SUPPLEMENTAL FINAL ENVIRONMENTAL IMPACT STATEMENT

For the

PROPOSED MEDLEY CENTRE REDEVELOPMENT AND RENOVATION

Town of Irondequoit, Monroe County, New York

VOLUME III

TRAFFIC STUDY APPENDICES 1 through 14
(excluding appendix 8)

Passero Associates
100 Liberty Pole Way | Rochester, NY 14604
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MEDLEY CENTRE
TRAFFIC STUDY

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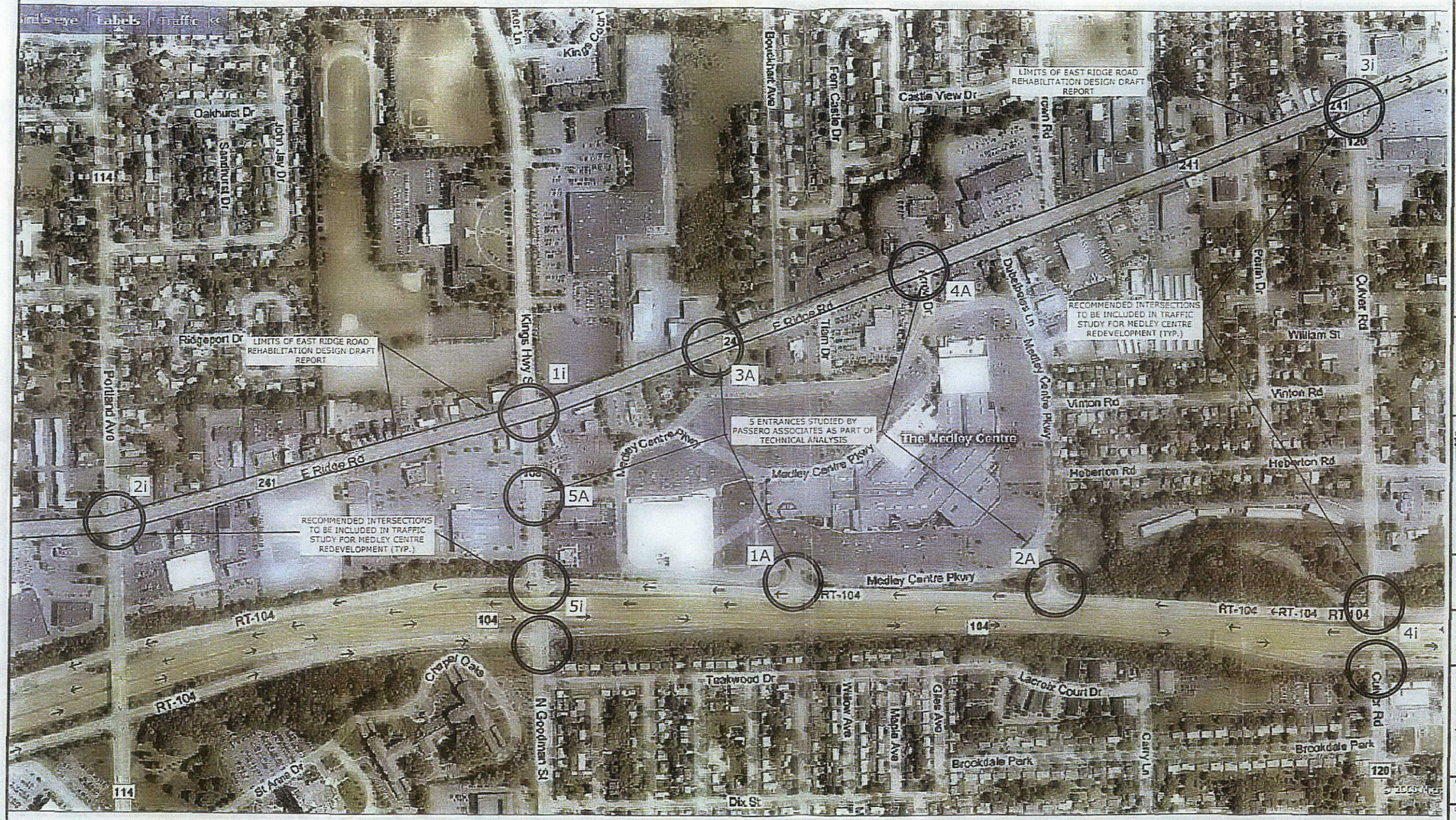
APPENDIX 1: AERIAL PHOTOGRAPH



Passero Associates

dal pos
DAL POS ARCHITECTS, LLC

NOT FOR CONSTRUCTION

SRC development

Revisions

LOCATION SKETCH

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Designed by: Jess D. Hyde

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MEDLEY CENTRE REGIONAL TRAFFIC MAPPING

Town of Irondequoit, Monroe County, New York

Project No: 2008512.01

Drawing No: | Sheet No: 3-1

Scale: 1" = 200'

