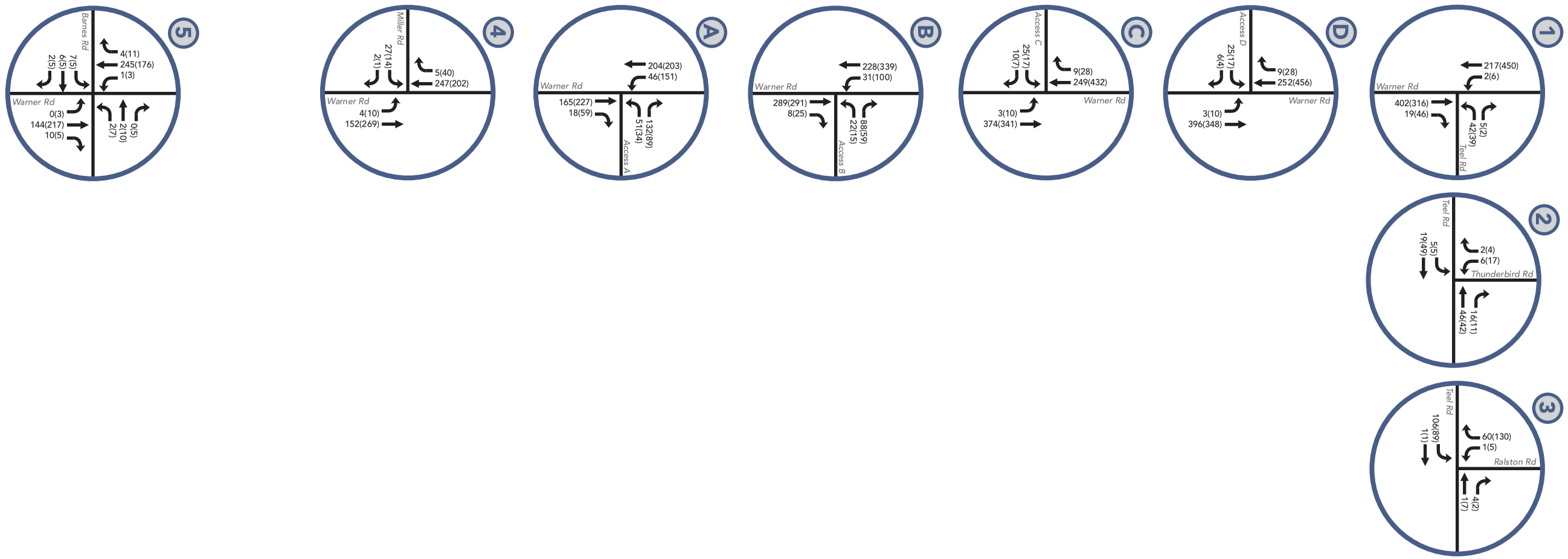
not to scale

Figure 8: Total Traffic - Year 2028





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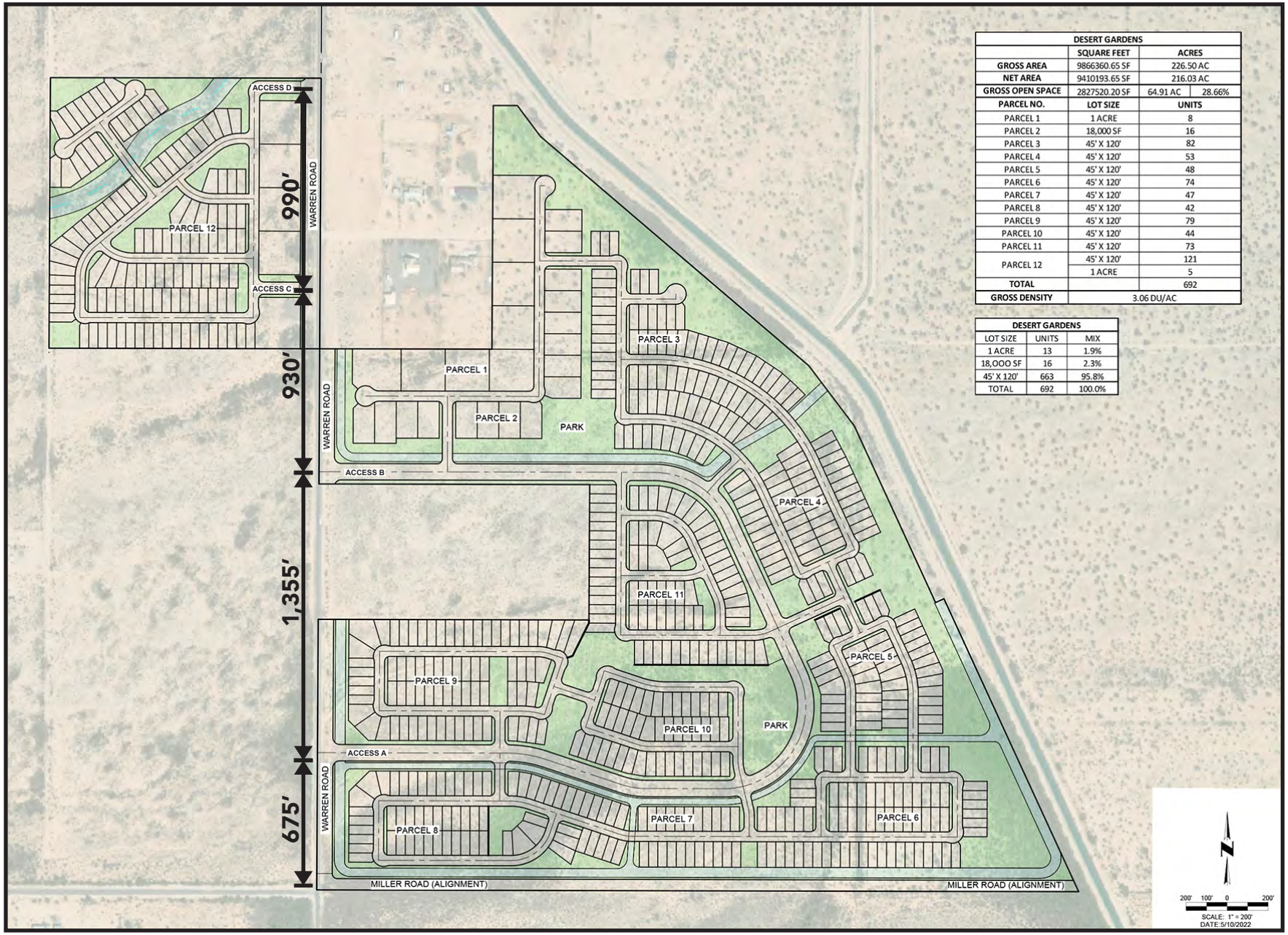
not to scale

Figure 9: Total Traffic - Year 2033



DESERT GARDENS		
	SQUARE FEET	ACRES
GROSS AREA	9866360.65 SF	226.50 AC
NET AREA	9410193.65 SF	216.03 AC
GROSS OPEN SPACE	2827520.20 SF	64.91 AC 28.66%
PARCEL NO.	LOT SIZE	UNITS
PARCEL 1	1 ACRE	8
PARCEL 2	18,000 SF	16
PARCEL 3	45' X 120'	82
PARCEL 4	45' X 120'	53
PARCEL 5	45' X 120'	48
PARCEL 6	45' X 120'	74
PARCEL 7	45' X 120'	47
PARCEL 8	45' X 120'	42
PARCEL 9	45' X 120'	79
PARCEL 10	45' X 120'	44
PARCEL 11	45' X 120'	73
PARCEL 12	45' X 120'	121
	1 ACRE	5
TOTAL		692
GROSS DENSITY	3.06 DU/AC	

DESERT GARDENS		
LOT SIZE	UNITS	MIX
1 ACRE	13	1.9%
18,000 SF	16	2.3%
45' X 120'	663	95.8%
TOTAL	692	100.0%

Figure 10: Driveway Spacing

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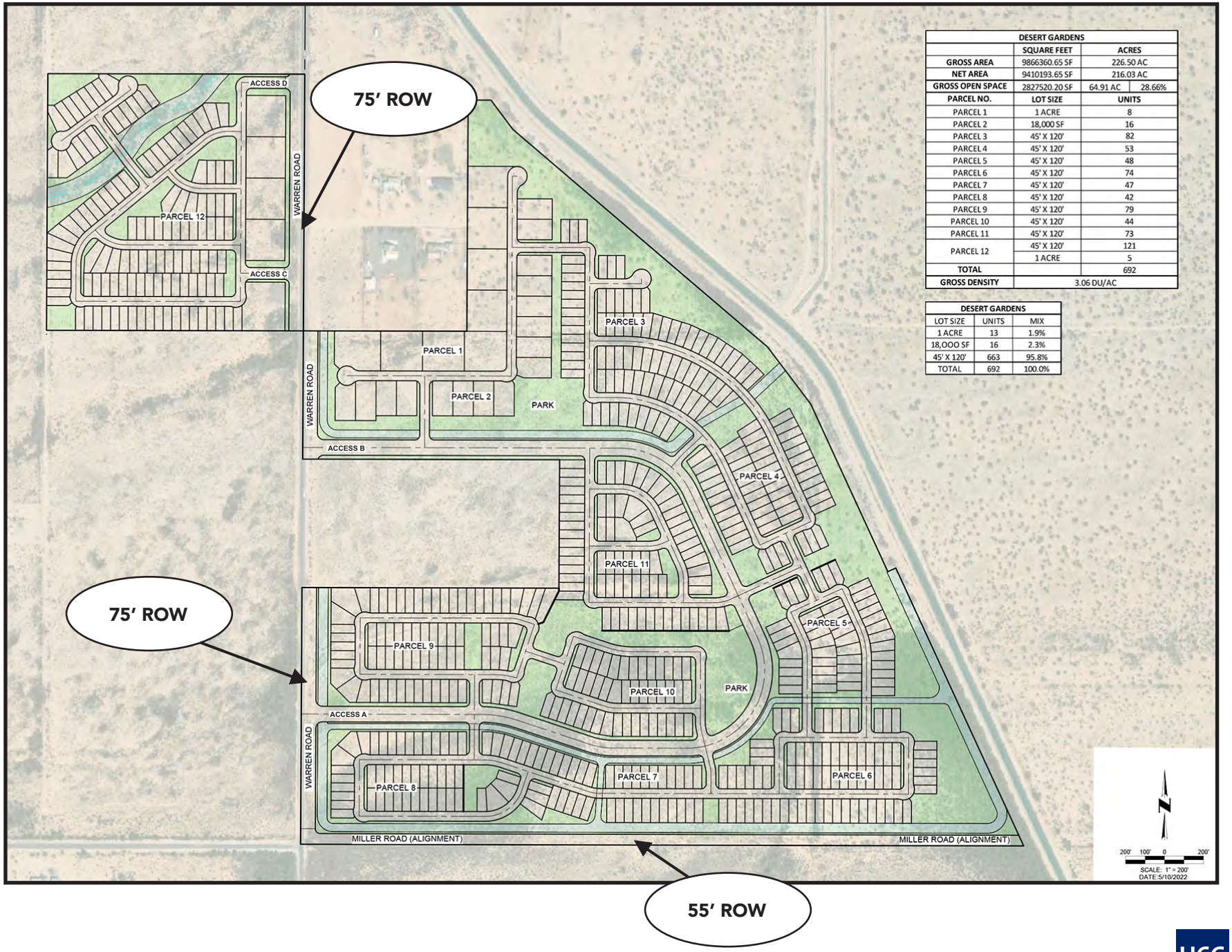

DESERT GARDENS		
	SQUARE FEET	ACRES
GROSS AREA	9866360.65 SF	226.50 AC
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PARCEL 7	45' X 120'	47
PARCEL 8	45' X 120'	42
PARCEL 9	45' X 120'	79
PARCEL 10	45' X 120'	44
PARCEL 11	45' X 120'	73
PARCEL 12	45' X 120'	121
	1 ACRE	5
TOTAL		692
GROSS DENSITY	3.06 DU/AC	

DESERT GARDENS		
LOT SIZE	UNITS	MIX
1 ACRE	13	1.9%
18,000 SF	16	2.3%
45' X 120'	663	95.8%
TOTAL	692	100.0%

Figure 11: Recommendations

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VII. CONCLUSIONS AND RECOMMENDATIONS

The proposed Desert Gardens Development is a single-family residential development. Desert Gardens will include 692 single family homes. The Desert Gardens Development is planned to be constructed in one phase.

The development will be constructed and occupied by 2028. One additional horizon year, 5 years after full buildout (2033) was analyzed based on Pinal County Traffic Impact Analysis Guidelines & Procedures to identify any foreseen traffic impacts 5 years after the site is fully constructed and occupied.

The proposed Desert Gardens Development will have four accesses located on Warren Road. All the site accesses are planned as full movement accesses.

After full build-out of the development, per ITE's *Trip Generation Manual 11th Edition,* Maricopa Opus is forecasted to generate 6,526 total daily trips, with 484 trips in the morning peak hour and 650 trips in the evening peak hour.

Half street improvements are planned along the site's eastern and western boundaries on Warren Road. Warren Road should be constructed as an arterial with 75 feet of right of way.

Fifty-five feet of right of way should be reserved on Miller Road, the site's southern boundary for future widening.

Through the 2033 total traffic conditions, all study area intersections operate at an acceptable LOS C or better when all the improvements by Desert Gardens and by others are taken into consideration.

A traffic signal is not warranted at the intersections of Warren Road/Teel Road, Warren Road/Miller Road or Warren Road/Barnes Road by year 2033 using projected traffic volumes from this study. However, if new development is planned in the area, then these warrants should be reanalyzed using the newly projected traffic volumes that take the new development traffic needs into consideration.

Proper intersection sight distance and sight triangles shall be provided and maintained at all site access driveways of the proposed development to give drivers exiting the site a clear view of oncoming traffic. The landscape and hardscape (monument signs) within the sight triangles must not obstruct the driver's view of the adjacent travel lanes.

Based on this TIA, the following roadway and intersection improvements are proposed.

BUILDOUT – 2028
By Desert Gardens Development

- Construct half street improvements on Warren Road along the site's western and eastern boundary. This improvement should provide 75 feet of right of way, measured from centerline to right of way line.
- Reserve 55 feet of right of way, measured from centerline to right of way line, for a future Miller Road on the site's southern boundary.
- Install right and left turn lanes on Warren Road at Accesses A, B, C and D. Turn lane lengths are specified in Tables 9 and 10.

VIII. LIMITATIONS

Our professional services have been performed using the degree of skill ordinarily exercised, under similar circumstances, by reputable transportation engineering firms practicing in this locality. No other warranty, expressed or implied, is made.

The contents of this report are intended for the sole use of the addressee and his/her designees. In completing this report, data was obtained from a variety of sources (i.e., City, County, State and Federal sources); United Civil Group has assumed these sources to be reliable and accurate. Should deviations from this report be noted, this firm shall be contacted for review of the area of concern.

A reasonable attempt was made to acquire recent traffic impact studies, traffic projections and/or data that may be helpful in more accurately projecting traffic volumes. United Civil Group is not responsible for incorporating data made available after this document has been finalized.

This report is issued with the understanding that it is the responsibility of the owner to see that its provisions are carried out or brought to the attention of those concerned. If any changes of the proposed project are planned, the conclusions and recommendations contained in this report shall be reviewed and the report shall be modified or supplemented, as necessary.

IX. SOURCES

A Policy on Geometric Design of Highways and Streets, American Association of State Highway and Transportation Officials, 2018.

Highway Capacity Manual, HCM, Transportation Research Board, 2016.

Manual on Uniform Traffic Control Devices, Federal Highway Administration, MUTCD 2009.

Pinal County Access Management Manual, February 24, 2017.

Pinal County Regionally Significant Routes for Safety and Mobility Final Report. December 2008.

Pinal County Small Area Transportation Study Final Report, August 2006.

Pinal County Subdivision & Infrastructure Design Manual.

Pinal County Traffic Assessment Guidelines & Procedures, January 2007.

Trip Generation, 11th Edition, Institute of Transportation Engineers, 2021.

Appendix A

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Turning Movement Count

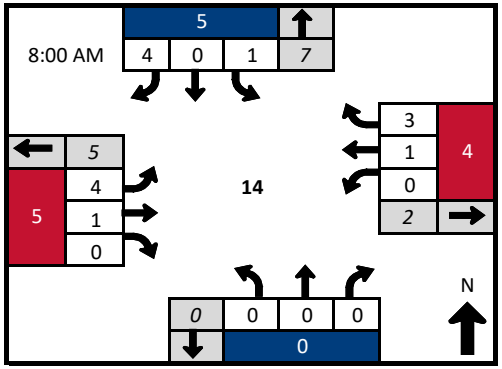
Project No: TR21119

Location: Ralston Road and Teel Road

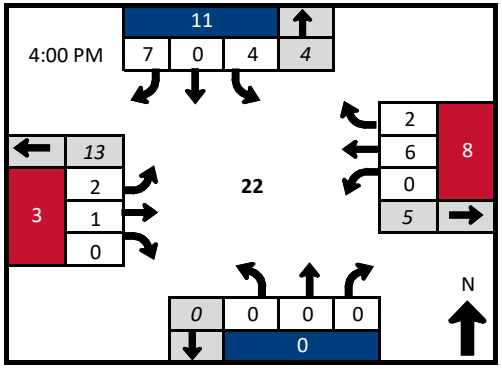
Intersection Configuration: Unsignalized

Apr-6-2022 (Wednesday)

	Speed Limit	Lt	Lt\T	T	T/Rt	Rt	Lt/T/Rt	Lt/Rt
Northbound								
Southbound	35							1
Eastbound	25		1					
Westbound	25				1			



	Ralston Road				Ralston Road				Teel Road				Teel Road				Total	Peak Hour
	Northbound				Southbound				Eastbound				Westbound					
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds		
7:00 AM	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	3	
7:15 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0	3	
7:30 AM	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0	3	
7:45 AM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	3	12
8:00 AM	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	3	12
8:15 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	0	3	12
8:30 AM	0	0	0	0	1	0	2	0	0	0	0	0	0	1	0	0	4	13
8:45 AM	0	0	0	0	0	0	1	0	2	0	0	0	0	0	1	0	4	14
Peak Hour Total	**0**	**0**	**0**	**0**	**1**	**0**	**4**	**0**	**4**	**1**	**0**	**0**	**0**	**1**	**3**	**0**	**14**	



	Ralston Road				Ralston Road				Teel Road				Teel Road				Total	Peak Hour
	Northbound				Southbound				Eastbound				Westbound					
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds		
4:00 PM	0	0	0	0	3	0	1	0	0	1	0	0	0	2	1	0	8	
4:15 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	
4:30 PM	0	0	0	0	1	0	3	0	2	0	0	0	0	1	1	0	8	
4:45 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	3	0	0	4	22
5:00 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	1	0	0	3	17
5:15 PM	0	0	0	0	2	0	1	0	1	0	0	0	0	0	2	0	6	21
5:30 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	2	0	0	3	16
5:45 PM	0	0	0	0	0	0	2	0	2	0	0	0	0	1	1	0	6	18
Peak Hour Total	**0**	**0**	**0**	**0**	**4**	**0**	**7**	**0**	**2**	**1**	**0**	**0**	**0**	**6**	**2**	**0**	**22**	

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Turning Movement Count

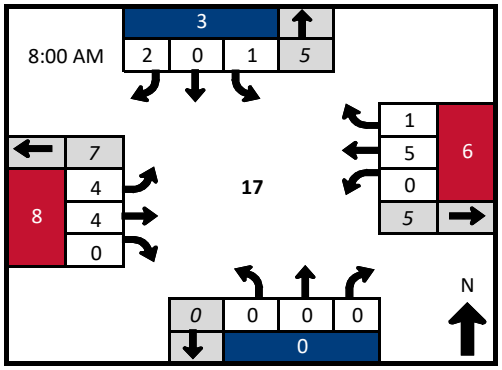
Project No: TR22014

Location: Thunderbird Road and Teel Road

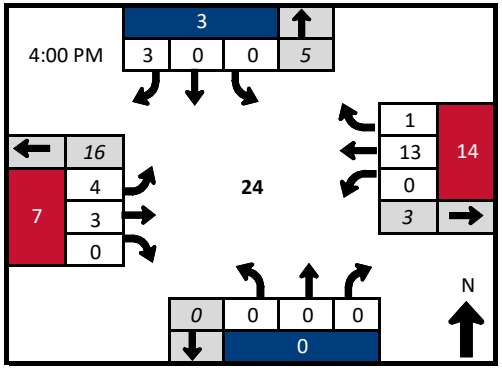
Intersection Configuration: Unsignalized

April 6, 2022 (Wednesday)

	Speed Limit	Lt	Lt\T	T	T/Rt	Rt	Lt/T/Rt	Lt/Rt
Northbound	25							1
Southbound								
Eastbound	25		1					
Westbound	25				1			



	Thunderbird Road Northbound				Thunderbird Road Southbound				Teel Road Eastbound				Teel Road Westbound				Total	Peak Hour
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds		
7:00 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	0	3	
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:30 AM	0	0	0	0	0	0	1	0	0	2	0	0	0	1	0	0	4	
7:45 AM	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0	3	10
8:00 AM	0	0	0	0	1	0	1	0	0	1	0	0	0	1	1	0	5	12
8:15 AM	0	0	0	0	0	0	0	0	2	1	0	0	0	1	0	0	4	16
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	14
8:45 AM	0	0	0	0	0	0	1	0	2	2	0	0	0	1	0	0	6	17
Peak Hour Total	**0**	**0**	**0**	**0**	**1**	**0**	**2**	**0**	**4**	**4**	**0**	**0**	**0**	**5**	**1**	**0**	**17**	