Date: OCTOBER 2008

APPENDIX 2

APPENDIX 2: EXISTING (2008) TRAFFIC VOLUMES

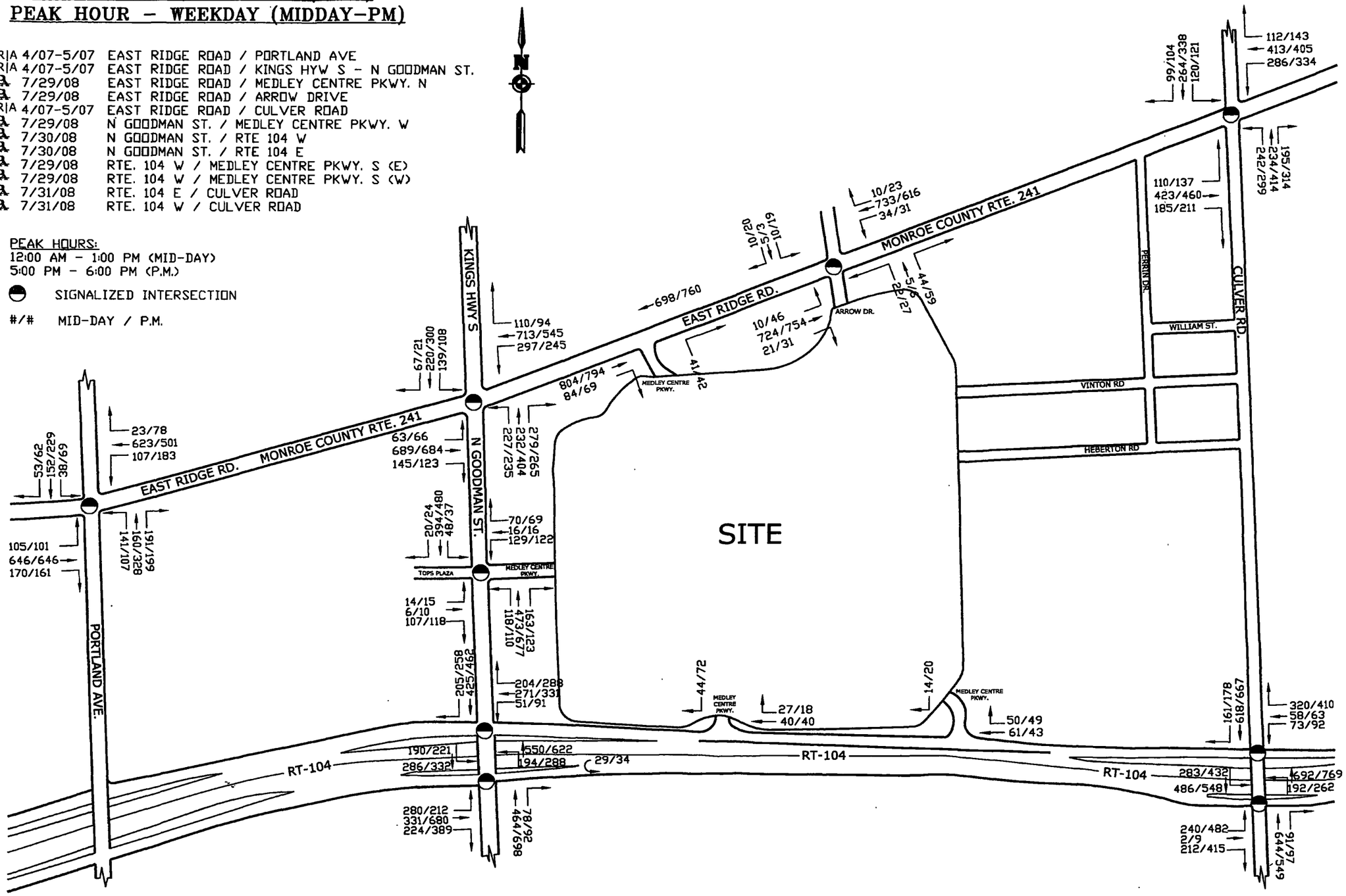
EXISTING TRAFFIC VOLUMES (2008)
PEAK HOUR – WEEKDAY (MIDDAY–PM)

F|R|A 4/07-5/07 EAST RIDGE ROAD / PORTLAND AVE
F|R|A 4/07-5/07 EAST RIDGE ROAD / KINGS HYW S – N GOODMAN ST.
RA 7/29/08 EAST RIDGE ROAD / MEDLEY CENTRE PKWY. N
RA 7/29/08 EAST RIDGE ROAD / ARROW DRIVE
F|R|A 4/07-5/07 EAST RIDGE ROAD / CULVER ROAD
RA 7/29/08 N GOODMAN ST. / MEDLEY CENTRE PKWY. W
RA 7/30/08 N GOODMAN ST. / RTE 104 W
RA 7/30/08 N GOODMAN ST. / RTE 104 E
RA 7/29/08 RTE. 104 W / MEDLEY CENTRE PKWY. S (E)
RA 7/29/08 RTE. 104 W / MEDLEY CENTRE PKWY. S (W)
RA 7/31/08 RTE. 104 E / CULVER ROAD
RA 7/31/08 RTE. 104 W / CULVER ROAD

PEAK HOURS:
12:00 AM – 1:00 PM (MID-DAY)
5:00 PM – 6:00 PM (P.M.)