	Thunderbird Road Northbound				Thunderbird Road Southbound				Teel Road Eastbound				Teel Road Westbound				Total	Peak Hour
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds		
4:00 PM	0	0	0	0	0	0	2	0	0	1	0	0	0	4	0	0	7	
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	
4:30 PM	0	0	0	0	0	0	1	0	1	2	0	0	0	3	1	0	8	
4:45 PM	0	0	0	0	0	0	0	0	3	0	0	0	0	4	0	0	7	24
5:00 PM	0	0	0	0	0	0	3	0	0	0	0	0	0	3	0	0	6	23
5:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2	23
5:30 PM	0	0	0	0	0	0	2	0	1	2	0	0	0	2	1	0	8	23
5:45 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	2	1	0	5	21
Peak Hour Total	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**4**	**3**	**0**	**0**	**0**	**13**	**1**	**0**	**24**	

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Turning Movement Count

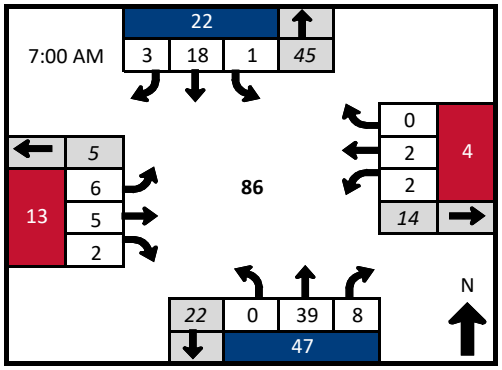
	Speed Limit	Lt	Lt\T	T	T/Rt	Rt	Lt/T/Rt	Lt/Rt
Northbound	40						1	
Southbound	40						1	
Eastbound	35						1	
Westbound	35						1	

Project No: TR22014

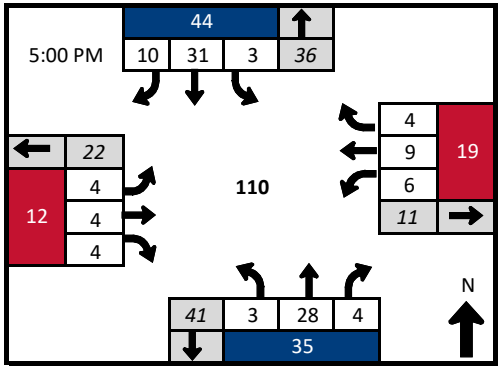
Location: Warren Road and Barnes Road

Intersection Configuration: Unsignalized

April 6, 2022 (Wednesday)



	Warren Road Northbound				Warren Road Southbound				Barnes Road Eastbound				Barnes Road Westbound				Total	Peak Hour
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds		
7:00 AM	0	12	1	0	0	4	0	0	2	2	0	0	1	1	0	0	23	
7:15 AM	0	14	2	0	1	8	1	0	0	2	2	0	0	0	0	0	30	
7:30 AM	0	4	3	0	0	3	1	0	2	0	0	0	0	0	0	0	13	
7:45 AM	0	9	2	0	0	3	1	0	2	1	0	0	1	1	0	0	20	86
8:00 AM	0	6	1	0	0	4	0	0	4	0	1	0	1	3	0	0	20	83
8:15 AM	1	10	0	0	1	5	1	0	4	3	0	0	1	0	0	0	26	79
8:30 AM	0	2	1	0	1	5	2	0	0	1	0	0	0	1	0	0	13	79
8:45 AM	1	7	0	0	0	12	0	0	3	0	0	0	0	0	0	0	23	82
Peak Hour Total	**0**	**39**	**8**	**0**	**1**	**18**	**3**	**0**	**6**	**5**	**2**	**0**	**2**	**2**	**0**	**0**	**86**	



	Warren Road Northbound				Warren Road Southbound				Barnes Road Eastbound				Barnes Road Westbound				Total	Peak Hour
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds		
4:00 PM	2	8	0	0	1	8	5	0	0	1	1	0	0	3	0	0	29	
4:15 PM	2	8	1	0	1	6	2	0	0	0	2	0	1	1	1	0	25	
4:30 PM	1	9	0	0	0	15	1	0	0	0	0	0	1	3	0	0	30	
4:45 PM	0	7	3	0	1	8	0	0	2	0	0	0	1	3	0	0	25	109
5:00 PM	0	7	0	0	0	7	3	0	1	1	2	0	1	2	4	0	28	108
5:15 PM	1	4	2	0	1	9	2	0	1	1	0	0	3	2	0	0	26	109
5:30 PM	1	8	2	0	1	9	2	0	1	0	1	0	1	3	0	0	29	108
5:45 PM	1	9	0	0	1	6	3	0	1	2	1	0	1	2	0	0	27	110
Peak Hour Total	**3**	**28**	**4**	**0**	**3**	**31**	**10**	**0**	**4**	**4**	**4**	**0**	**6**	**9**	**4**	**0**	**110**	

United Civil Group

Turning Movement Count

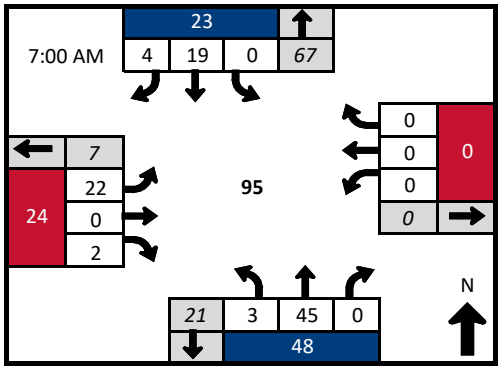
Project No: TR22014

Location: Warren Road and Miller Road

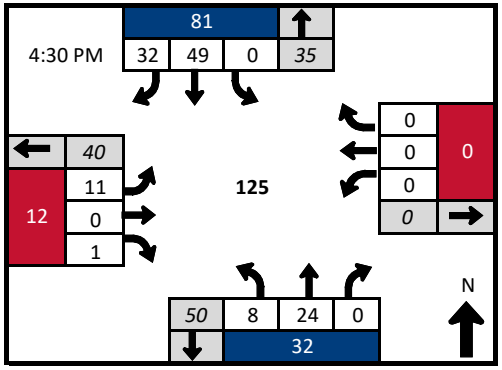
Intersection Configuration: Unsignalized

April 6, 2022 (Wednesday)

	Speed Limit	Lt	Lt\T	T	T/Rt	Rt	Lt/T/Rt	Lt/Rt
Northbound	40		1					
Southbound	40				1			
Eastbound	35							1
Westbound								



	Warren Road				Warren Road				Miller Road				Miller Road				Total	Peak Hour
	Northbound				Southbound				Eastbound				Westbound					
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds		
7:00 AM	1	16	0	0	0	4	0	0	5	0	1	0	0	0	0	0	27	
7:15 AM	1	12	0	0	0	7	1	0	4	0	1	0	0	0	0	0	26	
7:30 AM	0	8	0	0	0	5	2	0	10	0	0	0	0	0	0	0	25	
7:45 AM	1	9	0	0	0	3	1	0	3	0	0	0	0	0	0	0	17	95
8:00 AM	1	11	0	0	0	5	1	0	6	0	0	0	0	0	0	0	24	92
8:15 AM	0	16	0	0	0	6	2	0	2	0	2	0	0	0	0	0	28	94
8:30 AM	0	2	0	0	0	8	4	0	4	0	0	0	0	0	0	0	18	87
8:45 AM	0	9	0	0	0	11	1	0	3	0	0	0	0	0	0	0	24	94
Peak Hour Total	**3**	**45**	**0**	**0**	**0**	**19**	**4**	**0**	**22**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**95**	



	Warren Road				Warren Road				Miller Road				Miller Road				Total	Peak Hour
	Northbound				Southbound				Eastbound				Westbound					
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds		
4:00 PM	1	6	0	0	0	11	5	0	1	0	1	0	0	0	0	0	25	
4:15 PM	0	9	0	0	0	8	3	0	2	0	1	0	0	0	0	0	23	
4:30 PM	1	7	0	0	0	18	7	0	2	0	0	0	0	0	0	0	35	
4:45 PM	0	8	0	0	0	6	10	0	1	0	1	0	0	0	0	0	26	109
5:00 PM	3	6	0	0	0	12	10	0	3	0	0	0	0	0	0	0	34	118
5:15 PM	4	3	0	0	0	13	5	0	5	0	0	0	0	0	0	0	30	125
5:30 PM	1	8	0	0	0	11	5	0	2	0	1	0	0	0	0	0	28	118
5:45 PM	1	9	0	0	0	10	7	0	1	0	0	0	0	0	0	0	28	120
Peak Hour Total	**8**	**24**	**0**	**0**	**0**	**49**	**32**	**0**	**11**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**125**	

United Civil Group

Turning Movement Count

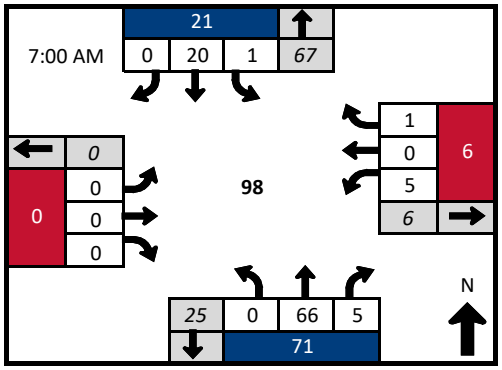
Project No: TR22014

Location: Warren Road and Teel Road

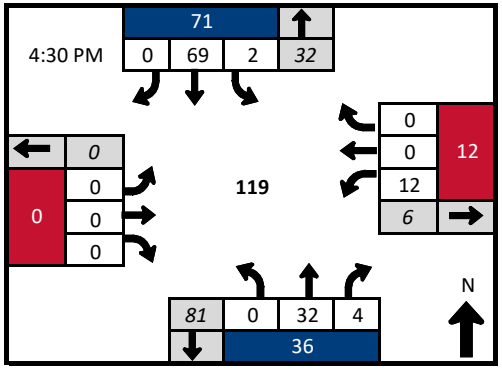
Intersection Configuration: Unsignalized

April 6, 2022 (Wednesday)

	Speed Limit	Lt	Lt\T	T	T/Rt	Rt	Lt/T/Rt	Lt/Rt
Northbound	40				1			
Southbound	40		1					
Eastbound								
Westbound	25							1



	Warren Road Northbound				Warren Road Southbound				Teel Road Eastbound				Teel Road Westbound				Total	Peak Hour
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds		
7:00 AM	0	21	2	0	0	4	0	0	0	0	0	0	0	0	1	0	28	
7:15 AM	0	15	0	0	0	6	0	0	0	0	0	0	2	0	0	0	23	
7:30 AM	0	19	1	0	0	6	0	0	0	0	0	0	2	0	0	0	28	
7:45 AM	0	11	2	0	1	4	0	0	0	0	0	0	1	0	0	0	19	98
8:00 AM	0	14	2	0	0	4	0	0	0	0	0	0	1	0	0	0	21	91
8:15 AM	0	21	0	0	0	7	0	0	0	0	0	0	1	0	0	0	29	97
8:30 AM	0	8	0	0	0	13	0	0	0	0	0	0	2	0	0	0	23	92
8:45 AM	0	10	0	0	0	8	0	0	0	0	0	0	1	0	1	0	20	93
Peak Hour Total	**0**	**66**	**5**	**0**	**1**	**20**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**1**	**0**	**98**	



	Warren Road Northbound				Warren Road Southbound				Teel Road Eastbound				Teel Road Westbound				Total	Peak Hour
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds		
4:00 PM	0	8	1	0	0	14	0	0	0	0	0	0	4	0	1	0	28	
4:15 PM	0	10	0	0	0	11	0	0	0	0	0	0	2	0	0	0	23	
4:30 PM	0	8	2	0	0	21	0	0	0	0	0	0	2	0	0	0	33	
4:45 PM	0	6	2	0	0	12	0	0	0	0	0	0	4	0	0	0	24	108
5:00 PM	0	9	0	0	1	19	0	0	0	0	0	0	5	0	0	0	34	114
5:15 PM	0	9	0	0	1	17	0	0	0	0	0	0	1	0	0	0	28	119
5:30 PM	0	9	2	0	1	15	0	0	0	0	0	0	1	0	0	0	28	114
5:45 PM	0	8	1	0	0	18	0	0	0	0	0	0	1	0	0	0	28	118
Peak Hour Total	**0**	**32**	**4**	**0**	**2**	**69**	**0**	**0**	**0**	**0**	**0**	**0**	**12**	**0**	**0**	**0**	**119**	

Appendix B

Intersection Level Of Service Report
Intersection 2: Warren Road & Teel Road

Control Type:	Two-way stop	Delay (sec / veh):	9.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.007

Intersection Setup

Name	Warren Road		Warren Road		Teel Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Warren Road		Warren Road		Teel Road	
Base Volume Input [veh/h]	66	5	1	20	5	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	66	5	1	20	5	1
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	1	0	6	1	0
Total Analysis Volume [veh/h]	73	6	1	22	6	1
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	7.37	0.00	9.04	8.68
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.02	0.02
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.04	0.04	0.58	0.58
d_A, Approach Delay [s/veh]	0.00		0.32		8.99	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.64					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 3: Thunderbird Road & Teel Road

Control Type:	Two-way stop	Delay (sec / veh):	8.6
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.001

Intersection Setup

Name	Thunderbird Road		Teel Road		Teel Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Thunderbird Road		Teel Road		Teel Road	
Base Volume Input [veh/h]	1	2	4	4	5	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	2	4	4	5	1
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	1	1	1	1	0
Total Analysis Volume [veh/h]	1	2	4	4	6	1
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	8.62	8.36	7.24	0.00	0.00	0.00
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.01	0.01	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.22	0.22	0.17	0.17	0.00	0.00
d_A, Approach Delay [s/veh]	8.44		3.62		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	3.02					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 4: Ralston Road & Teel Road

Control Type:	Two-way stop	Delay (sec / veh):	8.6
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.001

Intersection Setup

Name	Ralston Road		Teel Road		Teel Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Ralston Road		Teel Road		Teel Road	
Base Volume Input [veh/h]	1	4	4	1	1	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	4	4	1	1	3
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	1	1	0	0	1
Total Analysis Volume [veh/h]	1	4	4	1	1	3
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	8.60	8.34	7.23	0.00	0.00	0.00
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.01	0.01	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.35	0.35	0.17	0.17	0.00	0.00
d_A, Approach Delay [s/veh]	8.39		5.78		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	5.06					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 5: Warren Road & Miller Road

Control Type:	Two-way stop	Delay (sec / veh):	9.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.026

Intersection Setup

Name	Warren Road		Warren Road		Miller Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		40.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Warren Road		Warren Road		Miller Road	
Base Volume Input [veh/h]	3	45	19	4	22	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	45	19	4	22	2
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	13	5	1	6	1
Total Analysis Volume [veh/h]	3	50	21	4	24	2
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.03	0.00
d_M, Delay for Movement [s/veh]	7.27	0.00	0.00	0.00	9.02	8.53
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.00	0.00	0.09	0.09
95th-Percentile Queue Length [ft/ln]	0.13	0.13	0.00	0.00	2.15	2.15
d_A, Approach Delay [s/veh]	0.41		0.00		8.98	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	2.45					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 6: Warren Road & Barnes Road

Control Type:	Two-way stop	Delay (sec / veh):	9.5
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.007

Intersection Setup

Name	Warren Road			Warren Road			Barnes Road			Barnes Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Warren Road			Warren Road			Barnes Road			Barnes Road		
Base Volume Input [veh/h]	0	39	8	1	18	3	6	5	2	2	2	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	39	8	1	18	3	6	5	2	2	2	0
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	11	2	0	5	1	2	1	1	1	1	0
Total Analysis Volume [veh/h]	0	43	9	1	20	3	7	6	2	2	2	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.26	0.00	0.00	7.32	0.00	0.00	9.00	9.49	8.48	8.99	9.42	8.54
Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.05	0.05	0.01	0.01	0.01
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.04	0.04	0.04	1.29	1.29	1.29	0.35	0.35	0.35
d_A, Approach Delay [s/veh]	0.00			0.30			9.13			9.21		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	1.91											
Intersection LOS	A											

Intersection Level Of Service Report
Intersection 2: Warren Road & Teel Road

Control Type:	Two-way stop	Delay (sec / veh):	9.2
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.015

Intersection Setup

Name	Warren Road		Warren Road		Teel Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Warren Road		Warren Road		Teel Road	
Base Volume Input [veh/h]	32	4	2	69	12	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	32	4	2	69	12	0
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	1	1	19	3	0
Total Analysis Volume [veh/h]	36	4	2	77	13	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	7.30	0.00	9.17	8.54
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.05	0.05
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.08	0.08	1.13	1.13
d_A, Approach Delay [s/veh]	0.00		0.18		9.17	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	1.01					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 3: Thunderbird Road & Teel Road

Control Type:	Two-way stop	Delay (sec / veh):	8.4
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.003

Intersection Setup

Name	Thunderbird Road		Teel Road		Teel Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Thunderbird Road		Teel Road		Teel Road	
Base Volume Input [veh/h]	0	3	4	3	13	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	3	4	3	13	1
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	1	1	1	4	0
Total Analysis Volume [veh/h]	0	3	4	3	14	1
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	8.65	8.39	7.25	0.00	0.00	0.00
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.01	0.01	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.21	0.21	0.17	0.17	0.00	0.00
d_A, Approach Delay [s/veh]	8.39		4.14		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	2.17					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 4: Ralston Road & Teel Road

Control Type:	Two-way stop	Delay (sec / veh):	8.6
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.004

Intersection Setup

Name	Ralston Road		Teel Road		Teel Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Ralston Road		Teel Road		Teel Road	
Base Volume Input [veh/h]	4	7	2	1	6	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	7	2	1	6	2
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	2	1	0	2	1
Total Analysis Volume [veh/h]	4	8	2	1	7	2
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	8.62	8.39	7.24	0.00	0.00	0.00
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.03	0.03	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.87	0.87	0.08	0.08	0.00	0.00
d_A, Approach Delay [s/veh]	8.47		4.82		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	4.84					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 5: Warren Road & Miller Road

Control Type:	Two-way stop	Delay (sec / veh):	9.2
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.014

Intersection Setup

Name	Warren Road		Warren Road		Miller Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		40.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Warren Road		Warren Road		Miller Road	
Base Volume Input [veh/h]	8	24	49	32	11	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	8	24	49	32	11	1
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	7	14	9	3	0
Total Analysis Volume [veh/h]	9	27	54	36	12	1
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	7.40	0.00	0.00	0.00	9.18	8.70
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.02	0.02	0.00	0.00	0.04	0.04
95th-Percentile Queue Length [ft/ln]	0.38	0.38	0.00	0.00	1.12	1.12
d_A, Approach Delay [s/veh]	1.85		0.00		9.14	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	1.33					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 6: Warren Road & Barnes Road

Control Type:	Two-way stop	Delay (sec / veh):	9.6
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.013

Intersection Setup

Name	Warren Road			Warren Road			Barnes Road			Barnes Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Warren Road			Warren Road			Barnes Road			Barnes Road		
Base Volume Input [veh/h]	3	28	4	3	31	10	4	4	4	6	9	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	28	4	3	31	10	4	4	4	6	9	4
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	8	1	1	9	3	1	1	1	2	3	1
Total Analysis Volume [veh/h]	3	31	4	3	34	11	4	4	4	7	10	4
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00
d_M, Delay for Movement [s/veh]	7.31	0.00	0.00	7.29	0.00	0.00	9.17	9.55	8.54	9.17	9.62	8.56
Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.01	0.01	0.01	0.01	0.04	0.04	0.04	0.07	0.07	0.07
95th-Percentile Queue Length [ft/ln]	0.13	0.13	0.13	0.13	0.13	0.13	1.02	1.02	1.02	1.87	1.87	1.87
d_A, Approach Delay [s/veh]	0.58			0.46			9.09			9.27		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	2.92											
Intersection LOS	A											

Intersection Level Of Service Report
Intersection 2: Warren Road & Teel Road

Control Type:	Two-way stop	Delay (sec / veh):	9.8
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.058

Intersection Setup

Name	Warren Road		Warren Road		Teel Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Warren Road		Warren Road		Teel Road	
Base Volume Input [veh/h]	66	5	1	20	5	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	15	13	1	38	36	4
Total Hourly Volume [veh/h]	89	19	2	61	42	5
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	5	1	17	12	1
Total Analysis Volume [veh/h]	99	21	2	68	47	6
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.06	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	7.45	0.00	9.76	9.12
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.21	0.21
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.08	0.08	5.17	5.17
d_A, Approach Delay [s/veh]	0.00		0.21		9.69	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	2.18					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 3: Thunderbird Road & Teel Road

Control Type:	Two-way stop	Delay (sec / veh):	9.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.008

Intersection Setup

Name	Thunderbird Road		Teel Road		Teel Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Thunderbird Road		Teel Road		Teel Road	
Base Volume Input [veh/h]	1	2	4	4	5	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	5	0	0	14	40	15
Total Hourly Volume [veh/h]	6	2	5	19	46	16
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	1	1	5	13	4
Total Analysis Volume [veh/h]	7	2	6	21	51	18
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	9.02	8.62	7.36	0.00	0.00	0.00
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.03	0.03	0.01	0.01	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.74	0.74	0.25	0.25	0.00	0.00
d_A, Approach Delay [s/veh]	8.93		1.63		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	1.19					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 4: Ralston Road & Teel Road

Control Type:	Two-way stop	Delay (sec / veh):	10.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.001

Intersection Setup

Name	Ralston Road		Teel Road		Teel Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Ralston Road		Teel Road		Teel Road	
Base Volume Input [veh/h]	1	4	4	1	1	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	55	101	0	0	0
Total Hourly Volume [veh/h]	1	60	106	1	1	3
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	17	29	0	0	1
Total Analysis Volume [veh/h]	1	67	118	1	1	3
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.06	0.07	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	10.41	8.56	7.40	0.00	0.00	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.20	0.20	0.23	0.23	0.00	0.00
95th-Percentile Queue Length [ft/ln]	5.07	5.07	5.84	5.84	0.00	0.00
d_A, Approach Delay [s/veh]	8.58		7.34		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	7.63					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 5: Warren Road & Miller Road

Control Type:	Two-way stop	Delay (sec / veh):	9.8
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.036

Intersection Setup

Name	Warren Road		Warren Road		Miller Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		40.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Warren Road		Warren Road		Miller Road	
Base Volume Input [veh/h]	3	45	19	4	22	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	28	74	0	0	0
Total Hourly Volume [veh/h]	3	79	95	5	25	2
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	22	26	1	7	1
Total Analysis Volume [veh/h]	3	88	106	6	28	2
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.04	0.00
d_M, Delay for Movement [s/veh]	7.44	0.00	0.00	0.00	9.77	8.99
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.00	0.00	0.12	0.12
95th-Percentile Queue Length [ft/ln]	0.13	0.13	0.00	0.00	2.95	2.95
d_A, Approach Delay [s/veh]	0.25		0.00		9.72	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	1.35					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 6: Warren Road & Barnes Road

Control Type:	Two-way stop	Delay (sec / veh):	10.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.010

Intersection Setup

Name	Warren Road			Warren Road			Barnes Road			Barnes Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Warren Road			Warren Road			Barnes Road			Barnes Road		
Base Volume Input [veh/h]	0	39	8	1	18	3	6	5	2	2	2	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	28	0	0	74	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	72	9	1	94	3	7	6	2	2	2	0
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	20	3	0	26	1	2	2	1	1	1	0
Total Analysis Volume [veh/h]	0	80	10	1	104	3	8	7	2	2	2	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.43	0.00	0.00	7.39	0.00	0.00	9.83	10.27	8.90	9.81	10.16	8.72
Movement LOS	A	A	A	A	A	A	A	B	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.07	0.07	0.02	0.02	0.02
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.04	0.04	0.04	1.73	1.73	1.73	0.42	0.42	0.42
d_A, Approach Delay [s/veh]	0.00			0.07			9.90			9.99		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	0.98											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 2: Warren Road & Teel Road

Control Type:	Two-way stop	Delay (sec / veh):	10.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.056

Intersection Setup

Name	Warren Road		Warren Road		Teel Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Warren Road		Warren Road		Teel Road	
Base Volume Input [veh/h]	32	4	2	69	12	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	41	41	4	25	24	2
Total Hourly Volume [veh/h]	77	46	6	103	38	2
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	13	2	29	11	1
Total Analysis Volume [veh/h]	86	51	7	114	42	2
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.06	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	7.50	0.00	10.13	9.12
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.01	0.01	0.19	0.19
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.29	0.29	4.65	4.65
d_A, Approach Delay [s/veh]	0.00		0.43		10.08	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	1.64					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 3: Thunderbird Road & Teel Road

Control Type:	Two-way stop	Delay (sec / veh):	9.2
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.022

Intersection Setup

Name	Thunderbird Road		Teel Road		Teel Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Thunderbird Road		Teel Road		Teel Road	
Base Volume Input [veh/h]	0	3	4	3	13	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	17	0	0	45	26	10
Total Hourly Volume [veh/h]	17	3	5	48	41	11
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	1	1	13	11	3
Total Analysis Volume [veh/h]	19	3	6	53	46	12
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	9.21	8.65	7.34	0.00	0.00	0.00
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.08	0.08	0.01	0.01	0.00	0.00
95th-Percentile Queue Length [ft/ln]	1.89	1.89	0.25	0.25	0.00	0.00
d_A, Approach Delay [s/veh]	9.14		0.75		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	1.76					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 4: Ralston Road & Teel Road

Control Type:	Two-way stop	Delay (sec / veh):	10.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.008

Intersection Setup

Name	Ralston Road		Teel Road		Teel Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Ralston Road		Teel Road		Teel Road	
Base Volume Input [veh/h]	4	7	2	1	6	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	121	87	0	0	0
Total Hourly Volume [veh/h]	5	129	89	1	7	2
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	36	25	0	2	1
Total Analysis Volume [veh/h]	6	143	99	1	8	2
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.13	0.06	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	10.48	8.92	7.38	0.00	0.00	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.49	0.49	0.19	0.19	0.00	0.00
95th-Percentile Queue Length [ft/ln]	12.31	12.31	4.86	4.86	0.00	0.00
d_A, Approach Delay [s/veh]	8.98		7.31		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	7.99					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 5: Warren Road & Miller Road

Control Type:	Two-way stop	Delay (sec / veh):	10.2
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.018

Intersection Setup

Name	Warren Road		Warren Road		Miller Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		40.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Warren Road		Warren Road		Miller Road	
Base Volume Input [veh/h]	8	24	49	32	11	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	82	49	0	0	0
Total Hourly Volume [veh/h]	9	109	104	36	12	1
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	30	29	10	3	0
Total Analysis Volume [veh/h]	10	121	116	40	13	1
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	7.54	0.00	0.00	0.00	10.19	9.04
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.02	0.02	0.00	0.00	0.06	0.06
95th-Percentile Queue Length [ft/ln]	0.42	0.42	0.00	0.00	1.49	1.49
d_A, Approach Delay [s/veh]	0.58		0.00		10.11	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.72					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 6: Warren Road & Barnes Road

Control Type:	Two-way stop	Delay (sec / veh):	10.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.017

Intersection Setup

Name	Warren Road			Warren Road			Barnes Road			Barnes Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Warren Road			Warren Road			Barnes Road			Barnes Road		
Base Volume Input [veh/h]	3	28	4	3	31	10	4	4	4	6	9	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	82	0	0	49	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	114	5	3	84	11	5	5	5	7	10	5
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	32	1	1	23	3	1	1	1	2	3	1
Total Analysis Volume [veh/h]	3	127	6	3	93	12	6	6	6	8	11	6
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01
d_M, Delay for Movement [s/veh]	7.43	0.00	0.00	7.48	0.00	0.00	10.38	10.62	8.88	10.38	10.70	9.10
Movement LOS	A	A	A	A	A	A	B	B	A	B	B	A
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.01	0.01	0.01	0.01	0.07	0.07	0.07	0.11	0.11	0.11
95th-Percentile Queue Length [ft/ln]	0.13	0.13	0.13	0.13	0.13	0.13	1.86	1.86	1.86	2.71	2.71	2.71
d_A, Approach Delay [s/veh]	0.16			0.21			9.96			10.21		
Approach LOS	A			A			A			B		
d_I, Intersection Delay [s/veh]	1.67											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 2: Warren Road & Teel Road

Control Type:	Two-way stop	Delay (sec / veh):	10.6
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.068

Intersection Setup

Name	Warren Road		Warren Road		Teel Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Warren Road		Warren Road		Teel Road	
Base Volume Input [veh/h]	66	5	1	20	5	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.2434	1.2434	1.2434	1.2434	1.2434	1.2434
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	51	13	1	98	36	4
Total Hourly Volume [veh/h]	133	19	2	123	42	5
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	37	5	1	34	12	1
Total Analysis Volume [veh/h]	148	21	2	137	47	6
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.07	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	7.56	0.00	10.62	9.47
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.24	0.24
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.08	0.08	6.05	6.05
d_A, Approach Delay [s/veh]	0.00		0.11		10.49	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	1.58					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 3: Thunderbird Road & Teel Road

Control Type:	Two-way stop	Delay (sec / veh):	9.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.008

Intersection Setup

Name	Thunderbird Road		Teel Road		Teel Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Thunderbird Road		Teel Road		Teel Road	
Base Volume Input [veh/h]	1	2	4	4	5	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.2434	1.2434	1.2434	1.2434	1.2434	1.2434
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	5	0	0	14	40	15
Total Hourly Volume [veh/h]	6	2	5	19	46	16
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	1	1	5	13	4
Total Analysis Volume [veh/h]	7	2	6	21	51	18
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	9.02	8.62	7.36	0.00	0.00	0.00
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.03	0.03	0.01	0.01	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.74	0.74	0.25	0.25	0.00	0.00
d_A, Approach Delay [s/veh]	8.93		1.63		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	1.19					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 4: Ralston Road & Teel Road

Control Type:	Two-way stop	Delay (sec / veh):	10.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.001

Intersection Setup

Name	Ralston Road		Teel Road		Teel Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Ralston Road		Teel Road		Teel Road	
Base Volume Input [veh/h]	1	4	4	1	1	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.2434	1.2434	1.2434	1.2434	1.2434	1.2434
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	55	101	0	0	0
Total Hourly Volume [veh/h]	1	60	106	1	1	4
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	17	29	0	0	1
Total Analysis Volume [veh/h]	1	67	118	1	1	4
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.06	0.07	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	10.42	8.56	7.40	0.00	0.00	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.20	0.20	0.23	0.23	0.00	0.00
95th-Percentile Queue Length [ft/ln]	5.07	5.07	5.85	5.85	0.00	0.00
d_A, Approach Delay [s/veh]	8.59		7.34		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	7.59					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 5: Warren Road & Miller Road

Control Type:	Two-way stop	Delay (sec / veh):	10.6
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.045

Intersection Setup

Name	Warren Road		Warren Road		Miller Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		40.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Warren Road		Warren Road		Miller Road	
Base Volume Input [veh/h]	3	45	19	4	22	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.2434	1.2434	1.2434	1.2434	1.2434	1.2434
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	64	134	0	0	0
Total Hourly Volume [veh/h]	4	120	158	5	27	2
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	33	44	1	8	1
Total Analysis Volume [veh/h]	4	133	176	6	30	2
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.04	0.00
d_M, Delay for Movement [s/veh]	7.59	0.00	0.00	0.00	10.62	9.43
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.00	0.00	0.15	0.15
95th-Percentile Queue Length [ft/ln]	0.17	0.17	0.00	0.00	3.69	3.69
d_A, Approach Delay [s/veh]	0.22		0.00		10.55	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	1.05					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 6: Warren Road & Barnes Road

Control Type:	Two-way stop	Delay (sec / veh):	11.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.012

Intersection Setup

Name	Warren Road			Warren Road			Barnes Road			Barnes Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Warren Road			Warren Road			Barnes Road			Barnes Road		
Base Volume Input [veh/h]	0	39	8	1	18	3	6	5	2	2	2	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.2434	1.2434	1.2434	1.2434	1.2434	1.2434	1.2434	1.2434	1.2434	1.2434	1.2434	1.2434
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	64	0	0	134	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	112	10	1	156	4	7	6	2	2	2	0
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	31	3	0	43	1	2	2	1	1	1	0
Total Analysis Volume [veh/h]	0	124	11	1	173	4	8	7	2	2	2	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.57	0.00	0.00	7.48	0.00	0.00	10.76	11.13	9.30	10.73	10.99	8.95
Movement LOS	A	A	A	A	A	A	B	B	A	B	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.08	0.08	0.02	0.02	0.02
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.04	0.04	0.04	2.03	2.03	2.03	0.49	0.49	0.49
d_A, Approach Delay [s/veh]	0.00			0.04			10.74			10.86		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	0.70											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 2: Warren Road & Teel Road

Control Type:	Two-way stop	Delay (sec / veh):	11.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.067

Intersection Setup

Name	Warren Road		Warren Road		Teel Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Warren Road		Warren Road		Teel Road	
Base Volume Input [veh/h]	32	4	2	69	12	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.2434	1.2434	1.2434	1.2434	1.2434	1.2434
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	95	41	4	57	24	2
Total Hourly Volume [veh/h]	135	46	6	143	39	2
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	13	2	40	11	1
Total Analysis Volume [veh/h]	150	51	7	159	43	2
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.01	0.00	0.07	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	7.63	0.00	10.99	9.56
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.01	0.01	0.22	0.22
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.29	0.29	5.54	5.54
d_A, Approach Delay [s/veh]	0.00		0.32		10.93	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	1.32					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 3: Thunderbird Road & Teel Road

Control Type:	Two-way stop	Delay (sec / veh):	9.2
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.022

Intersection Setup

Name	Thunderbird Road		Teel Road		Teel Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Thunderbird Road		Teel Road		Teel Road	
Base Volume Input [veh/h]	0	3	4	3	13	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.2434	1.2434	1.2434	1.2434	1.2434	1.2434
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	17	0	0	45	26	10
Total Hourly Volume [veh/h]	17	4	5	49	42	11
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	1	1	14	12	3
Total Analysis Volume [veh/h]	19	4	6	54	47	12
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	9.23	8.65	7.34	0.00	0.00	0.00
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.08	0.08	0.01	0.01	0.00	0.00
95th-Percentile Queue Length [ft/ln]	1.98	1.98	0.25	0.25	0.00	0.00
d_A, Approach Delay [s/veh]	9.13		0.73		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	1.79					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 4: Ralston Road & Teel Road

Control Type:	Two-way stop	Delay (sec / veh):	10.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.008

Intersection Setup

Name	Ralston Road		Teel Road		Teel Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Ralston Road		Teel Road		Teel Road	
Base Volume Input [veh/h]	4	7	2	1	6	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.2434	1.2434	1.2434	1.2434	1.2434	1.2434
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	121	87	0	0	0
Total Hourly Volume [veh/h]	5	130	89	1	7	2
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	36	25	0	2	1
Total Analysis Volume [veh/h]	6	144	99	1	8	2
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.13	0.06	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	10.48	8.92	7.38	0.00	0.00	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.50	0.50	0.19	0.19	0.00	0.00
95th-Percentile Queue Length [ft/ln]	12.40	12.40	4.86	4.86	0.00	0.00
d_A, Approach Delay [s/veh]	8.99		7.31		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	7.99					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 5: Warren Road & Miller Road

Control Type:	Two-way stop	Delay (sec / veh):	11.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.026

Intersection Setup

Name	Warren Road		Warren Road		Miller Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		40.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Warren Road		Warren Road		Miller Road	
Base Volume Input [veh/h]	8	24	49	32	11	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.2434	1.2434	1.2434	1.2434	1.2434	1.2434
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	136	81	0	0	0
Total Hourly Volume [veh/h]	10	166	142	40	14	1
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	46	39	11	4	0
Total Analysis Volume [veh/h]	11	184	158	44	16	1
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.03	0.00
d_M, Delay for Movement [s/veh]	7.64	0.00	0.00	0.00	11.05	9.34
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.02	0.02	0.00	0.00	0.08	0.08
95th-Percentile Queue Length [ft/ln]	0.46	0.46	0.00	0.00	2.10	2.10
d_A, Approach Delay [s/veh]	0.43		0.00		10.95	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.65					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 6: Warren Road & Barnes Road

Control Type:	Two-way stop	Delay (sec / veh):	11.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.019

Intersection Setup

Name	Warren Road			Warren Road			Barnes Road			Barnes Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Warren Road			Warren Road			Barnes Road			Barnes Road		
Base Volume Input [veh/h]	3	28	4	3	31	10	4	4	4	6	9	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	136	0	0	81	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	168	5	3	116	11	5	5	5	7	10	5
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	47	1	1	32	3	1	1	1	2	3	1
Total Analysis Volume [veh/h]	3	187	6	3	129	12	6	6	6	8	11	6
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01
d_M, Delay for Movement [s/veh]	7.50	0.00	0.00	7.61	0.00	0.00	11.25	11.37	9.09	11.25	11.48	9.46
Movement LOS	A	A	A	A	A	A	B	B	A	B	B	A
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.01	0.01	0.01	0.01	0.08	0.08	0.08	0.12	0.12	0.12
95th-Percentile Queue Length [ft/ln]	0.13	0.13	0.13	0.13	0.13	0.13	2.09	2.09	2.09	3.08	3.08	3.08
d_A, Approach Delay [s/veh]	0.11			0.16			10.57			10.92		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	1.33											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 2: Warren Road & Teel Road

Control Type:	Two-way stop	Delay (sec / veh):	13.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.099

Intersection Setup

Name	Warren Road		Warren Road		Teel Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Warren Road		Warren Road		Teel Road	
Base Volume Input [veh/h]	66	5	1	20	5	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	269	0	0	94	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	15	13	1	38	36	4
Total Hourly Volume [veh/h]	358	19	2	155	42	5
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	99	5	1	43	12	1
Total Analysis Volume [veh/h]	398	21	2	172	47	6
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.10	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	8.16	0.00	13.51	11.50
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.36	0.36
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.08	0.08	9.09	9.09
d_A, Approach Delay [s/veh]	0.00		0.09		13.29	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	1.12					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 3: Thunderbird Road & Teel Road

Control Type:	Two-way stop	Delay (sec / veh):	9.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.008

Intersection Setup

Name	Thunderbird Road		Teel Road		Teel Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Thunderbird Road		Teel Road		Teel Road	
Base Volume Input [veh/h]	1	2	4	4	5	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	5	0	0	14	40	15
Total Hourly Volume [veh/h]	6	2	5	19	46	16
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	1	1	5	13	4
Total Analysis Volume [veh/h]	7	2	6	21	51	18
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	9.02	8.62	7.36	0.00	0.00	0.00
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.03	0.03	0.01	0.01	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.74	0.74	0.25	0.25	0.00	0.00
d_A, Approach Delay [s/veh]	8.93		1.63		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	1.19					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 4: Ralston Road & Teel Road

Control Type:	Two-way stop	Delay (sec / veh):	10.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.001

Intersection Setup

Name	Ralston Road		Teel Road		Teel Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Ralston Road		Teel Road		Teel Road	
Base Volume Input [veh/h]	1	4	4	1	1	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	55	101	0	0	0
Total Hourly Volume [veh/h]	1	60	106	1	1	3
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	17	29	0	0	1
Total Analysis Volume [veh/h]	1	67	118	1	1	3
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.06	0.07	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	10.41	8.56	7.40	0.00	0.00	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.20	0.20	0.23	0.23	0.00	0.00
95th-Percentile Queue Length [ft/ln]	5.07	5.07	5.84	5.84	0.00	0.00
d_A, Approach Delay [s/veh]	8.58		7.34		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	7.63					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 5: Warren Road & Miller Road

Control Type:	Two-way stop	Delay (sec / veh):	10.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.043

Intersection Setup

Name	Warren Road		Warren Road		Miller Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		40.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Warren Road		Warren Road		Miller Road	
Base Volume Input [veh/h]	3	45	19	4	22	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	32	89	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	28	74	0	0	0
Total Hourly Volume [veh/h]	3	111	184	5	25	2
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	31	51	1	7	1
Total Analysis Volume [veh/h]	3	123	204	6	28	2
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.04	0.00
d_M, Delay for Movement [s/veh]	7.65	0.00	0.00	0.00	10.73	9.57
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.00	0.00	0.14	0.14
95th-Percentile Queue Length [ft/ln]	0.13	0.13	0.00	0.00	3.52	3.52
d_A, Approach Delay [s/veh]	0.18		0.00		10.65	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.94					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 6: Warren Road & Barnes Road

Control Type:	Two-way stop	Delay (sec / veh):	11.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.012

Intersection Setup

Name	Warren Road			Warren Road			Barnes Road			Barnes Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Warren Road			Warren Road			Barnes Road			Barnes Road		
Base Volume Input [veh/h]	0	39	8	1	18	3	6	5	2	2	2	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	32	0	0	89	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	28	0	0	74	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	104	9	1	183	3	7	6	2	2	2	0
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	29	3	0	51	1	2	2	1	1	1	0
Total Analysis Volume [veh/h]	0	116	10	1	203	3	8	7	2	2	2	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.64	0.00	0.00	7.47	0.00	0.00	10.95	11.30	9.47	10.92	11.15	8.91
Movement LOS	A	A	A	A	A	A	B	B	A	B	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.08	0.08	0.02	0.02	0.02
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.04	0.04	0.04	2.09	2.09	2.09	0.50	0.50	0.50
d_A, Approach Delay [s/veh]	0.00			0.04			10.92			11.03		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	0.67											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 7: Warren Road & Access A

Control Type:	Two-way stop	Delay (sec / veh):	12.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.097

Intersection Setup

Name	Warren Road		Warren Road		Access A	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Warren Road		Warren Road		Access A	
Base Volume Input [veh/h]	70	0	0	26	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1262	1.0000	1.0000	1.1262	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	14	18	46	38	51	132
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	28	0	0	74	0	0
Total Hourly Volume [veh/h]	121	18	46	141	51	132
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	5	13	39	14	37
Total Analysis Volume [veh/h]	134	20	51	157	57	147
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.04	0.00	0.10	0.16
d_M, Delay for Movement [s/veh]	0.00	0.00	7.62	0.00	12.67	10.50
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.11	0.00	1.03	1.03
95th-Percentile Queue Length [ft/ln]	0.00	0.00	2.78	0.00	25.63	25.63
d_A, Approach Delay [s/veh]	0.00		1.87		11.11	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	4.69					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 8: Warren Road & Access B

Control Type:	Two-way stop	Delay (sec / veh):	13.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.048

Intersection Setup

Name	Warren Road		Warren Road		Access B	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Warren Road		Warren Road		Access B	
Base Volume Input [veh/h]	70	0	0	26	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1262	1.0000	1.0000	1.1262	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	138	8	31	62	22	88
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	28	0	0	74	0	0
Total Hourly Volume [veh/h]	245	8	31	165	22	88
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	68	2	9	46	6	24
Total Analysis Volume [veh/h]	272	9	34	183	24	98
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.03	0.00	0.05	0.13
d_M, Delay for Movement [s/veh]	0.00	0.00	7.89	0.00	13.29	10.80
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.08	0.00	0.63	0.63
95th-Percentile Queue Length [ft/ln]	0.00	0.00	2.04	0.00	15.85	15.85
d_A, Approach Delay [s/veh]	0.00		1.24		11.29	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	2.65					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 9: Warren Road & Access C

Control Type:	Two-way stop	Delay (sec / veh):	13.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.059

Intersection Setup

Name	Warren Road		Warren Road		Access C	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Warren Road		Warren Road		Access C	
Base Volume Input [veh/h]	0	70	26	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.1262	1.1262	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	223	83	9	25	10
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	28	74	0	0	0
Total Hourly Volume [veh/h]	3	330	186	9	25	10
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	92	52	3	7	3
Total Analysis Volume [veh/h]	3	367	207	10	28	11
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.06	0.01
d_M, Delay for Movement [s/veh]	7.67	0.00	0.00	0.00	13.09	9.84
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.01	0.00	0.00	0.00	0.23	0.23
95th-Percentile Queue Length [ft/ln]	0.17	0.00	0.00	0.00	5.81	5.81
d_A, Approach Delay [s/veh]	0.06		0.00		12.17	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.79					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 10: Warren Road & Access D