SIGNALIZED INTERSECTION

#/# MID-DAY / P.M.



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Revisions

No.	Date	By	Description

Traffic Analysis

Medley Centre
Existing Conditions
Wkday

Town of Irondequoit, Monroe County, New York

Project No.	
2008512.01	
Drawing No.	Sheet No.
T 1-1	1
Scale:	N.T.S.
Date	July 2008

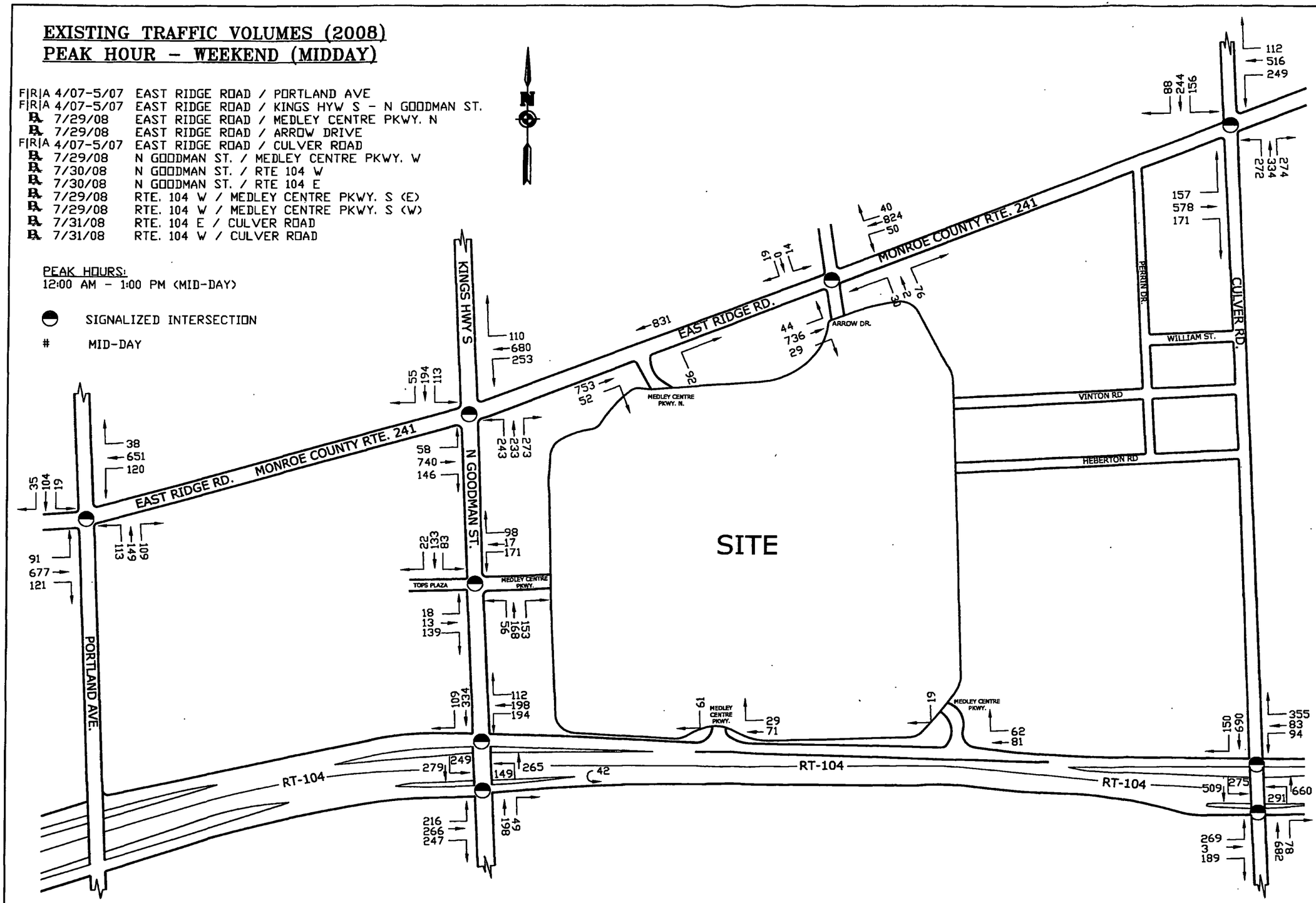
EXISTING TRAFFIC VOLUMES (2008)
PEAK HOUR – WEEKEND (MIDDAY)