Control Type:	Two-way stop	Delay (sec / veh):	13.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.061

Intersection Setup

Name	Warren Road		Warren Road		Access D	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Warren Road		Warren Road		Access D	
Base Volume Input [veh/h]	0	70	26	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.1262	1.1262	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	245	86	9	25	6
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	28	74	0	0	0
Total Hourly Volume [veh/h]	3	352	189	9	25	6
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	98	53	3	7	2
Total Analysis Volume [veh/h]	3	391	210	10	28	7
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.06	0.01
d_M, Delay for Movement [s/veh]	7.67	0.00	0.00	0.00	13.38	9.87
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.01	0.00	0.00	0.00	0.22	0.22
95th-Percentile Queue Length [ft/ln]	0.17	0.00	0.00	0.00	5.58	5.58
d_A, Approach Delay [s/veh]	0.06		0.00		12.68	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.72					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 2: Warren Road & Teel Road

Control Type:	Two-way stop	Delay (sec / veh):	16.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.117

Intersection Setup

Name	Warren Road		Warren Road		Teel Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Warren Road		Warren Road		Teel Road	
Base Volume Input [veh/h]	32	4	2	69	12	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	181	0	0	307	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	41	41	4	25	24	2
Total Hourly Volume [veh/h]	258	46	6	410	38	2
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	72	13	2	114	11	1
Total Analysis Volume [veh/h]	287	51	7	456	42	2
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.01	0.00	0.12	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	7.96	0.00	16.33	11.27
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.01	0.01	0.40	0.40
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.29	0.29	10.07	10.07
d_A, Approach Delay [s/veh]	0.00		0.12		16.10	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.90					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 3: Thunderbird Road & Teel Road

Control Type:	Two-way stop	Delay (sec / veh):	9.2
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.022

Intersection Setup

Name	Thunderbird Road		Teel Road		Teel Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Thunderbird Road		Teel Road		Teel Road	
Base Volume Input [veh/h]	0	3	4	3	13	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	17	0	0	45	26	10
Total Hourly Volume [veh/h]	17	3	5	48	41	11
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	1	1	13	11	3
Total Analysis Volume [veh/h]	19	3	6	53	46	12
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	9.21	8.65	7.34	0.00	0.00	0.00
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.08	0.08	0.01	0.01	0.00	0.00
95th-Percentile Queue Length [ft/ln]	1.89	1.89	0.25	0.25	0.00	0.00
d_A, Approach Delay [s/veh]	9.14		0.75		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	1.76					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 4: Ralston Road & Teel Road

Control Type:	Two-way stop	Delay (sec / veh):	10.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.008

Intersection Setup

Name	Ralston Road		Teel Road		Teel Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Ralston Road		Teel Road		Teel Road	
Base Volume Input [veh/h]	4	7	2	1	6	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	121	87	0	0	0
Total Hourly Volume [veh/h]	5	129	89	1	7	2
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	36	25	0	2	1
Total Analysis Volume [veh/h]	6	143	99	1	8	2
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.13	0.06	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	10.48	8.92	7.38	0.00	0.00	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.49	0.49	0.19	0.19	0.00	0.00
95th-Percentile Queue Length [ft/ln]	12.31	12.31	4.86	4.86	0.00	0.00
d_A, Approach Delay [s/veh]	8.98		7.31		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	7.99					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 5: Warren Road & Miller Road

Control Type:	Two-way stop	Delay (sec / veh):	11.6
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.023

Intersection Setup

Name	Warren Road		Warren Road		Miller Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		40.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Warren Road		Warren Road		Miller Road	
Base Volume Input [veh/h]	8	24	49	32	11	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	103	60	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	82	49	0	0	0
Total Hourly Volume [veh/h]	9	212	164	36	12	1
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	59	46	10	3	0
Total Analysis Volume [veh/h]	10	236	182	40	13	1
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	7.68	0.00	0.00	0.00	11.63	9.45
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.02	0.02	0.00	0.00	0.08	0.08
95th-Percentile Queue Length [ft/ln]	0.42	0.42	0.00	0.00	1.89	1.89
d_A, Approach Delay [s/veh]	0.31		0.00		11.48	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.49					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 6: Warren Road & Barnes Road

Control Type:	Two-way stop	Delay (sec / veh):	12.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.021

Intersection Setup

Name	Warren Road			Warren Road			Barnes Road			Barnes Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Warren Road			Warren Road			Barnes Road			Barnes Road		
Base Volume Input [veh/h]	3	28	4	3	31	10	4	4	4	6	9	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	103	0	0	60	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	82	0	0	49	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	217	5	3	144	11	5	5	5	7	10	5
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	60	1	1	40	3	1	1	1	2	3	1
Total Analysis Volume [veh/h]	3	241	6	3	160	12	6	6	6	8	11	6
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.02	0.01
d_M, Delay for Movement [s/veh]	7.57	0.00	0.00	7.73	0.00	0.00	12.15	12.13	9.28	12.15	12.26	9.82
Movement LOS	A	A	A	A	A	A	B	B	A	B	B	A
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.01	0.01	0.01	0.01	0.09	0.09	0.09	0.14	0.14	0.14
95th-Percentile Queue Length [ft/ln]	0.13	0.13	0.13	0.13	0.13	0.13	2.32	2.32	2.32	3.45	3.45	3.45
d_A, Approach Delay [s/veh]	0.09			0.13			11.19			11.64		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	1.15											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 7: Warren Road & Access A

Control Type:	Two-way stop	Delay (sec / veh):	16.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.108

Intersection Setup

Name	Warren Road		Warren Road		Access A	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Warren Road		Warren Road		Access A	
Base Volume Input [veh/h]	38	0	0	77	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1262	1.0000	1.0000	1.1262	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	44	59	151	26	34	89
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	82	0	0	49	0	0
Total Hourly Volume [veh/h]	169	59	151	162	34	89
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	47	16	42	45	9	25
Total Analysis Volume [veh/h]	188	66	168	180	38	99
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.13	0.00	0.11	0.12
d_M, Delay for Movement [s/veh]	0.00	0.00	8.15	0.00	16.93	10.91
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.44	0.00	0.85	0.85
95th-Percentile Queue Length [ft/ln]	0.00	0.00	10.99	0.00	21.34	21.34
d_A, Approach Delay [s/veh]	0.00		3.93		12.58	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	4.18					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 8: Warren Road & Access B

Control Type:	Two-way stop	Delay (sec / veh):	17.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.053

Intersection Setup

Name	Warren Road		Warren Road		Access B	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Warren Road		Warren Road		Access B	
Base Volume Input [veh/h]	38	0	0	77	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1262	1.0000	1.0000	1.1262	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	108	25	100	162	15	59
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	82	0	0	49	0	0
Total Hourly Volume [veh/h]	233	25	100	298	15	59
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	65	7	28	83	4	16
Total Analysis Volume [veh/h]	259	28	111	331	17	66
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.09	0.00	0.05	0.08
d_M, Delay for Movement [s/veh]	0.00	0.00	8.09	0.00	17.28	10.57
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.29	0.00	0.48	0.48
95th-Percentile Queue Length [ft/ln]	0.00	0.00	7.14	0.00	11.93	11.93
d_A, Approach Delay [s/veh]	0.00		2.03		11.95	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	2.33					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 9: Warren Road & Access C

Control Type:	Two-way stop	Delay (sec / veh):	15.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.052

Intersection Setup

Name	Warren Road		Warren Road		Access C	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Warren Road		Warren Road		Access C	
Base Volume Input [veh/h]	0	38	77	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.1262	1.1262	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	10	158	255	28	17	7
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	82	49	0	0	0
Total Hourly Volume [veh/h]	10	283	391	28	17	7
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	79	109	8	5	2
Total Analysis Volume [veh/h]	11	314	434	31	19	8
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.05	0.01
d_M, Delay for Movement [s/veh]	8.32	0.00	0.00	0.00	15.46	11.39
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.03	0.00	0.00	0.00	0.21	0.21
95th-Percentile Queue Length [ft/ln]	0.76	0.00	0.00	0.00	5.18	5.18
d_A, Approach Delay [s/veh]	0.28		0.00		14.25	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.58					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 10: Warren Road & Access D

Control Type:	Two-way stop	Delay (sec / veh):	16.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.055

Intersection Setup

Name	Warren Road		Warren Road		Access D	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Warren Road		Warren Road		Access D	
Base Volume Input [veh/h]	0	38	77	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.1262	1.1262	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	10	165	279	28	17	4
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	82	49	0	0	0
Total Hourly Volume [veh/h]	10	290	415	28	17	4
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	81	115	8	5	1
Total Analysis Volume [veh/h]	11	322	461	31	19	4
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.05	0.01
d_M, Delay for Movement [s/veh]	8.39	0.00	0.00	0.00	15.97	11.62
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.03	0.00	0.00	0.00	0.19	0.19
95th-Percentile Queue Length [ft/ln]	0.78	0.00	0.00	0.00	4.87	4.87
d_A, Approach Delay [s/veh]	0.28		0.00		15.21	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.52					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 2: Warren Road & Teel Road

Control Type:	Two-way stop	Delay (sec / veh):	15.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.117

Intersection Setup

Name	Warren Road		Warren Road		Teel Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Warren Road		Warren Road		Teel Road	
Base Volume Input [veh/h]	66	5	1	20	5	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.2434	1.2434	1.2434	1.2434	1.2434	1.2434
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	269	0	0	94	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	51	13	1	98	36	4
Total Hourly Volume [veh/h]	402	19	2	217	42	5
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	112	5	1	60	12	1
Total Analysis Volume [veh/h]	447	21	2	241	47	6
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.12	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	8.29	0.00	15.17	12.21
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.43	0.43
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.08	0.08	10.76	10.76
d_A, Approach Delay [s/veh]	0.00		0.07		14.83	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	1.05					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 3: Thunderbird Road & Teel Road

Control Type:	Two-way stop	Delay (sec / veh):	9.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.008

Intersection Setup

Name	Thunderbird Road		Teel Road		Teel Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Thunderbird Road		Teel Road		Teel Road	
Base Volume Input [veh/h]	1	2	4	4	5	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.2434	1.2434	1.2434	1.2434	1.2434	1.2434
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	5	0	0	14	40	15
Total Hourly Volume [veh/h]	6	2	5	19	46	16
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	1	1	5	13	4
Total Analysis Volume [veh/h]	7	2	6	21	51	18
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	9.02	8.62	7.36	0.00	0.00	0.00
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.03	0.03	0.01	0.01	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.74	0.74	0.25	0.25	0.00	0.00
d_A, Approach Delay [s/veh]	8.93		1.63		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	1.19					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 4: Ralston Road & Teel Road

Control Type:	Two-way stop	Delay (sec / veh):	10.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.001

Intersection Setup

Name	Ralston Road		Teel Road		Teel Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Ralston Road		Teel Road		Teel Road	
Base Volume Input [veh/h]	1	4	4	1	1	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.2434	1.2434	1.2434	1.2434	1.2434	1.2434
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	55	101	0	0	0
Total Hourly Volume [veh/h]	1	60	106	1	1	4
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	17	29	0	0	1
Total Analysis Volume [veh/h]	1	67	118	1	1	4
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.06	0.07	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	10.42	8.56	7.40	0.00	0.00	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.20	0.20	0.23	0.23	0.00	0.00
95th-Percentile Queue Length [ft/ln]	5.07	5.07	5.85	5.85	0.00	0.00
d_A, Approach Delay [s/veh]	8.59		7.34		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	7.59					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 5: Warren Road & Miller Road

Control Type:	Two-way stop	Delay (sec / veh):	11.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.053

Intersection Setup

Name	Warren Road		Warren Road		Miller Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		40.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Warren Road		Warren Road		Miller Road	
Base Volume Input [veh/h]	3	45	19	4	22	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.2434	1.2434	1.2434	1.2434	1.2434	1.2434
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	32	89	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	64	134	0	0	0
Total Hourly Volume [veh/h]	4	152	247	5	27	2
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	42	69	1	8	1
Total Analysis Volume [veh/h]	4	169	274	6	30	2
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.05	0.00
d_M, Delay for Movement [s/veh]	7.81	0.00	0.00	0.00	11.78	10.10
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.00	0.00	0.18	0.18
95th-Percentile Queue Length [ft/ln]	0.17	0.17	0.00	0.00	4.44	4.44
d_A, Approach Delay [s/veh]	0.18		0.00		11.68	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.83					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 6: Warren Road & Barnes Road

Control Type:	Two-way stop	Delay (sec / veh):	12.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.014

Intersection Setup

Name	Warren Road			Warren Road			Barnes Road			Barnes Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Warren Road			Warren Road			Barnes Road			Barnes Road		
Base Volume Input [veh/h]	0	39	8	1	18	3	6	5	2	2	2	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.2434	1.2434	1.2434	1.2434	1.2434	1.2434	1.2434	1.2434	1.2434	1.2434	1.2434	1.2434
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	32	0	0	89	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	64	0	0	134	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	144	10	1	245	4	7	6	2	2	2	0
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	40	3	0	68	1	2	2	1	1	1	0
Total Analysis Volume [veh/h]	0	160	11	1	272	4	8	7	2	2	2	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.80	0.00	0.00	7.56	0.00	0.00	12.11	12.33	9.93	12.07	12.14	9.15
Movement LOS	A	A	A	A	A	A	B	B	A	B	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.02	0.02	0.02
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.04	0.04	0.04	2.46	2.46	2.46	0.59	0.59	0.59
d_A, Approach Delay [s/veh]	0.00			0.03			11.94			12.10		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	0.55											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 7: Warren Road & Access A

Control Type:	Two-way stop	Delay (sec / veh):	14.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.113

Intersection Setup

Name	Warren Road		Warren Road		Access A	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Warren Road		Warren Road		Access A	
Base Volume Input [veh/h]	70	0	0	26	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.2434	1.0000	1.0000	1.2434	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	14	18	46	38	51	132
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	64	0	0	134	0	0
Total Hourly Volume [veh/h]	165	18	46	204	51	132
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	46	5	13	57	14	37
Total Analysis Volume [veh/h]	183	20	51	227	57	147
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.04	0.00	0.11	0.17
d_M, Delay for Movement [s/veh]	0.00	0.00	7.73	0.00	14.15	11.17
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.12	0.00	1.17	1.17
95th-Percentile Queue Length [ft/ln]	0.00	0.00	2.90	0.00	29.28	29.28
d_A, Approach Delay [s/veh]	0.00		1.42		12.00	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	4.15					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 8: Warren Road & Access B

Control Type:	Two-way stop	Delay (sec / veh):	14.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.056

Intersection Setup

Name	Warren Road		Warren Road		Access B	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Warren Road		Warren Road		Access B	
Base Volume Input [veh/h]	70	0	0	26	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.2434	1.0000	1.0000	1.2434	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	138	8	31	62	22	88
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	64	0	0	134	0	0
Total Hourly Volume [veh/h]	289	8	31	228	22	88
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	80	2	9	63	6	24
Total Analysis Volume [veh/h]	321	9	34	253	24	98
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.03	0.00	0.06	0.14
d_M, Delay for Movement [s/veh]	0.00	0.00	8.01	0.00	14.79	11.35
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.09	0.00	0.71	0.71
95th-Percentile Queue Length [ft/ln]	0.00	0.00	2.13	0.00	17.68	17.68
d_A, Approach Delay [s/veh]	0.00		0.95		12.03	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	2.35					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 9: Warren Road & Access C

Control Type:	Two-way stop	Delay (sec / veh):	14.6
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.069

Intersection Setup

Name	Warren Road		Warren Road		Access C	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Warren Road		Warren Road		Access C	
Base Volume Input [veh/h]	0	70	26	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.2434	1.2434	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	223	83	9	25	10
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	64	134	0	0	0
Total Hourly Volume [veh/h]	3	374	249	9	25	10
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	104	69	3	7	3
Total Analysis Volume [veh/h]	3	416	277	10	28	11
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.07	0.01
d_M, Delay for Movement [s/veh]	7.83	0.00	0.00	0.00	14.59	10.43
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh/ln]	0.01	0.00	0.00	0.00	0.27	0.27
95th-Percentile Queue Length [ft/ln]	0.18	0.00	0.00	0.00	6.80	6.80
d_A, Approach Delay [s/veh]	0.06		0.00		13.42	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.73					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 10: Warren Road & Access D

Control Type:	Two-way stop	Delay (sec / veh):	14.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.072

Intersection Setup

Name	Warren Road		Warren Road		Access D	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Warren Road		Warren Road		Access D	
Base Volume Input [veh/h]	0	70	26	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.2434	1.2434	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	245	86	9	25	6
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	64	134	0	0	0
Total Hourly Volume [veh/h]	3	396	252	9	25	6
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	110	70	3	7	2
Total Analysis Volume [veh/h]	3	440	280	10	28	7
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.07	0.01
d_M, Delay for Movement [s/veh]	7.84	0.00	0.00	0.00	14.95	10.48
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh/ln]	0.01	0.00	0.00	0.00	0.26	0.26
95th-Percentile Queue Length [ft/ln]	0.18	0.00	0.00	0.00	6.57	6.57
d_A, Approach Delay [s/veh]	0.05		0.00		14.05	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.67					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 2: Warren Road & Teel Road

Control Type:	Two-way stop	Delay (sec / veh):	18.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.139

Intersection Setup

Name	Warren Road		Warren Road		Teel Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Warren Road		Warren Road		Teel Road	
Base Volume Input [veh/h]	32	4	2	69	12	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.2434	1.2434	1.2434	1.2434	1.2434	1.2434
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	181	0	0	307	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	95	41	4	57	24	2
Total Hourly Volume [veh/h]	316	46	6	450	39	2
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	88	13	2	125	11	1
Total Analysis Volume [veh/h]	351	51	7	500	43	2
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.01	0.01	0.14	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	8.12	0.00	18.45	12.23
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.01	0.01	0.49	0.49
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.29	0.29	12.19	12.19
d_A, Approach Delay [s/veh]	0.00		0.11		18.18	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.92					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 3: Thunderbird Road & Teel Road

Control Type:	Two-way stop	Delay (sec / veh):	9.2
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.022

Intersection Setup

Name	Thunderbird Road		Teel Road		Teel Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Thunderbird Road		Teel Road		Teel Road	
Base Volume Input [veh/h]	0	3	4	3	13	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.2434	1.2434	1.2434	1.2434	1.2434	1.2434
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	17	0	0	45	26	10
Total Hourly Volume [veh/h]	17	4	5	49	42	11
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	1	1	14	12	3
Total Analysis Volume [veh/h]	19	4	6	54	47	12
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	9.23	8.65	7.34	0.00	0.00	0.00
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.08	0.08	0.01	0.01	0.00	0.00
95th-Percentile Queue Length [ft/ln]	1.98	1.98	0.25	0.25	0.00	0.00
d_A, Approach Delay [s/veh]	9.13		0.73		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	1.79					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 4: Ralston Road & Teel Road

Control Type:	Two-way stop	Delay (sec / veh):	10.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.008

Intersection Setup

Name	Ralston Road		Teel Road		Teel Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Ralston Road		Teel Road		Teel Road	
Base Volume Input [veh/h]	4	7	2	1	6	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.2434	1.2434	1.2434	1.2434	1.2434	1.2434
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	121	87	0	0	0
Total Hourly Volume [veh/h]	5	130	89	1	7	2
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	36	25	0	2	1
Total Analysis Volume [veh/h]	6	144	99	1	8	2
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.13	0.06	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	10.48	8.92	7.38	0.00	0.00	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.50	0.50	0.19	0.19	0.00	0.00
95th-Percentile Queue Length [ft/ln]	12.40	12.40	4.86	4.86	0.00	0.00
d_A, Approach Delay [s/veh]	8.99		7.31		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	7.99					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 5: Warren Road & Miller Road

Control Type:	Two-way stop	Delay (sec / veh):	12.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.033

Intersection Setup

Name	Warren Road		Warren Road		Miller Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		40.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Warren Road		Warren Road		Miller Road	
Base Volume Input [veh/h]	8	24	49	32	11	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.2434	1.2434	1.2434	1.2434	1.2434	1.2434
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	103	60	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	136	81	0	0	0
Total Hourly Volume [veh/h]	10	269	202	40	14	1
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	75	56	11	4	0
Total Analysis Volume [veh/h]	11	299	224	44	16	1
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.03	0.00
d_M, Delay for Movement [s/veh]	7.79	0.00	0.00	0.00	12.76	9.80
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.02	0.02	0.00	0.00	0.11	0.11
95th-Percentile Queue Length [ft/ln]	0.46	0.46	0.00	0.00	2.68	2.68
d_A, Approach Delay [s/veh]	0.28		0.00		12.59	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.50					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 6: Warren Road & Barnes Road

Control Type:	Two-way stop	Delay (sec / veh):	13.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.018

Intersection Setup

Name	Warren Road			Warren Road			Barnes Road			Barnes Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Warren Road			Warren Road			Barnes Road			Barnes Road		
Base Volume Input [veh/h]	3	28	4	3	31	10	4	4	4	6	9	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262	1.1262
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	103	0	0	60	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	136	0	0	81	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	271	5	3	176	11	5	5	5	7	10	5
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	75	1	1	49	3	1	1	1	2	3	1
Total Analysis Volume [veh/h]	3	301	6	3	196	12	6	6	6	8	11	6
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.02	0.01
d_M, Delay for Movement [s/veh]	7.64	0.00	0.00	7.88	0.00	0.00	13.33	13.11	9.53	13.34	13.28	10.27
Movement LOS	A	A	A	A	A	A	B	B	A	B	B	B
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.01	0.01	0.01	0.01	0.10	0.10	0.10	0.16	0.16	0.16
95th-Percentile Queue Length [ft/ln]	0.13	0.13	0.13	0.13	0.13	0.13	2.62	2.62	2.62	3.94	3.94	3.94
d_A, Approach Delay [s/veh]	0.07			0.11			11.99			12.58		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	1.02											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 7: Warren Road & Access A