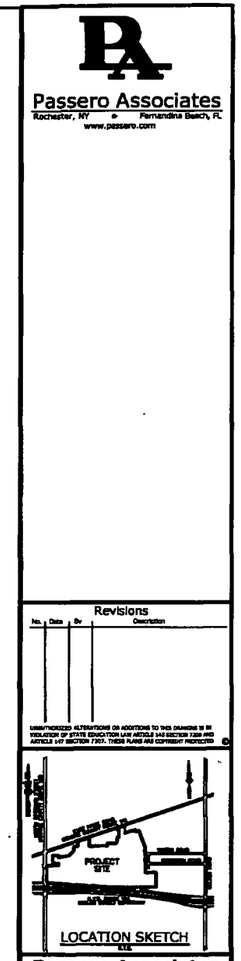
F|R|A	4/07-5/07	EAST RIDGE ROAD / PORTLAND AVE
F|R|A	4/07-5/07	EAST RIDGE ROAD / KINGS HYW S – N GOODMAN ST.
R	7/29/08	EAST RIDGE ROAD / MEDLEY CENTRE PKWY. N
R	7/29/08	EAST RIDGE ROAD / ARROW DRIVE
F|R|A	4/07-5/07	EAST RIDGE ROAD / CULVER ROAD
R	7/29/08	N GOODMAN ST. / MEDLEY CENTRE PKWY. W
R	7/30/08	N GOODMAN ST. / RTE 104 W
R	7/30/08	N GOODMAN ST. / RTE 104 E
R	7/29/08	RTE. 104 W / MEDLEY CENTRE PKWY. S (E)
R	7/29/08	RTE. 104 W / MEDLEY CENTRE PKWY. S (W)
R	7/31/08	RTE. 104 E / CULVER ROAD
R	7/31/08	RTE. 104 W / CULVER ROAD

PEAK HOURS:
12:00 AM – 1:00 PM (MID-DAY)

● SIGNALIZED INTERSECTION

MID-DAY





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Traffic Analysis

Medley Centre
Existing Conditions
Wkend

Town of Irondequoit, Monroe County, New York

Project No.: 2008512.01
Drawing No.: T 1-2
Sheet No.: 2
Scale: N.T.S.
Date: July 2008

APPENDIX 3

APPENDIX 3: BACKGROUND (2011) TRAFFIC VOLUMES

BACKGROUND TRAFFIC VOLUMES WEEKDAY (MIDDAY-PM) (2011)
(0.6% GROWTH RATE FACTOR/YEAR-MALL AT 15% OCCUPANCY)

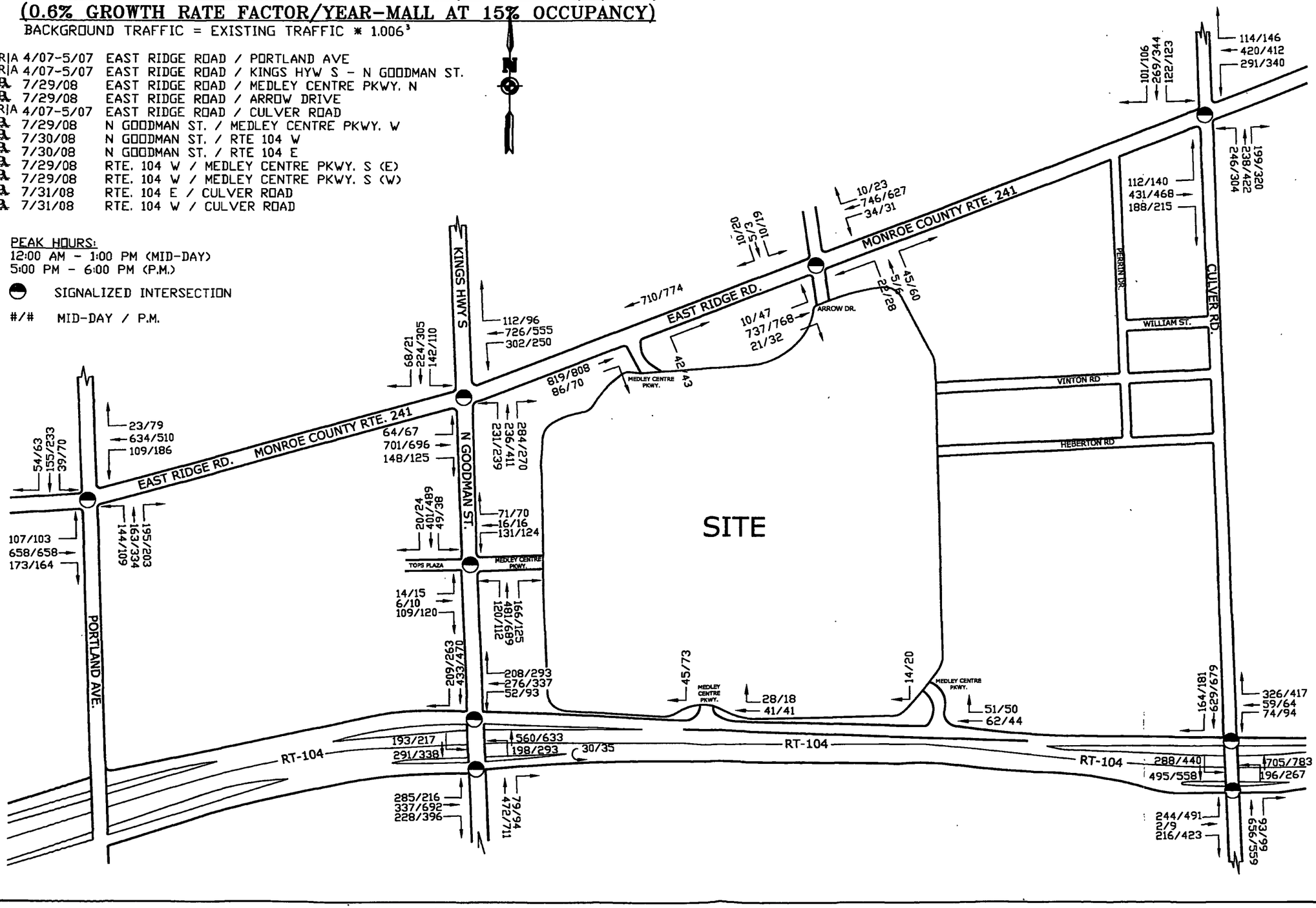
BACKGROUND TRAFFIC = EXISTING TRAFFIC * 1.006^3