Control Type:	Two-way stop	Delay (sec / veh):	19.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.126

Intersection Setup

Name	Warren Road		Warren Road		Access A	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Warren Road		Warren Road		Access A	
Base Volume Input [veh/h]	38	0	0	77	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.2434	1.0000	1.0000	1.2434	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	44	59	151	26	34	89
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	136	0	0	81	0	0
Total Hourly Volume [veh/h]	227	59	151	203	34	89
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	63	16	42	56	9	25
Total Analysis Volume [veh/h]	252	66	168	226	38	99
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.14	0.00	0.13	0.13
d_M, Delay for Movement [s/veh]	0.00	0.00	8.35	0.00	19.20	11.80
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.47	0.00	0.99	0.99
95th-Percentile Queue Length [ft/ln]	0.00	0.00	11.69	0.00	24.82	24.82
d_A, Approach Delay [s/veh]	0.00		3.56		13.85	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	3.89					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 8: Warren Road & Access B

Control Type:	Two-way stop	Delay (sec / veh):	19.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.062

Intersection Setup

Name	Warren Road		Warren Road		Access B	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Warren Road		Warren Road		Access B	
Base Volume Input [veh/h]	38	0	0	77	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.2434	1.0000	1.0000	1.2434	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	108	25	100	162	15	59
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	136	0	0	81	0	0
Total Hourly Volume [veh/h]	291	25	100	339	15	59
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	81	7	28	94	4	16
Total Analysis Volume [veh/h]	323	28	111	377	17	66
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.09	0.00	0.06	0.09
d_M, Delay for Movement [s/veh]	0.00	0.00	8.28	0.00	19.44	11.23
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.30	0.00	0.54	0.54
95th-Percentile Queue Length [ft/ln]	0.00	0.00	7.57	0.00	13.56	13.56
d_A, Approach Delay [s/veh]	0.00		1.88		12.91	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	2.16					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 9: Warren Road & Access C

Control Type:	Two-way stop	Delay (sec / veh):	17.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.061

Intersection Setup

Name	Warren Road		Warren Road		Access C	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Warren Road		Warren Road		Access C	
Base Volume Input [veh/h]	0	38	77	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.2434	1.2434	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	10	158	255	28	17	7
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	136	81	0	0	0
Total Hourly Volume [veh/h]	10	341	432	28	17	7
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	95	120	8	5	2
Total Analysis Volume [veh/h]	11	379	480	31	19	8
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.06	0.01
d_M, Delay for Movement [s/veh]	8.45	0.00	0.00	0.00	17.26	11.94
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.03	0.00	0.00	0.00	0.24	0.24
95th-Percentile Queue Length [ft/ln]	0.79	0.00	0.00	0.00	5.98	5.98
d_A, Approach Delay [s/veh]	0.24		0.00		15.68	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.56					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 10: Warren Road & Access D

Control Type:	Two-way stop	Delay (sec / veh):	17.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.064

Intersection Setup

Name	Warren Road		Warren Road		Access D	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Warren Road		Warren Road		Access D	
Base Volume Input [veh/h]	0	38	77	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.2434	1.2434	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	10	165	279	28	17	4
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	136	81	0	0	0
Total Hourly Volume [veh/h]	10	348	456	28	17	4
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	97	127	8	5	1
Total Analysis Volume [veh/h]	11	387	507	31	19	4
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

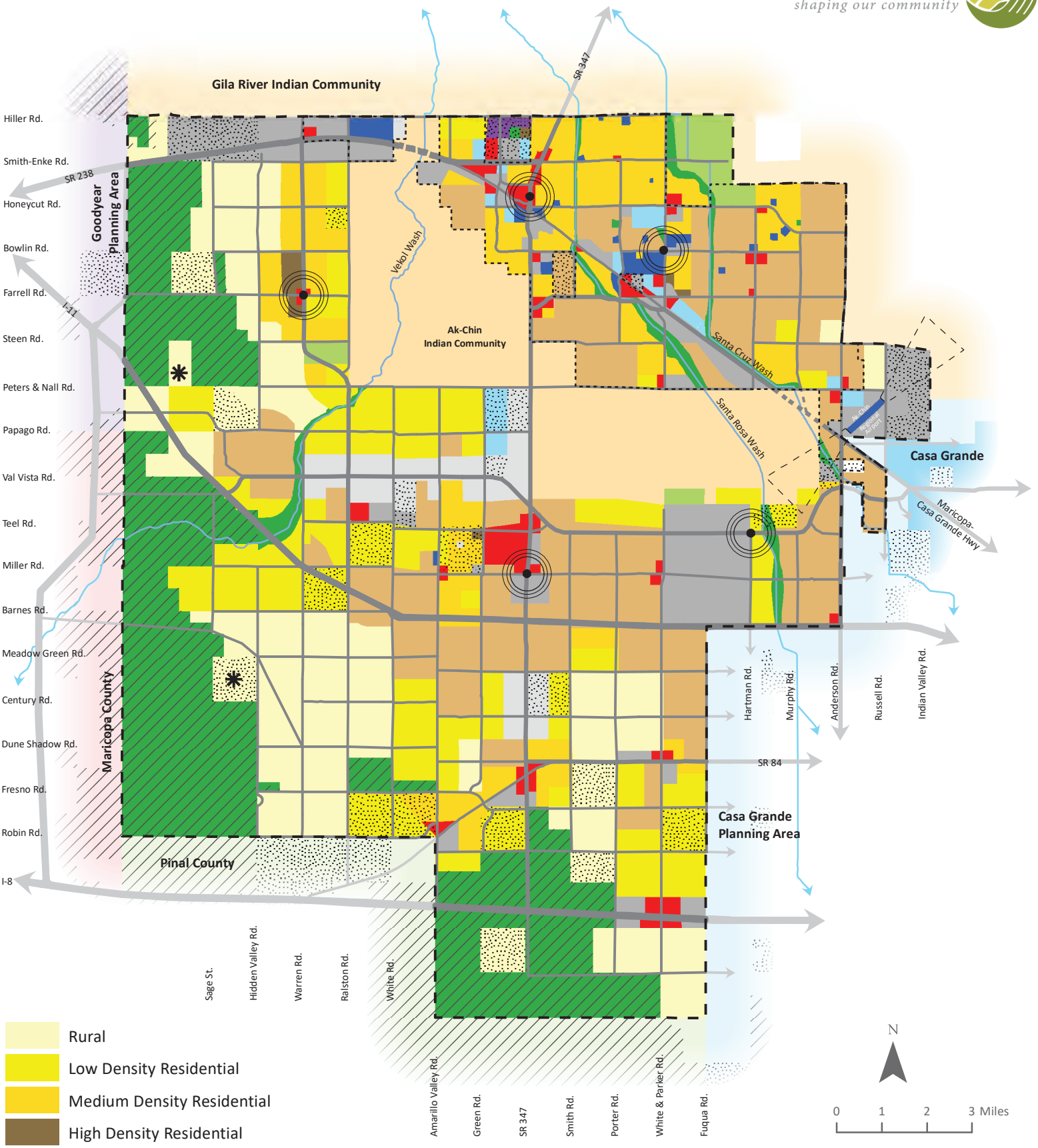
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.01	0.00	0.06	0.01
d_M, Delay for Movement [s/veh]	8.53	0.00	0.00	0.00	17.87	12.20
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.03	0.00	0.00	0.00	0.23	0.23
95th-Percentile Queue Length [ft/ln]	0.81	0.00	0.00	0.00	5.66	5.66
d_A, Approach Delay [s/veh]	0.24		0.00		16.89	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.50					
Intersection LOS	C					

Appendix C

FUTURE LAND USE

PLANNING MARICOPA
shaping our community



- Rural
- Low Density Residential
- Medium Density Residential
- High Density Residential
- Master Planned Community
- Mixed Use
- Commercial
- Public/Institutional
- Research & Development
- Agriculture
- Park/Open Space
- Employment/Industrial
- Light Industrial
- City Limits
- Planning Area
- B.L.M.
- State Land
- Village Center
- Resort

Appendix D

TRAFFIC IMPACT ANALYSIS

Hidden Valley Ranch

North of Val Vista Road between Hidden Valley Road and Warren Road
Pinal County, Arizona

November 24, 2021

UCG Project Number: TR21119

PREPARED FOR
CVL Consultants
4550 North 12th Street
Phoenix, Arizona 85014

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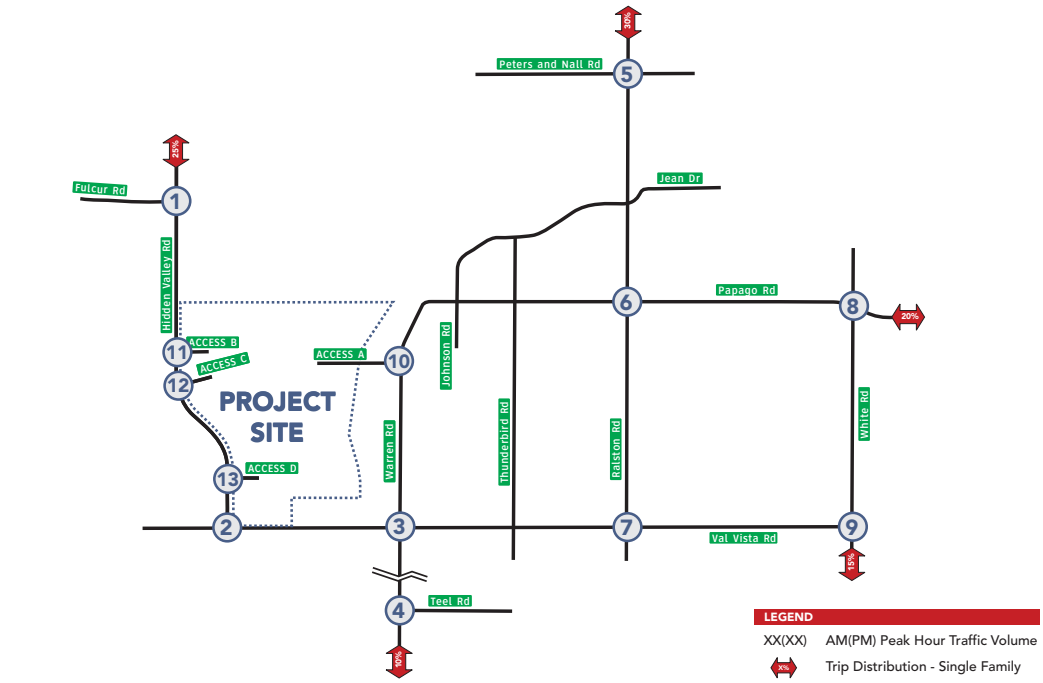
CONDUCTED BY
Sarah Simpson, PhD, PE
President



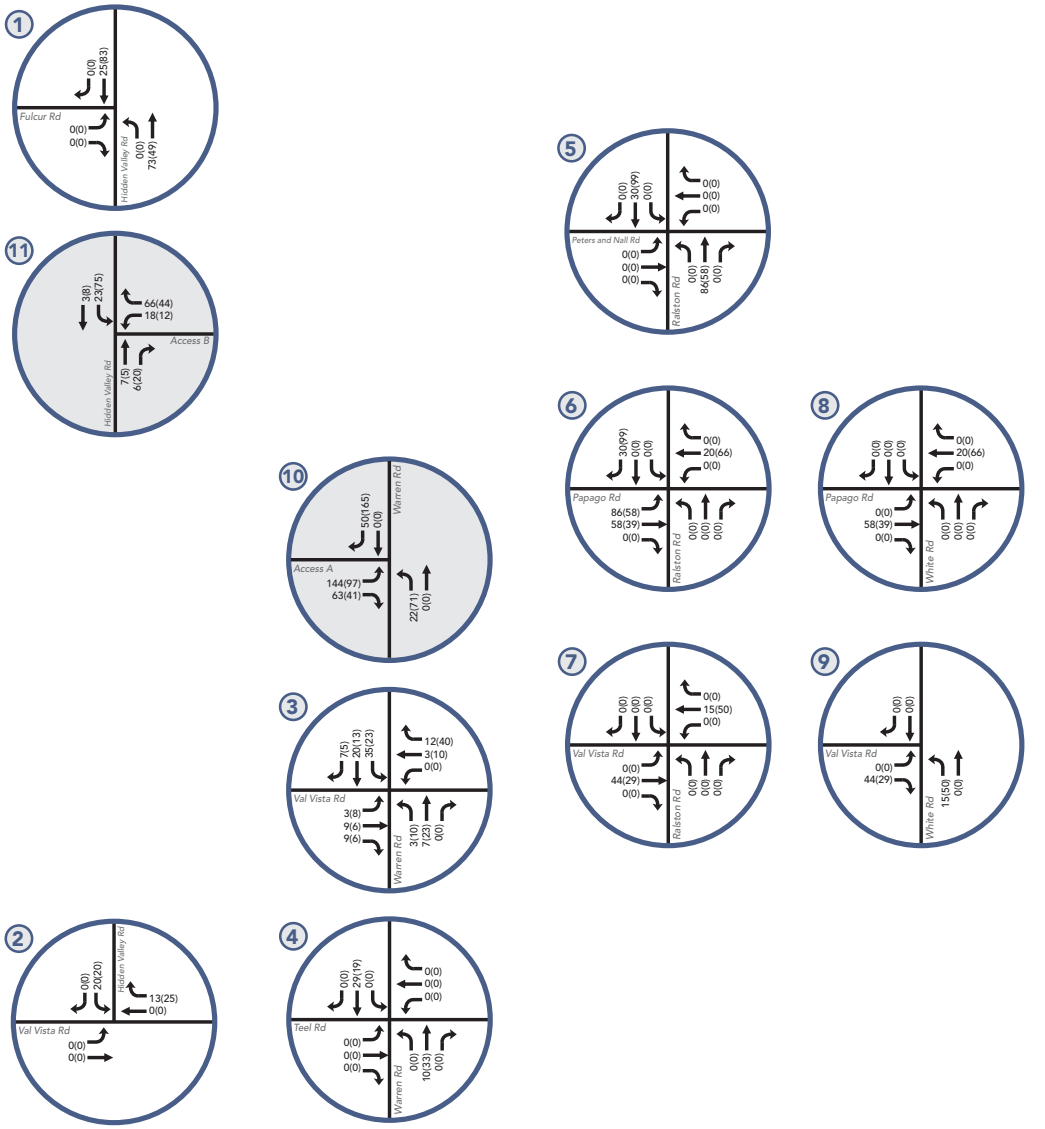
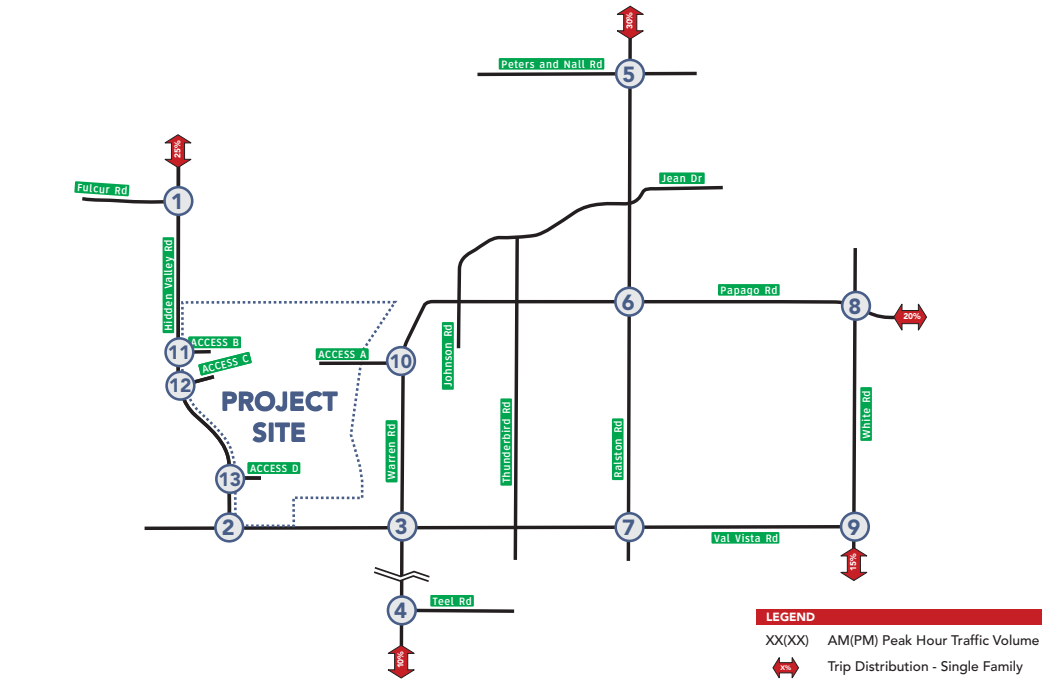


Figure 6: Site Generated Traffic and Trip Distribution - Phase 1



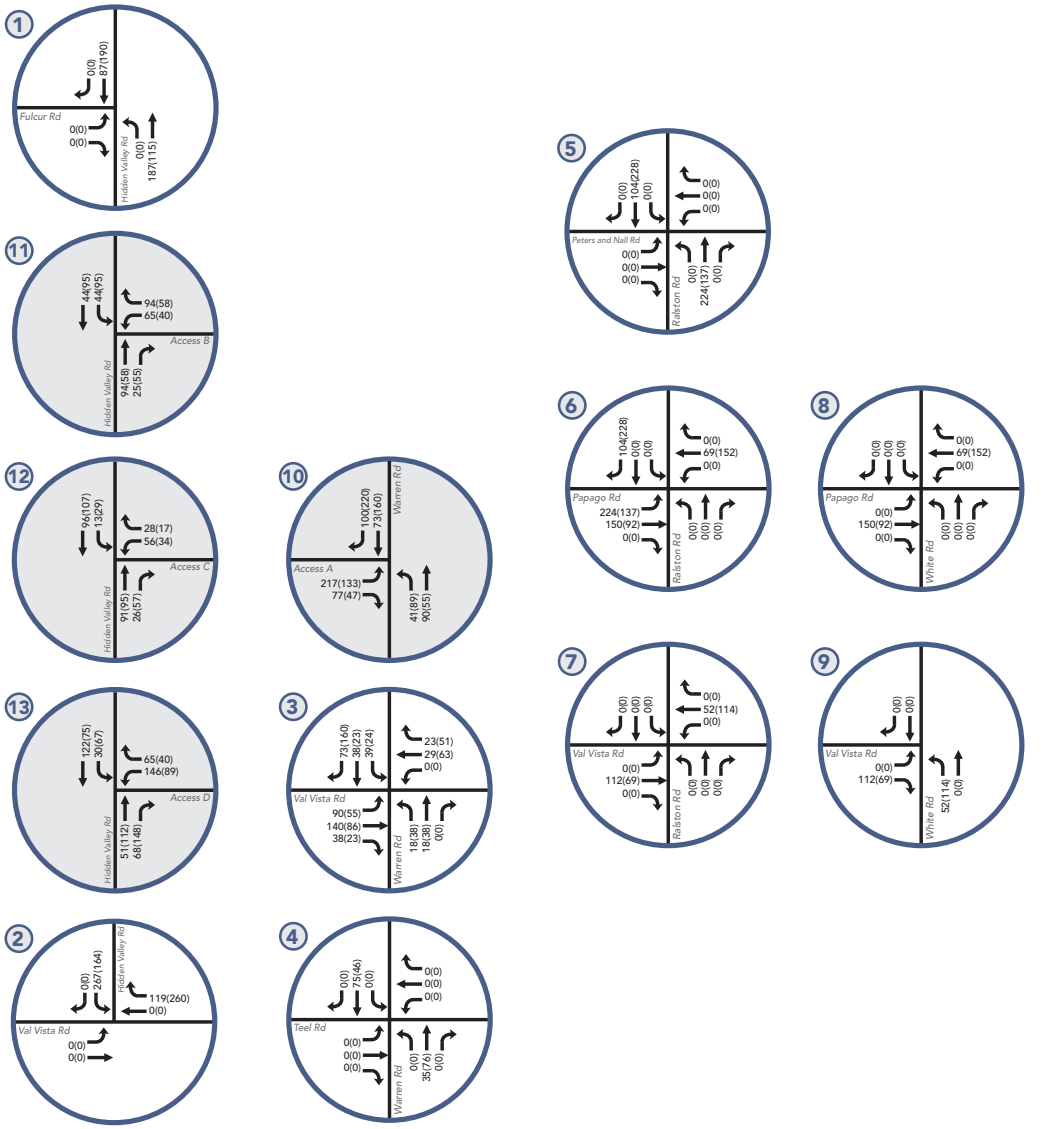


Figure 7: Site Generated Traffic and Trip Distribution - Full Build Out

TRAFFIC IMPACT ANALYSIS
FOR

Pecan Woods Residential Development
Papago Road and Amarillo Valley Road
Pinal County, Arizona

July 2, 2018
Revision 1: May 3, 2021
Revision 2: June 28, 2021

Prepared for:

CVL Consultants
4550 North 12th Street
Phoenix, AZ 85014

Prepared by:

United Civil Group
Project Number: TR18048

Conducted by: _____
Sarah Simpson PhD, PE
President

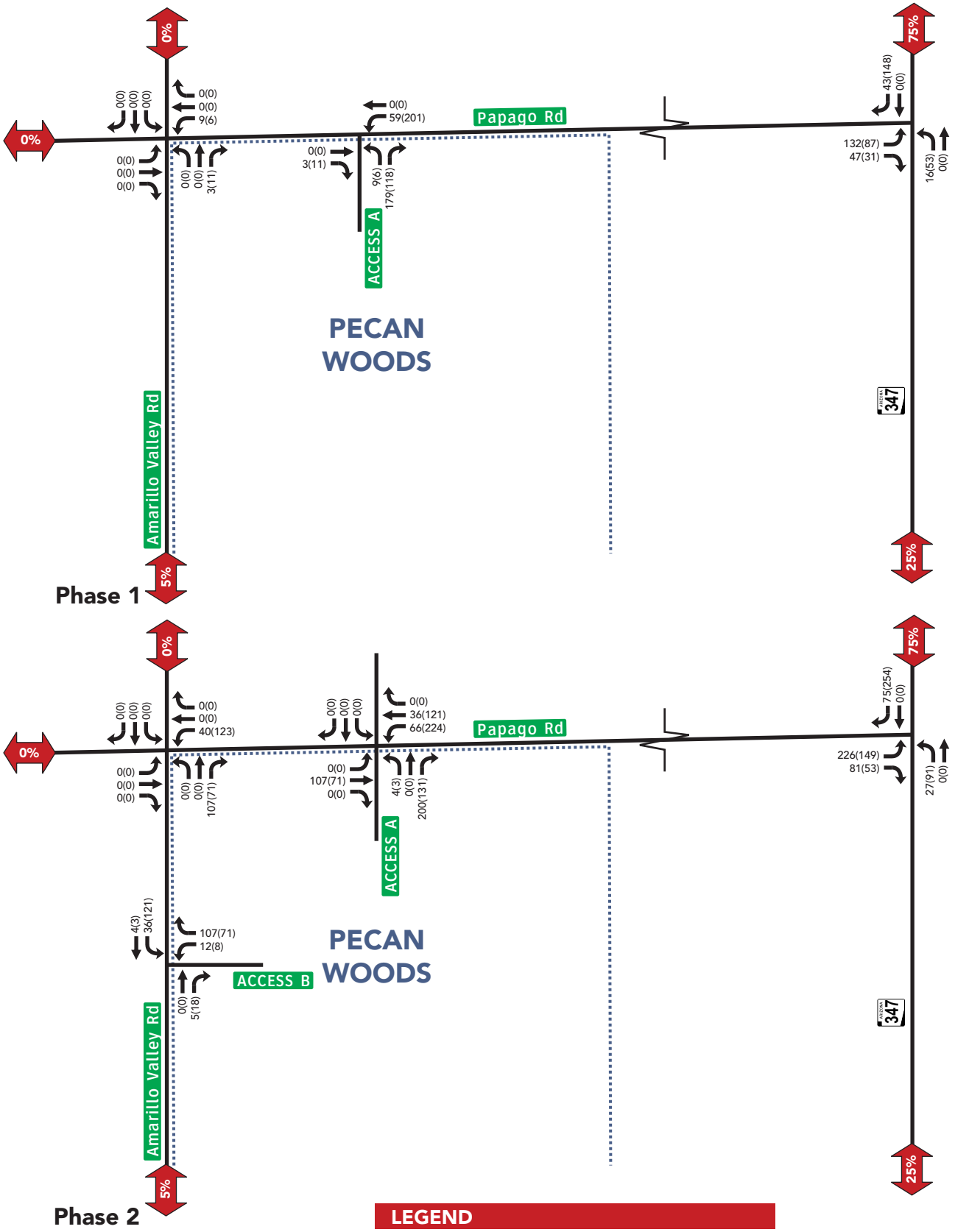
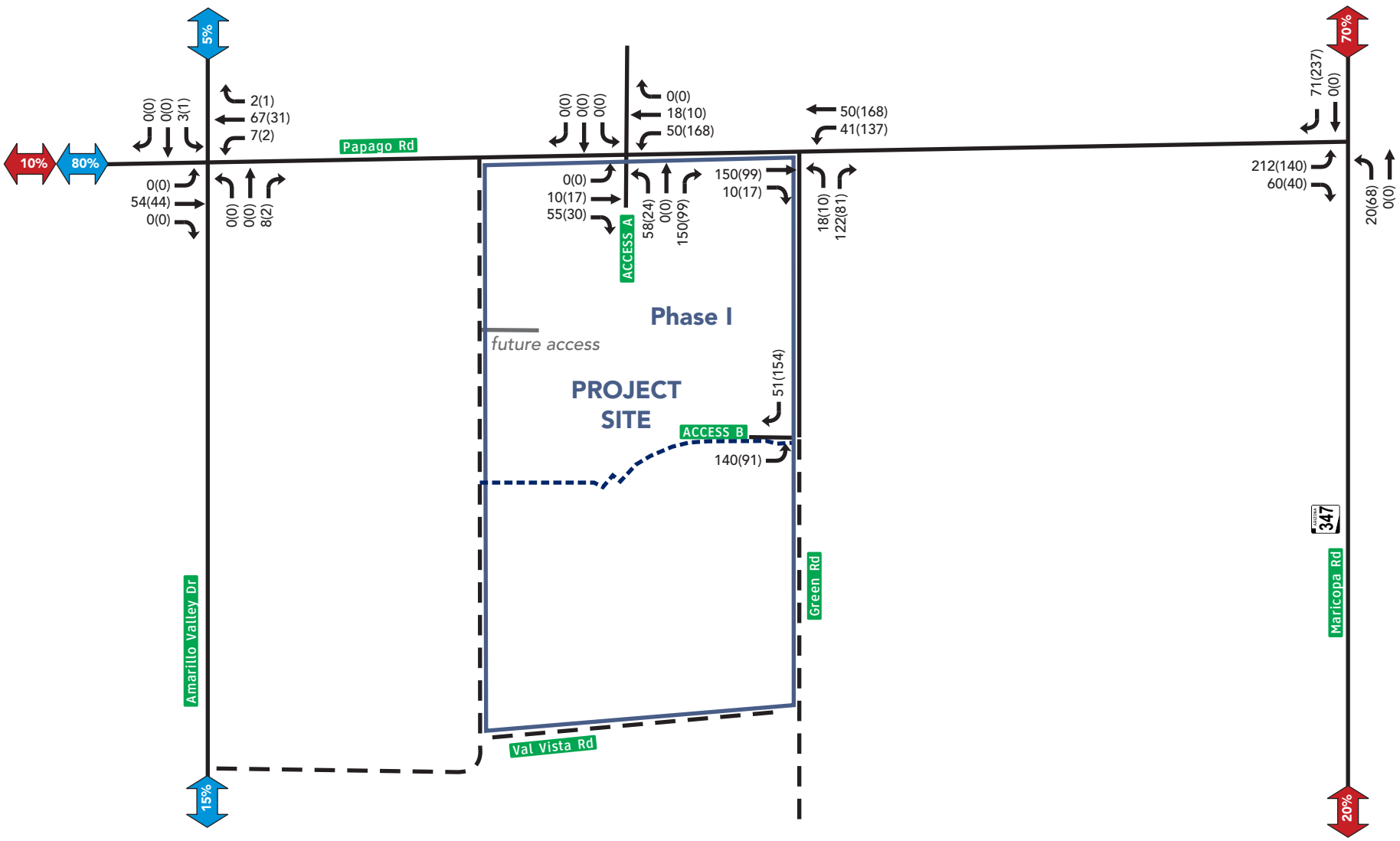


Figure 9: Site Generated Traffic and Trip Distribution

United Civil Group



LEGEND

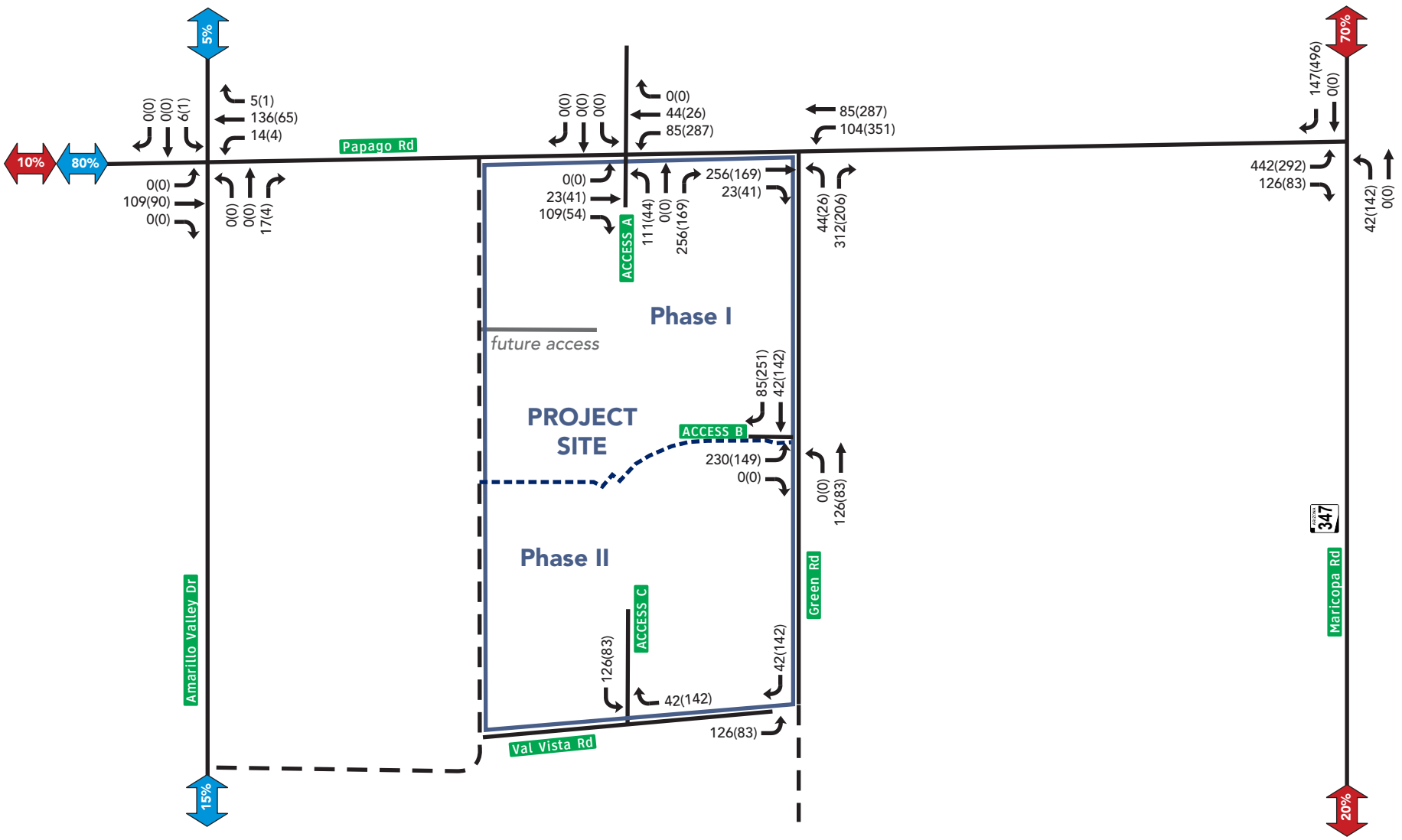
XX(XX)	AM(PM) Peak Hour Traffic Volume
X%	Trip Distribution - Residential Homes
X%	Trip Distribution - Elementary School
- - -	Unimproved Road

N

not to scale

UCG
United Civil Group

Figure 5: Site Generated Traffic and Trip Distribution - Phase I



LEGEND

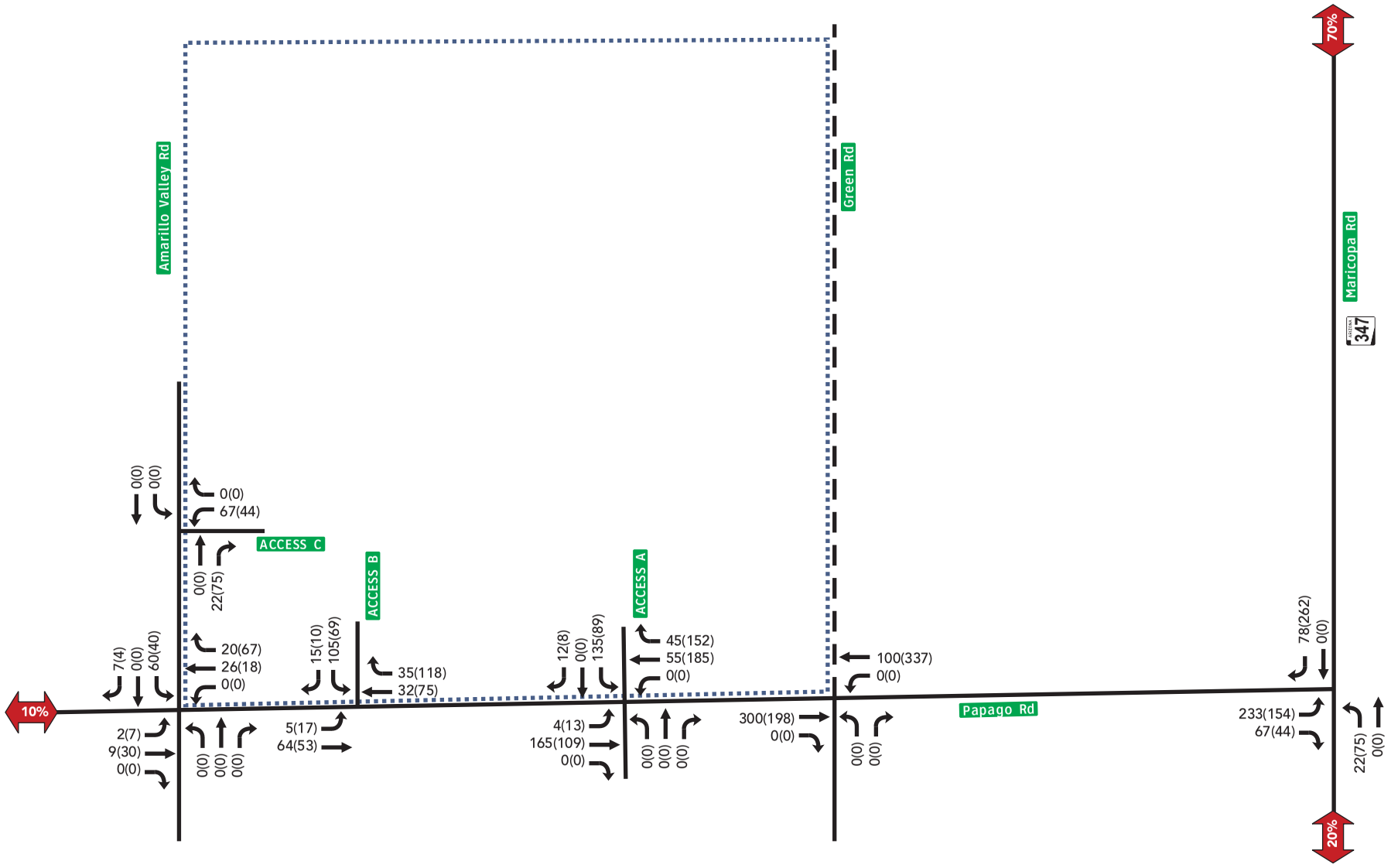
XX(XX)	AM(PM) Peak Hour Traffic Volume
X%	Trip Distribution - Residential Homes
X%	Trip Distribution - Elementary School
- - -	Unimproved Road

N

not to scale

UCG
United Civil Group

Figure 6: Site Generated Traffic and Trip Distribution - Phases I and II



LEGEND

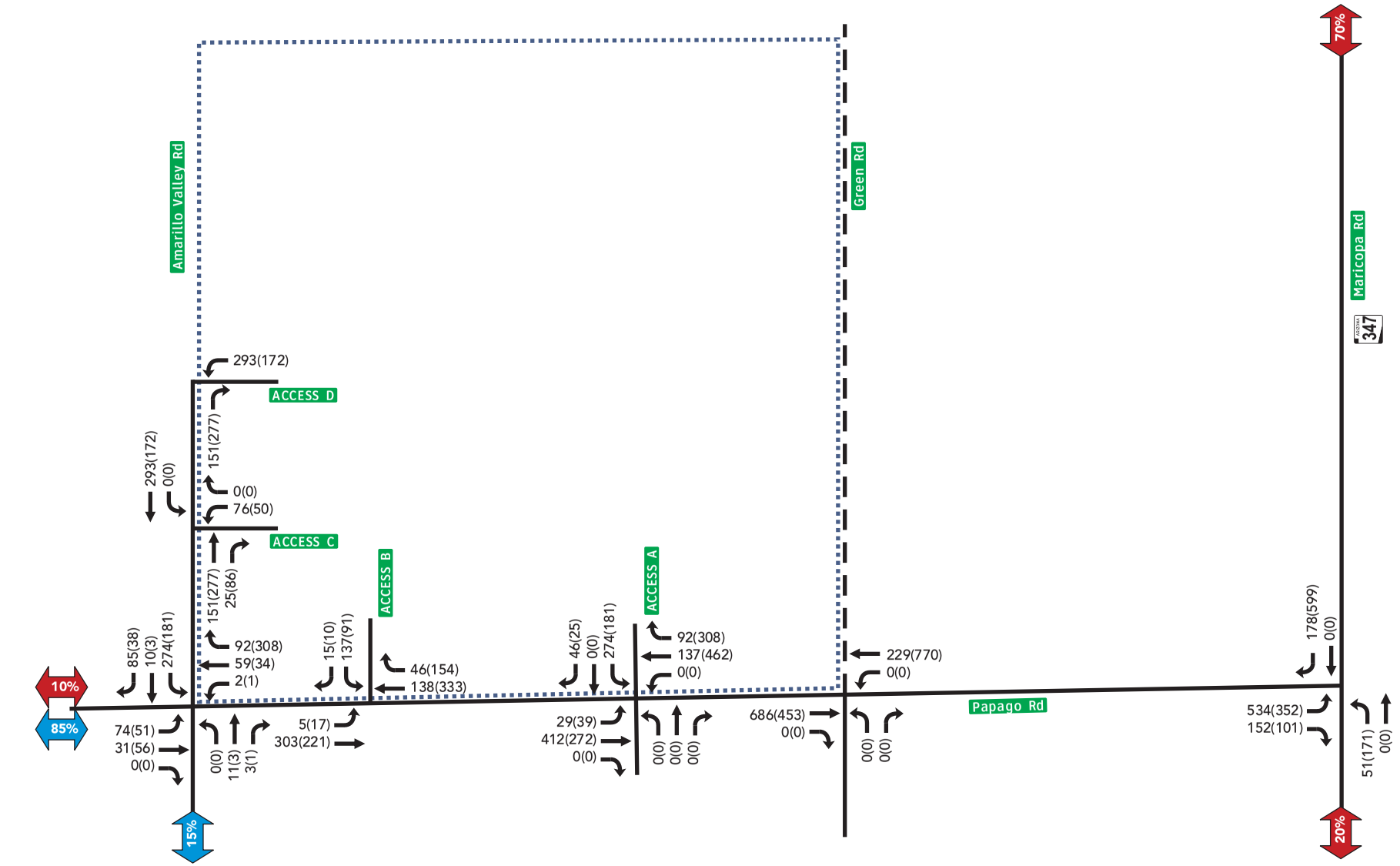
XX(XX)	AM(PM) Peak Hour Traffic Volume
X%	Trip Distribution - Residential Homes
- - -	Unimproved Road

N

not to scale

UCG
United Civil Group

Figure 5: Site Generated Traffic and Trip Distribution - Phase I



LEGEND

XX(XX)	AM(PM) Peak Hour Traffic Volume
X%	Trip Distribution - Residential Homes
X%	Trip Distribution - Schools
- - -	Unimproved Road

N

not to scale

UCG
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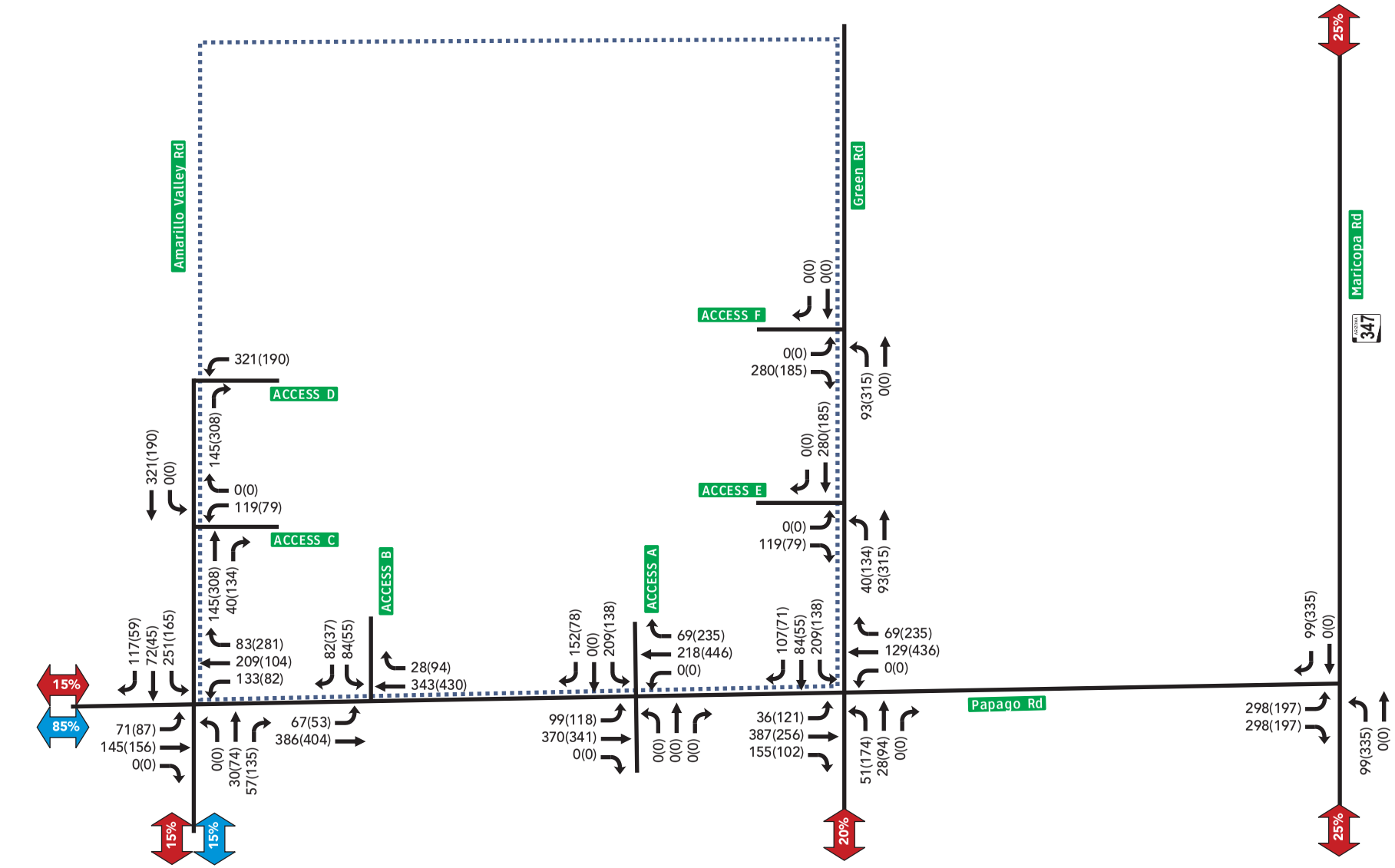
Figure 6: Site Generated Traffic and Trip Distribution - Phases I and II