F|R|A	4/07-5/07	EAST RIDGE ROAD / PORTLAND AVE
F|R|A	4/07-5/07	EAST RIDGE ROAD / KINGS HYW S - N GOODMAN ST.
R	7/29/08	EAST RIDGE ROAD / MEDLEY CENTRE PKWY. N
R	7/29/08	EAST RIDGE ROAD / ARROW DRIVE
F|R|A	4/07-5/07	EAST RIDGE ROAD / CULVER ROAD
R	7/29/08	N GOODMAN ST. / MEDLEY CENTRE PKWY. W
R	7/30/08	N GOODMAN ST. / RTE 104 W
R	7/30/08	N GOODMAN ST. / RTE 104 E
R	7/29/08	RTE. 104 W / MEDLEY CENTRE PKWY. S (E)
R	7/29/08	RTE. 104 W / MEDLEY CENTRE PKWY. S (W)
R	7/31/08	RTE. 104 E / CULVER ROAD
R	7/31/08	RTE. 104 W / CULVER ROAD

PEAK HOURS:
12:00 AM - 1:00 PM (MID-DAY)
5:00 PM - 6:00 PM (P.M.)

SIGNALIZED INTERSECTION

#/# MID-DAY / P.M.



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Traffic Analysis

Medley Centre
Background Traffic
Wkday

Town of Irondequoit, Monroe County, New York

Project No.	
2008512.01	
Drawing No.	Sheet No.
T 2-1	3
Scale:	N.T.S.
Date	July 2008

BACKGROUND TRAFFIC VOLUMES WEEKEND (MIDDAY) (2011)
(0.6% GROWTH RATE FACTOR/YEAR–ALL AT 15% OCCUPANCY)