LEGEND

XX(XX) AM(PM) Peak Hour Traffic Volume

X% Trip Distribution - Residential Homes

X% Trip Distribution - Schools

N

not to scale

UCG
United Civil Group

Figure 7: Site Generated Traffic and Trip Distribution - Full Build Out

TRAFFIC IMPACT ANALYSIS

Palomino Ranch

North of Papago Road between Amarillo Valley Road and White Road
Pinal County, Arizona

June 10, 2021
Revision 1: October 5, 2021

UCG Project Number: TR20073

PREPARED FOR
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11624 SE 5th Street, Suite 210
Bellevue, Washington 98005

PREPARED BY
United Civil Group
2803 N. 7th Avenue
Phoenix, Arizona 85007
602-265-6155

CONDUCTED BY

Sarah Simpson, PhD, PE
President

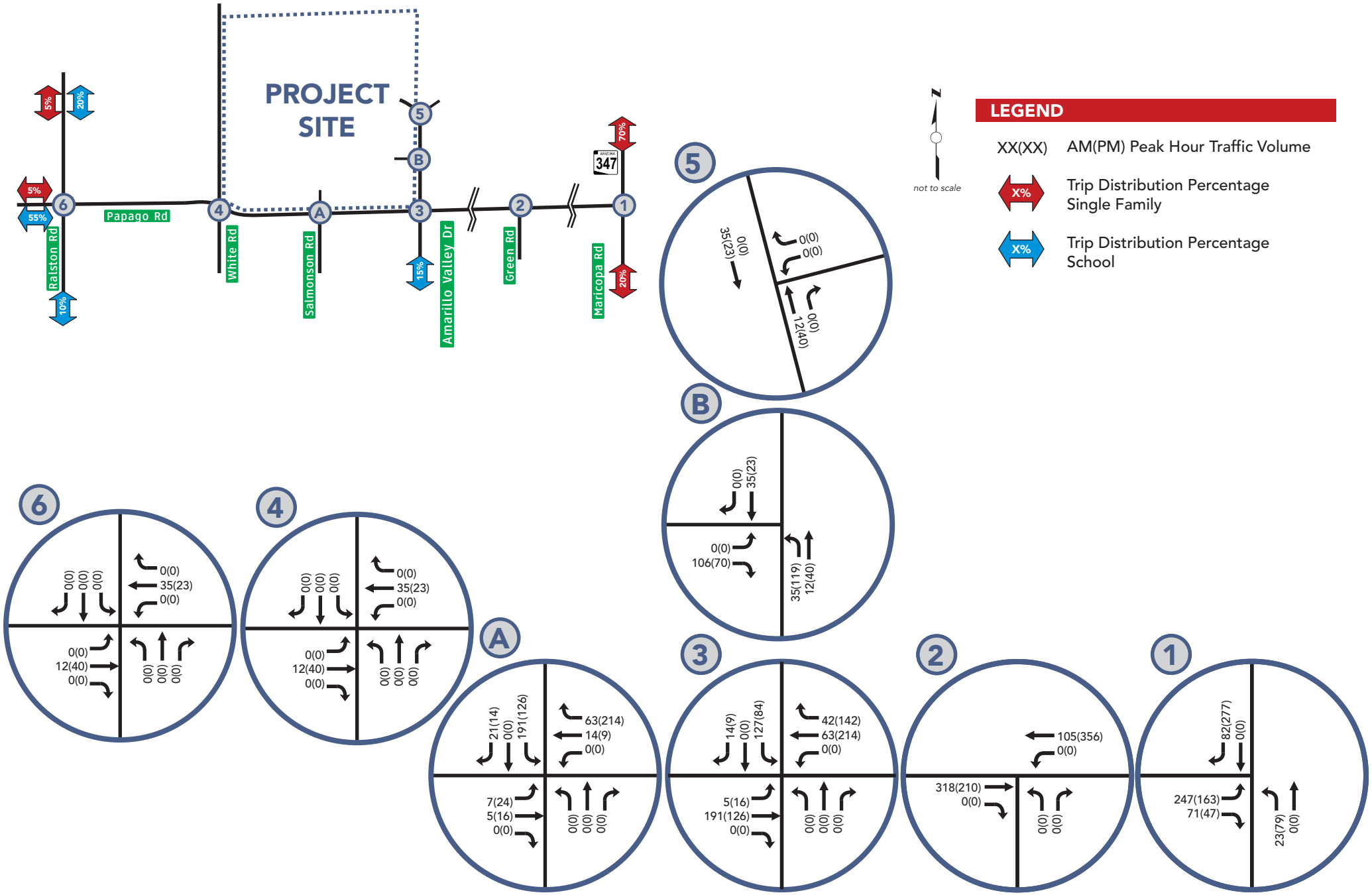

Figure 5: Site Generated Traffic and Trip Distribution - Phase 1

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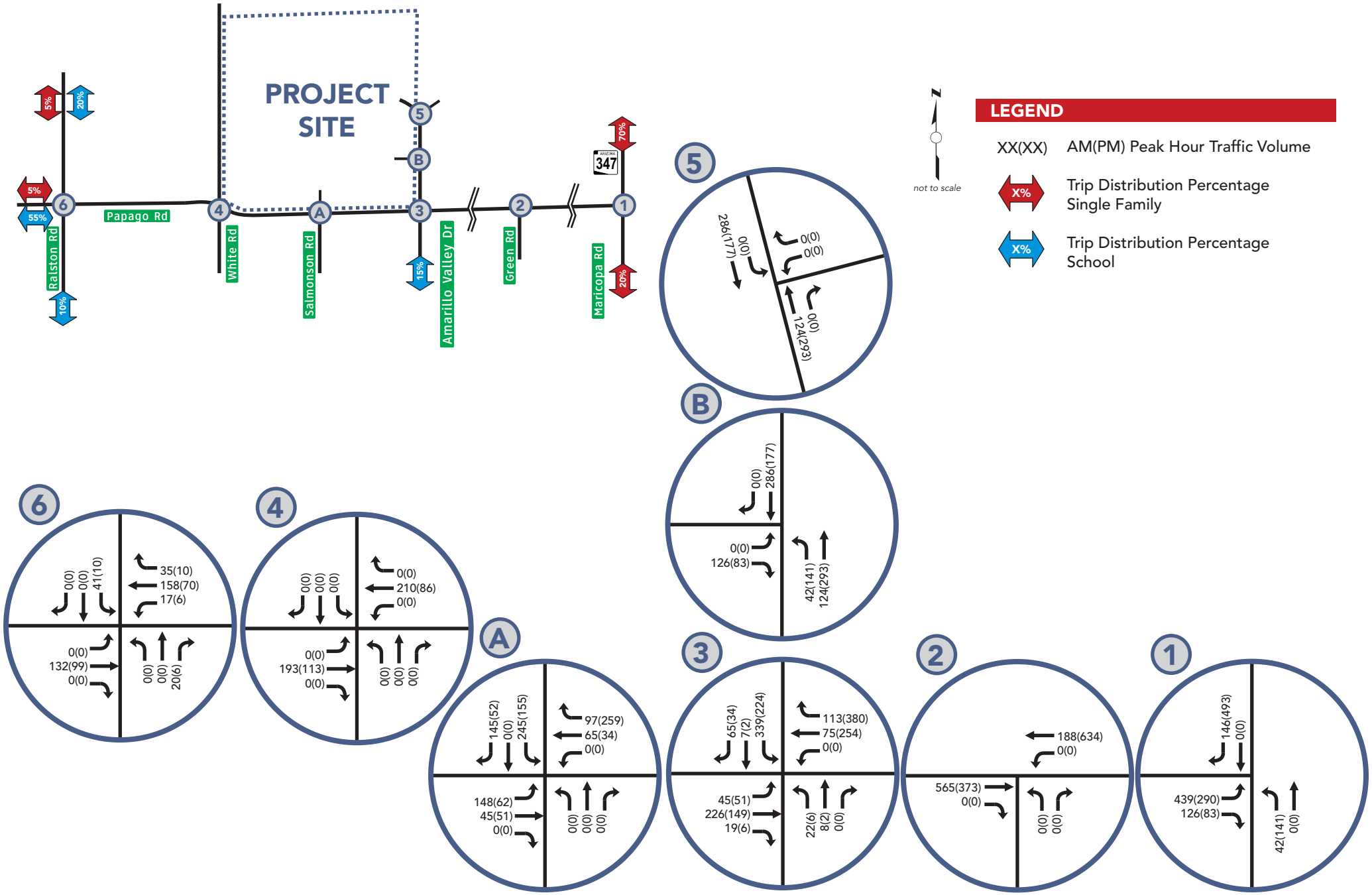

Figure 6: Site Generated Traffic and Trip Distribution - Phases 1-2

United Civil Group

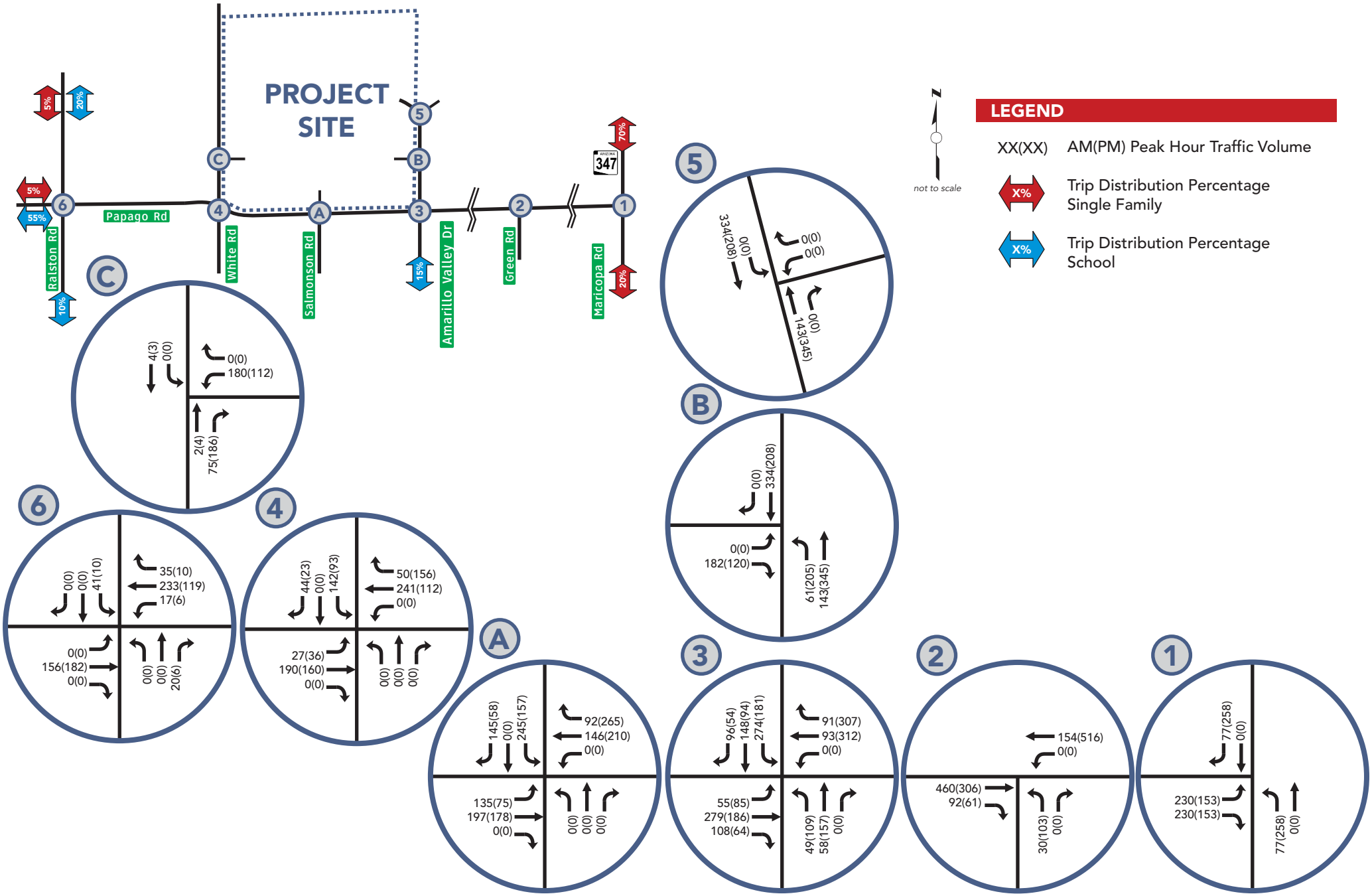

Figure 7: Site Generated Traffic and Trip Distribution - Phases 1-3

United Civil Group

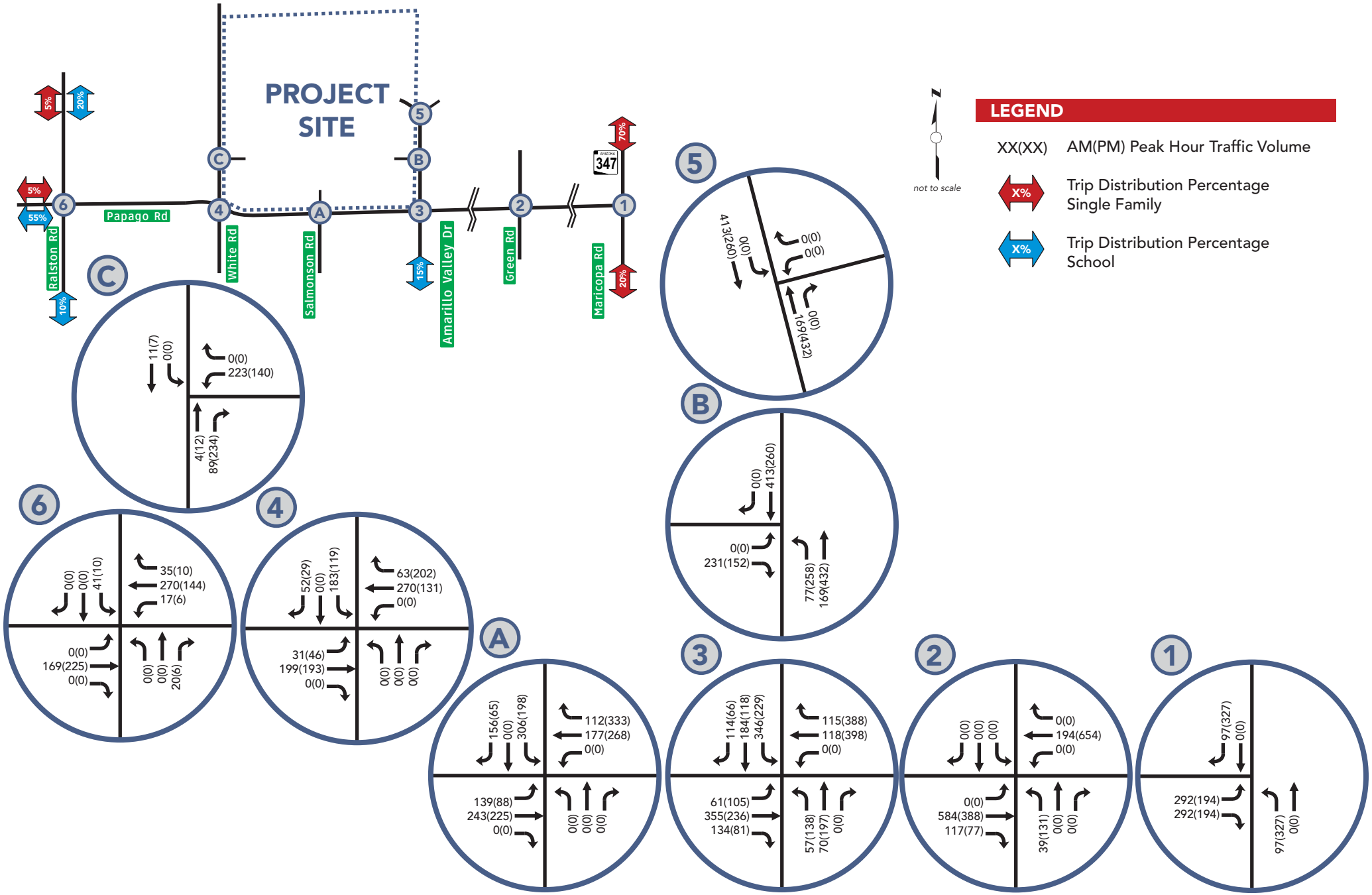

Figure 8: Site Generated Traffic and Trip Distribution - Full Build-Out

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TRAFFIC IMPACT ANALYSIS

Venida Single Family Residential Development

SEC of Papago Road and Green Road
Pinal County, Arizona

October 5, 2021

UCG Project Number: TR21096

PREPARED FOR
CVL Consultants
4550 North 12th Street
Phoenix, Arizona 85014

PREPARED BY

United Civil Group
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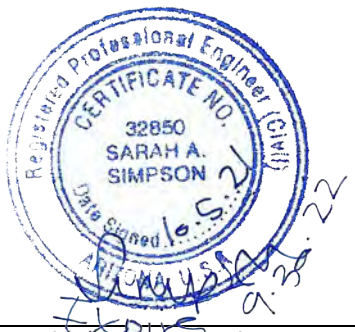
602-265-6155