BACKGROUND TRAFFIC = EXISTING TRAFFIC * 1.006^3

F|R|A	4/07-5/07	EAST RIDGE ROAD / PORTLAND AVE
F|R|A	4/07-5/07	EAST RIDGE ROAD / KINGS HYW S – N GOODMAN ST.
R	7/29/08	EAST RIDGE ROAD / MEDLEY CENTRE PKWY. N
R	7/29/08	EAST RIDGE ROAD / ARROW DRIVE
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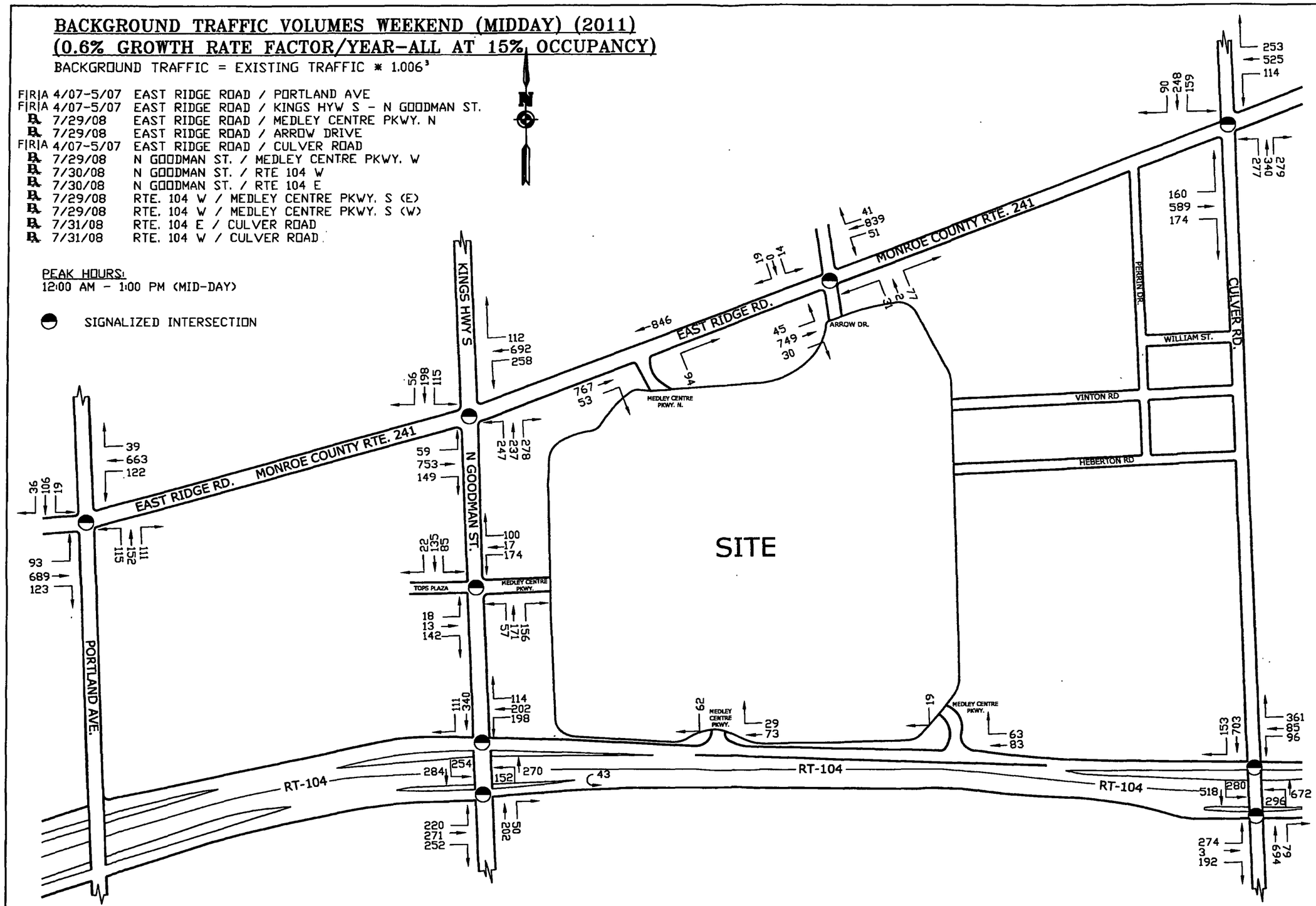
R	7/30/08	N GOODMAN ST. / RTE 104 W
R	7/30/08	N GOODMAN ST. / RTE 104 E
R	7/29/08	RTE. 104 W / MEDLEY CENTRE PKWY. S (E)
R	7/29/08	RTE. 104 W / MEDLEY CENTRE PKWY. S (W)
R	7/31/08	RTE. 104 E / CULVER ROAD
R	7/31/08	RTE. 104 W / CULVER ROAD

PEAK HOURS:
12:00 AM – 1:00 PM (MID-DAY)

SIGNALIZED INTERSECTION



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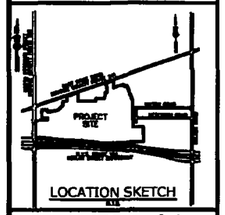

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Traffic Analysis

Medley Centre
Background Traffic
Wkend

Town of Irondequoit, Monroe County, New York

Project No.	2008512.01
Drawing No.	T 2-2
Sheet No.	4
Scale:	N.T.S.
Date	July 2008

BACKGROUND TRIP GENERATION
EXISTING MALL FULLY LEASED (VEHICLES)
WEEKDAY (MIDDAY-PM)

F|R|A	4/07-5/07	EAST RIDGE ROAD / PORTLAND AVE
F|R|A	4/07-5/07	EAST RIDGE ROAD / KINGS HYW S - N GOODMAN ST.
B.	7/29/08	EAST RIDGE ROAD / MEDLEY CENTRE PKWY. N
B.	7/29/08	EAST RIDGE ROAD / ARROW DRIVE
F|R|A	4/07-5/07	EAST RIDGE ROAD / CULVER ROAD
B.	7/29/08	N GOODMAN ST. / MEDLEY CENTRE PKWY. W
B.	7/30/08	N GOODMAN ST. / RTE 104 W
B.	7/30/08	N GOODMAN ST. / RTE 104 E
B.	7/29/08	RTE. 104 W / MEDLEY CENTRE PKWY. S (E)
B.	7/29/08	RTE. 104 W / MEDLEY CENTRE PKWY. S (W)
B.	7/31/08	RTE. 104 E / CULVER ROAD
B.	7/31/08	RTE. 104 W / CULVER ROAD

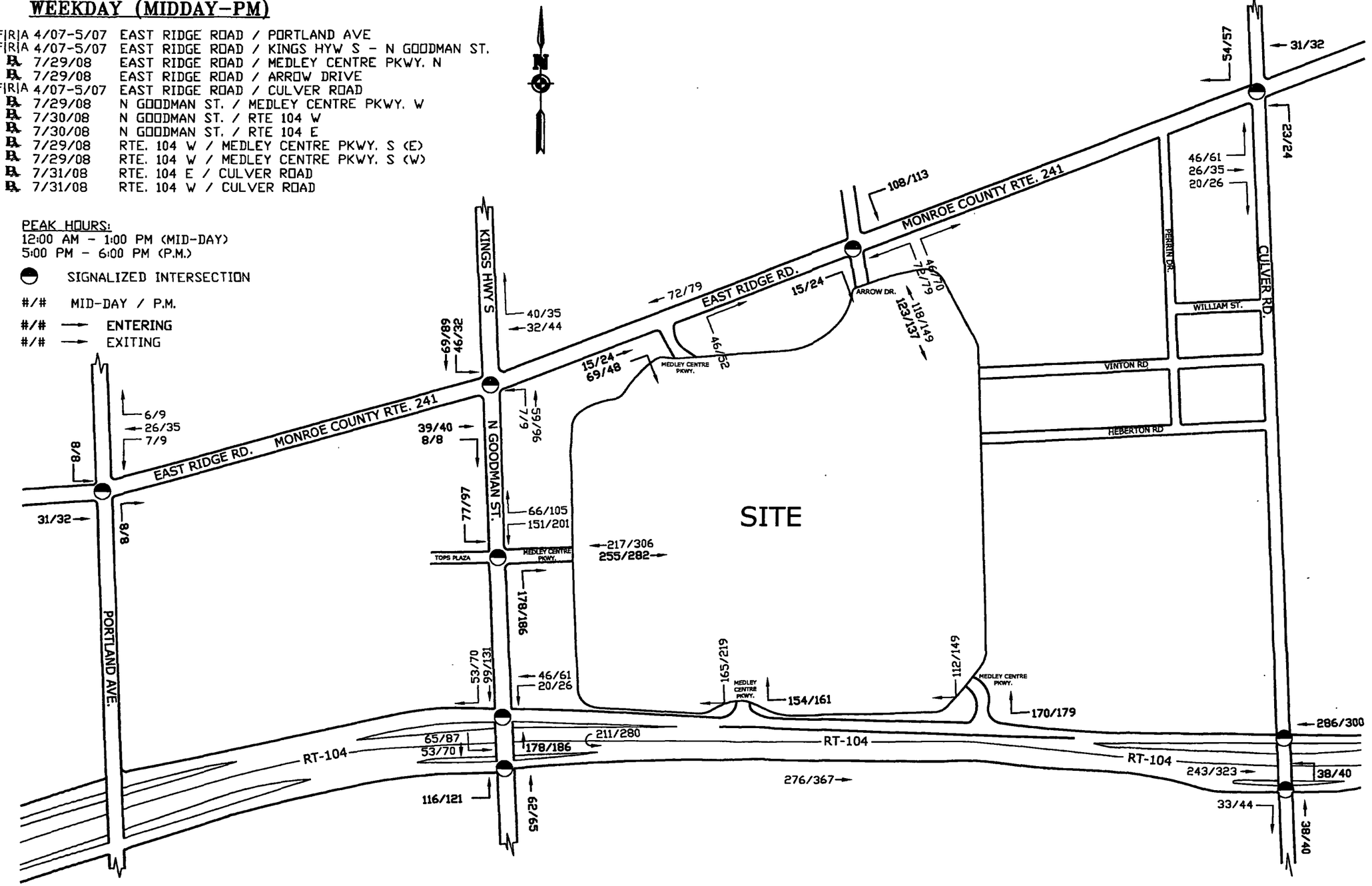
PEAK HOURS:
12:00 AM - 1:00 PM (MID-DAY)
5:00 PM - 6:00 PM (P.M.)

SIGNALIZED INTERSECTION

#/# MID-DAY / P.M.

#/# → ENTERING

#/# → EXITING



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Traffic Analysis
Medley Centre
Existing Mall
Trip Generation
Wkday (vehs)
Town of Irondequoit, Monroe County, New York