CONDUCTED BY



Sarah Simpson, PhD, PE
President

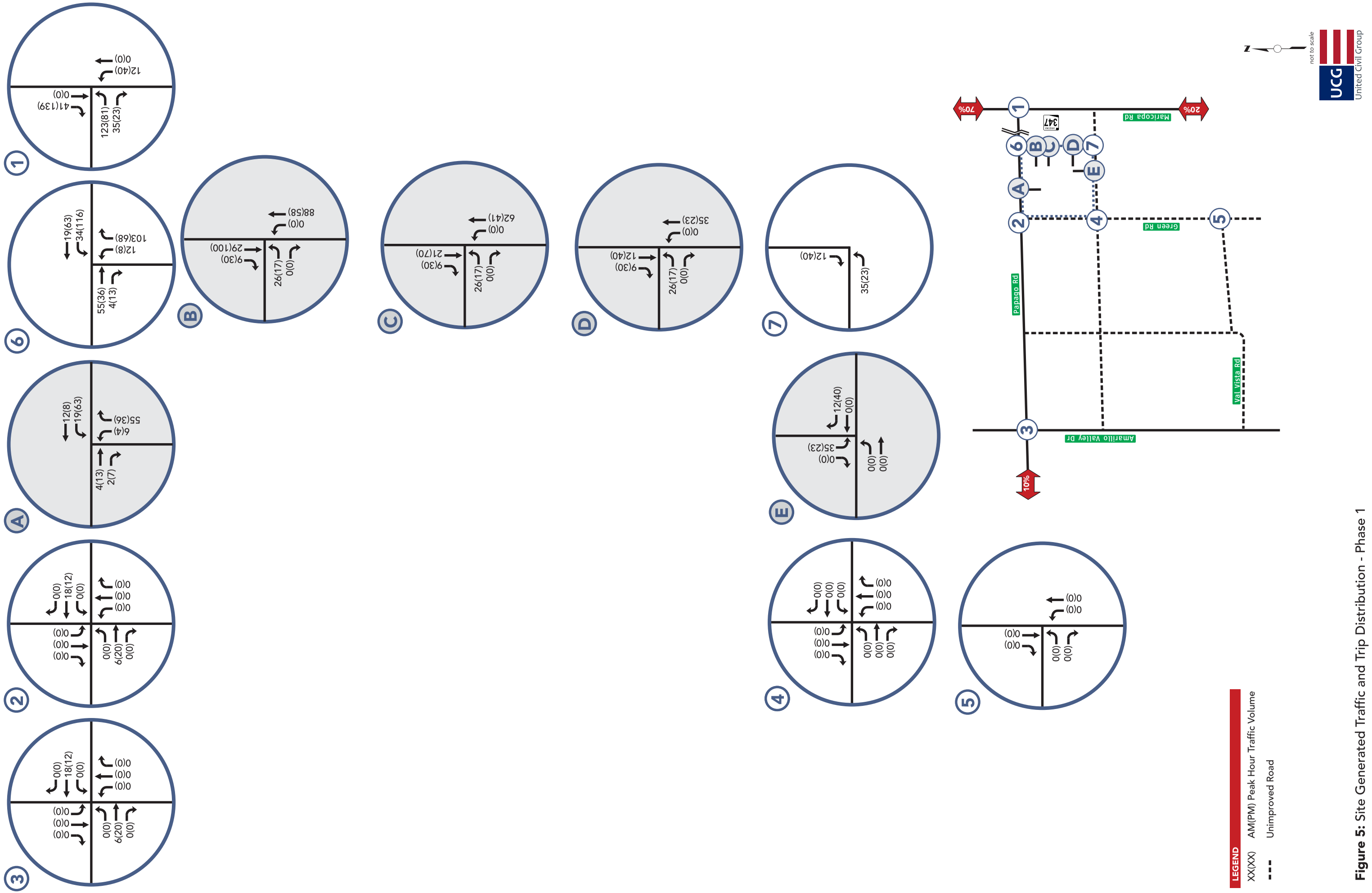


Figure 5: Site Generated Traffic and Trip Distribution - Phase 1

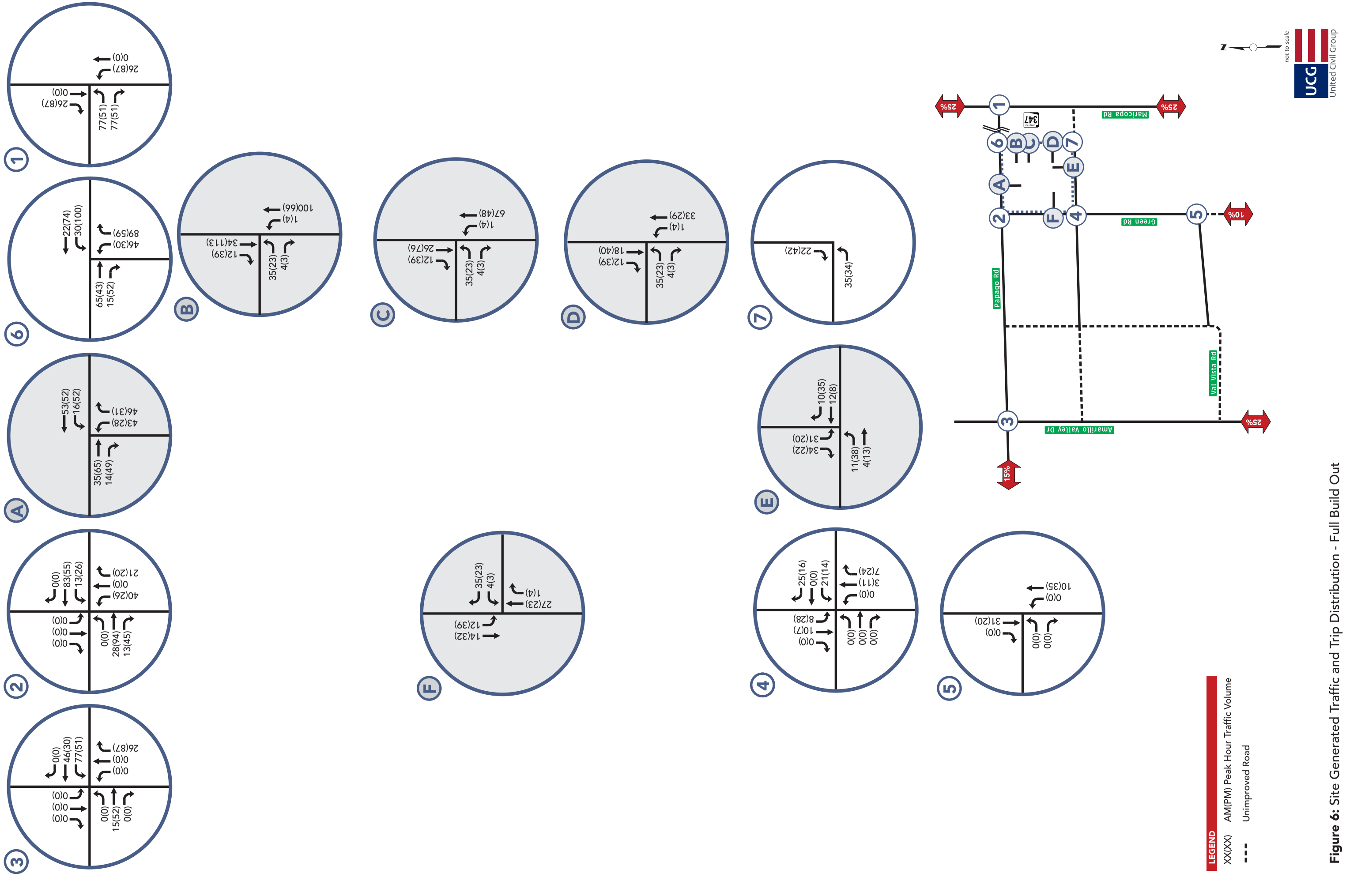
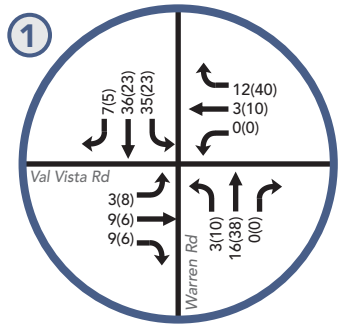
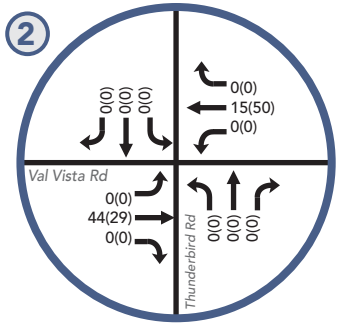
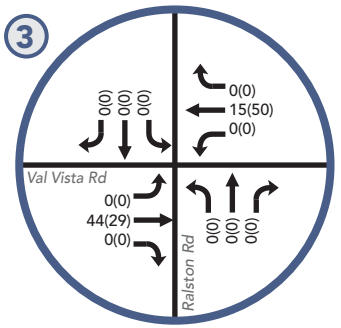
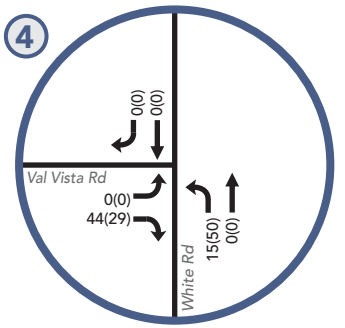


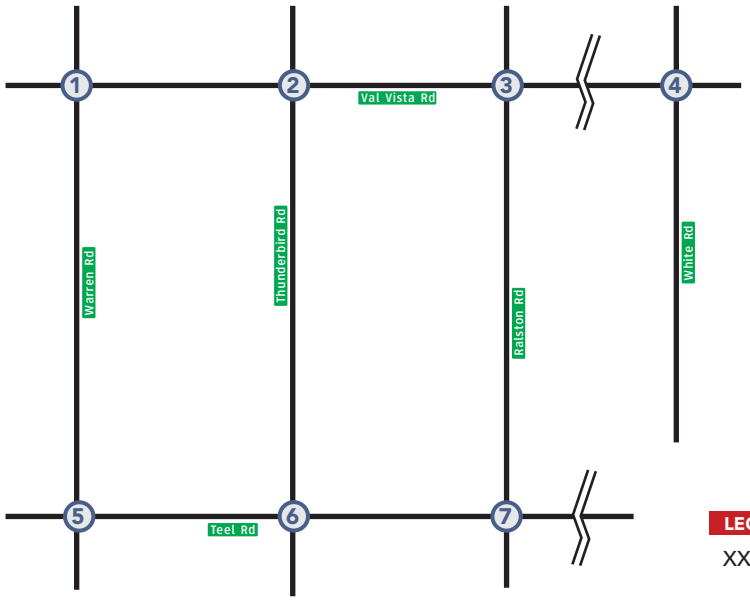
Figure 6: Site Generated Traffic and Trip Distribution - Full Build Out





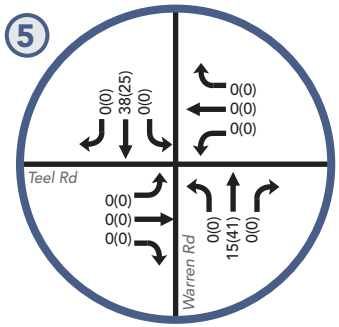


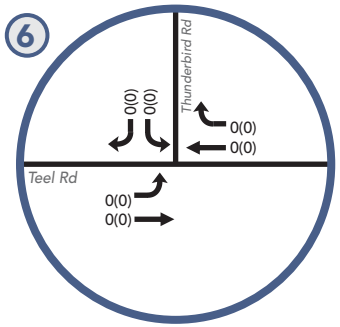


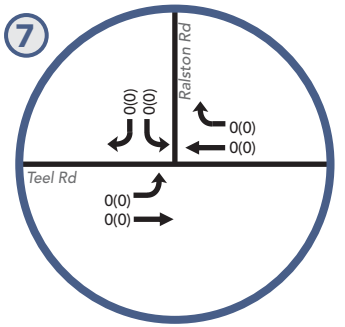


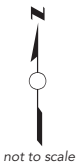
LEGEND

XX(XX) AM(PM) Peak Hour Traffic Volume









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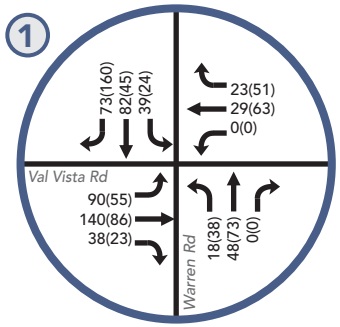
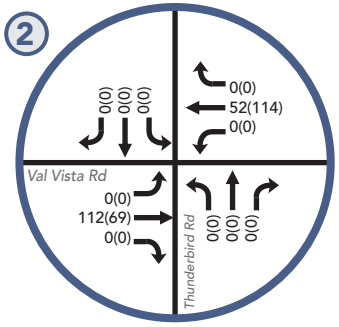
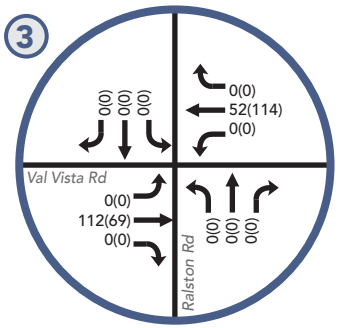
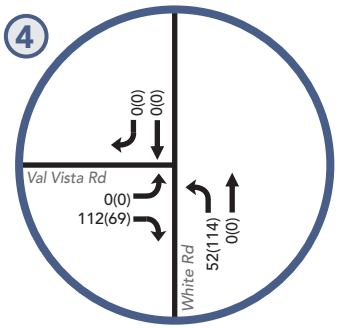
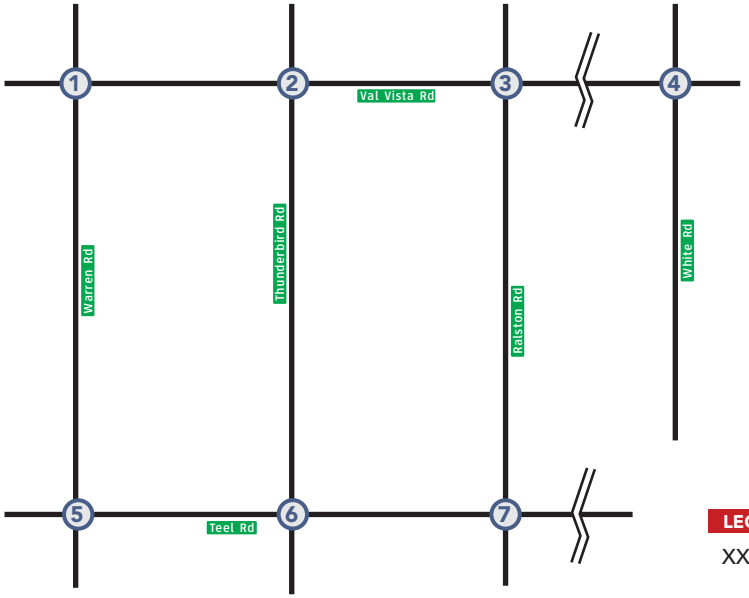
Adjacent Site Trips - 2028





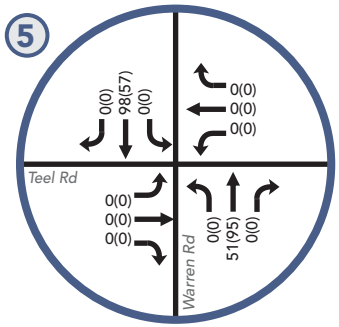


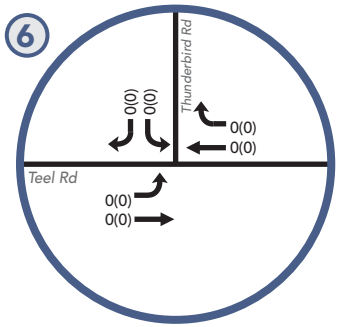


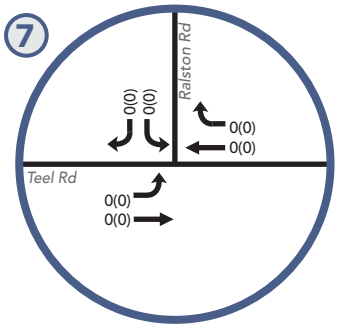


LEGEND

XX(XX) AM(PM) Peak Hour Traffic Volume







not to scale

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Adjacent Site Trips - 2033

TRAFFIC IMPACT ANALYSIS

Maricopa Opus

NWC of Ralston Road and Teel Road
Pinal County, Arizona

January 19, 2022
Revision #1: March 18, 2022

UCG Project Number: TR21136

PREPARED FOR
CVL Consultants
4550 North 12th Street
Phoenix, Arizona 85014

PREPARED BY

UCG
United Civil Group

Phoenix, Arizona 85007
602-265-6155

CONDUCTED BY

Registered Professional Engineer (Civil) CERTIFICATE NO. 32850 SARAH A. SIMPSON Date Signed 3-18-22 ARIZONA, U.S.A.

Sarah Simpson, PhD, PE
President

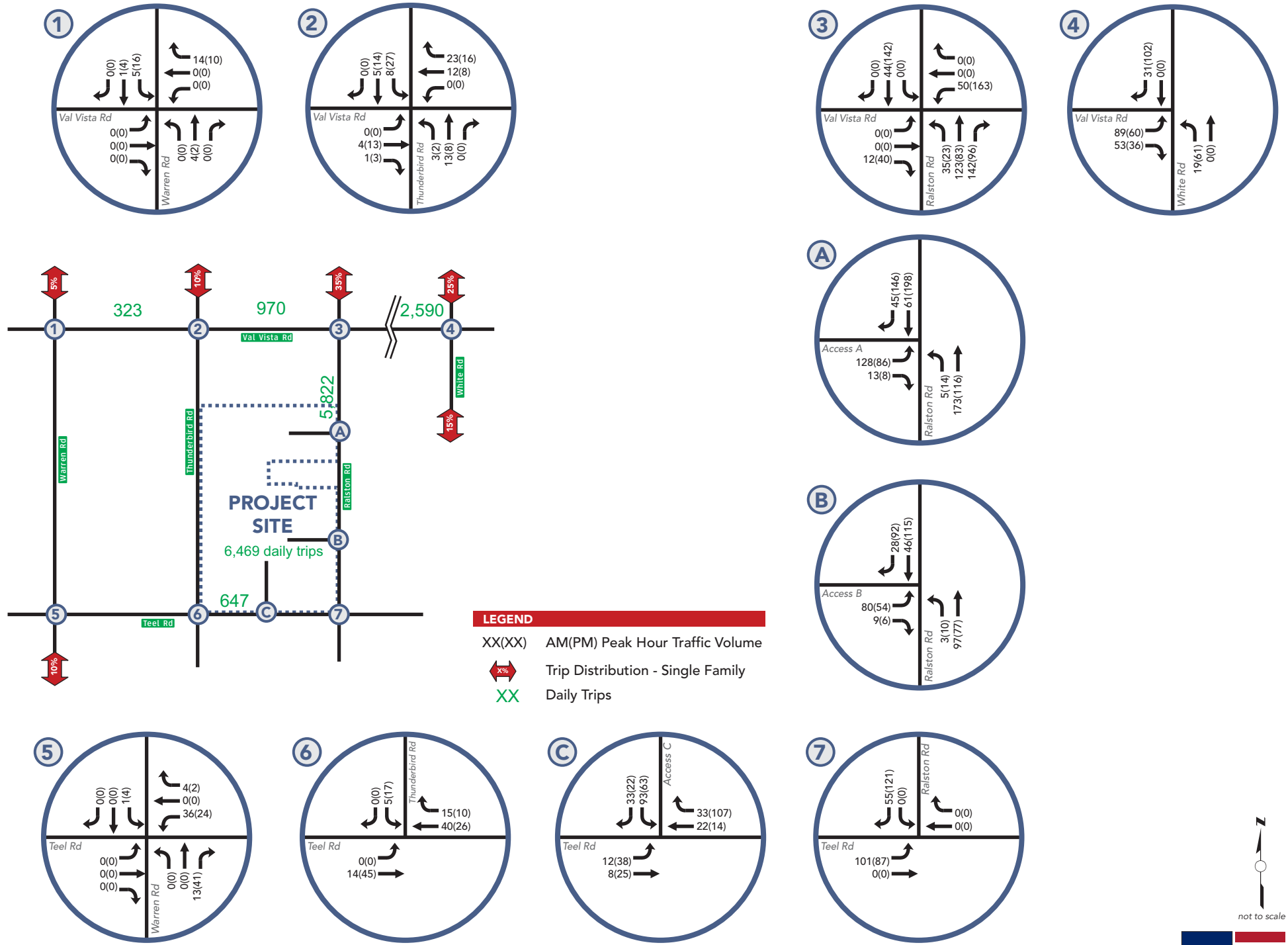

Figure 6: Site Generated Traffic and Trip Distribution

United Civil Group

Appendix E

MUTCD Signal Warrant Analysis

Horizon Year	**2033 Total Traffic**			
Community Type	Isolated community with less than 10,000 people			
Street Name	Warren Road		Barnes Road	
Posted Speed (mph)	40		35	
Direction	NB	SB	EB	WB
Number of Lanes	1		1	
	Major Street		Minor Street	
Morning Volume	154	251	15	4
Evening Volume	279	190	15	22

8 Highest Hours	Hourly Factors*	Major Street *(both directions)*	Minor Street *(higher one direction)*
1	0.0771	469	22
2	0.0730	444	21
3	0.0688	419	20
4	0.0656	399	19
5	0.0618	376	18
6	0.0612	372	17
7	0.0573	349	16
8	0.0572	348	16

** Source: Pignataro Traffic Engineering Theory and Practice, 1973*

70% Warrant Criteria	Major Street	Minor Street
Condition A	350	105
Condition B	525	53
80% Condition for A and B	420	84

8 Highest Hours	Met? Warrant 1 Condition A	Warrant 1 Condition B	80% Warrant for Conditions A and B**
1	NO	NO	NO
2	NO	NO	NO
3	NO	NO	NO
4	NO	NO	NO
5	NO	NO	NO
6	NO	NO	NO
7	NO	NO	NO
8	NO	NO	NO

***80% Condition for Warrants A and B is intended for application at locations where Condition A is not satisfied and Condition B is not satisfied and should be applied only after an adequate trial of other alternatives that could cause less delay and inconvenience to traffic has failed to solve the traffic problems.*

MUTCD Signal Warrant Analysis

Horizon Year	**2033 Total Traffic**			
Community Type	Isolated community with less than 10,000 people			
Street Name	Warren Road		Miller Road	
Posted Speed (mph)	40		35	
Direction	NB	SB	EB	WB
Number of Lanes	1		1	
	Major Street		Minor Street	
Morning Volume	156	252	29	0
Evening Volume	279	242	15	0

8 Highest Hours	Hourly Factors*	Major Street *(both directions)*	Minor Street *(higher one direction)*
1	0.0771	521	29
2	0.0730	493	27
3	0.0688	465	26
4	0.0656	443	25
5	0.0618	418	23
6	0.0612	414	23
7	0.0573	387	22
8	0.0572	387	22

** Source: Pignataro Traffic Engineering Theory and Practice, 1973*

70% Warrant Criteria	Major Street	Minor Street
Condition A	350	105
Condition B	525	53
80% Condition for A and B	420	84

8 Highest Hours	Met? Warrant 1 Condition A	Warrant 1 Condition B	80% Warrant for Conditions A and B**
1	NO	NO	NO
2	NO	NO	NO
3	NO	NO	NO
4	NO	NO	NO
5	NO	NO	NO
6	NO	NO	NO
7	NO	NO	NO
8	NO	NO	NO

***80% Condition for Warrants A and B is intended for application at locations where Condition A is not satisfied and Condition B is not satisfied and should be applied only after an adequate trial of other alternatives that could cause less delay and inconvenience to traffic has failed to solve the traffic problems.*

MUTCD Signal Warrant Analysis

Horizon Year	**2033 Total Traffic**			
Community Type	Isolated community with less than 10,000 people			
Street Name	Warren Road		Teel Road	
Posted Speed (mph)	40		35	
Direction	NB	SB	EB	WB
Number of Lanes	1		1	
	Major Street		Minor Street	
Morning Volume	421	219	0	47
Evening Volume	362	456	0	41

8 Highest Hours	Hourly Factors*	Major Street *(both directions)*	Minor Street *(higher one direction)*
1	0.0771	818	41
2	0.0730	775	39
3	0.0688	730	37
4	0.0656	696	35
5	0.0618	656	33
6	0.0612	649	33
7	0.0573	608	30
8	0.0572	607	30

** Source: Pignataro Traffic Engineering Theory and Practice, 1973*

70% Warrant Criteria	Major Street	Minor Street
Condition A	350	105
Condition B	525	53
80% Condition for A and B	420	84

8 Highest Hours	Met? Warrant 1 Condition A	Warrant 1 Condition B	80% Warrant for Conditions A and B**
1	NO	NO	NO
2	NO	NO	NO
3	NO	NO	NO
4	NO	NO	NO
5	NO	NO	NO
6	NO	NO	NO
7	NO	NO	NO
8	NO	NO	NO

***80% Condition for Warrants A and B is intended for application at locations where Condition A is not satisfied and Condition B is not satisfied and should be applied only after an adequate trial of other alternatives that could cause less delay and inconvenience to traffic has failed to solve the traffic problems.*