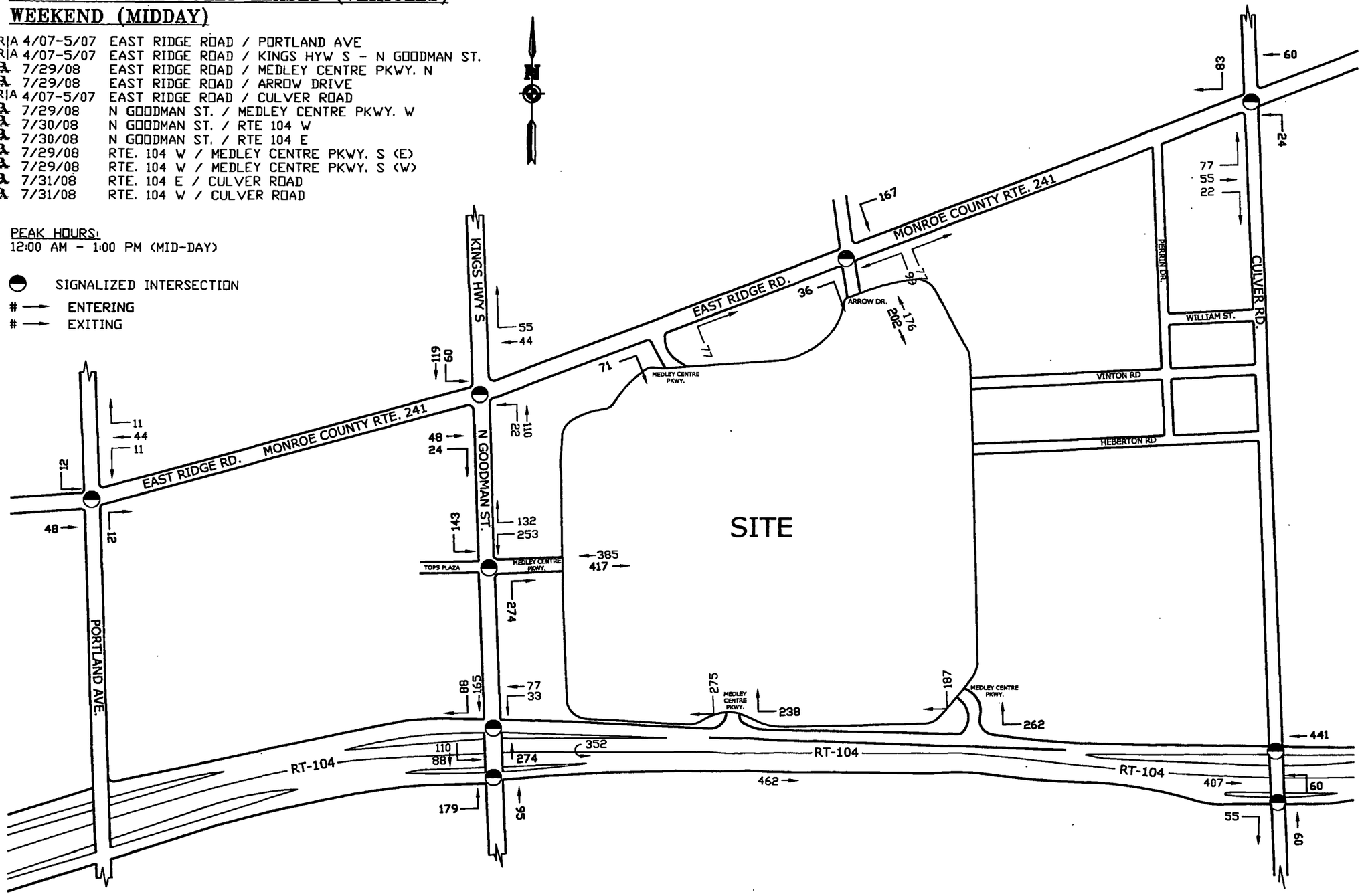
Project No. 2008512.01
Drawing No. T 3-1
Sheet No. 5
Scale: N.T.S.
Date: July 2008

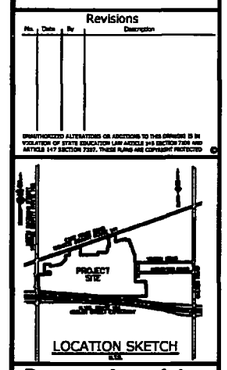
BACKGROUND TRIP GENERATION
EXISTING MALL FULLY LEASED (VEHICLES)
WEEKEND (MIDDAY)

F|R|A	4/07-5/07	EAST RIDGE ROAD / PORTLAND AVE
F|R|A	4/07-5/07	EAST RIDGE ROAD / KINGS HYW S - N GOODMAN ST.
B A	7/29/08	EAST RIDGE ROAD / MEDLEY CENTRE PKWY. N
B A	7/29/08	EAST RIDGE ROAD / ARROW DRIVE
F|R|A	4/07-5/07	EAST RIDGE ROAD / CULVER ROAD
B A	7/29/08	N GOODMAN ST. / MEDLEY CENTRE PKWY. W
B A	7/30/08	N GOODMAN ST. / RTE 104 W
B A	7/30/08	N GOODMAN ST. / RTE 104 E
B A	7/29/08	RTE. 104 W / MEDLEY CENTRE PKWY. S (E)
B A	7/29/08	RTE. 104 W / MEDLEY CENTRE PKWY. S (W)
B A	7/31/08	RTE. 104 E / CULVER ROAD
B A	7/31/08	RTE. 104 W / CULVER ROAD

PEAK HOURS:
12:00 AM - 1:00 PM (MID-DAY)

SIGNALIZED INTERSECTION
ENTERING
EXITING





LOCATION SKETCH

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Traffic Analysis
Medley Centre
Existing Mall
Trip Generation
Wkend (vehs)
Town of Irondequoit, Monroe County, New York

Project No.: 2008512.01
Drawing No.: T 3-2
Sheet No.: 6
Scale: N.T.S.
Date: July 2008

BACKGROUND TRAFFIC VOLUMES WEEKDAY (MIDDAY–PM)
INLCUDING EXISTING MALL FULLY LEASED (2011)
(0.6% GROWTH RATE FACTOR/YEAR)

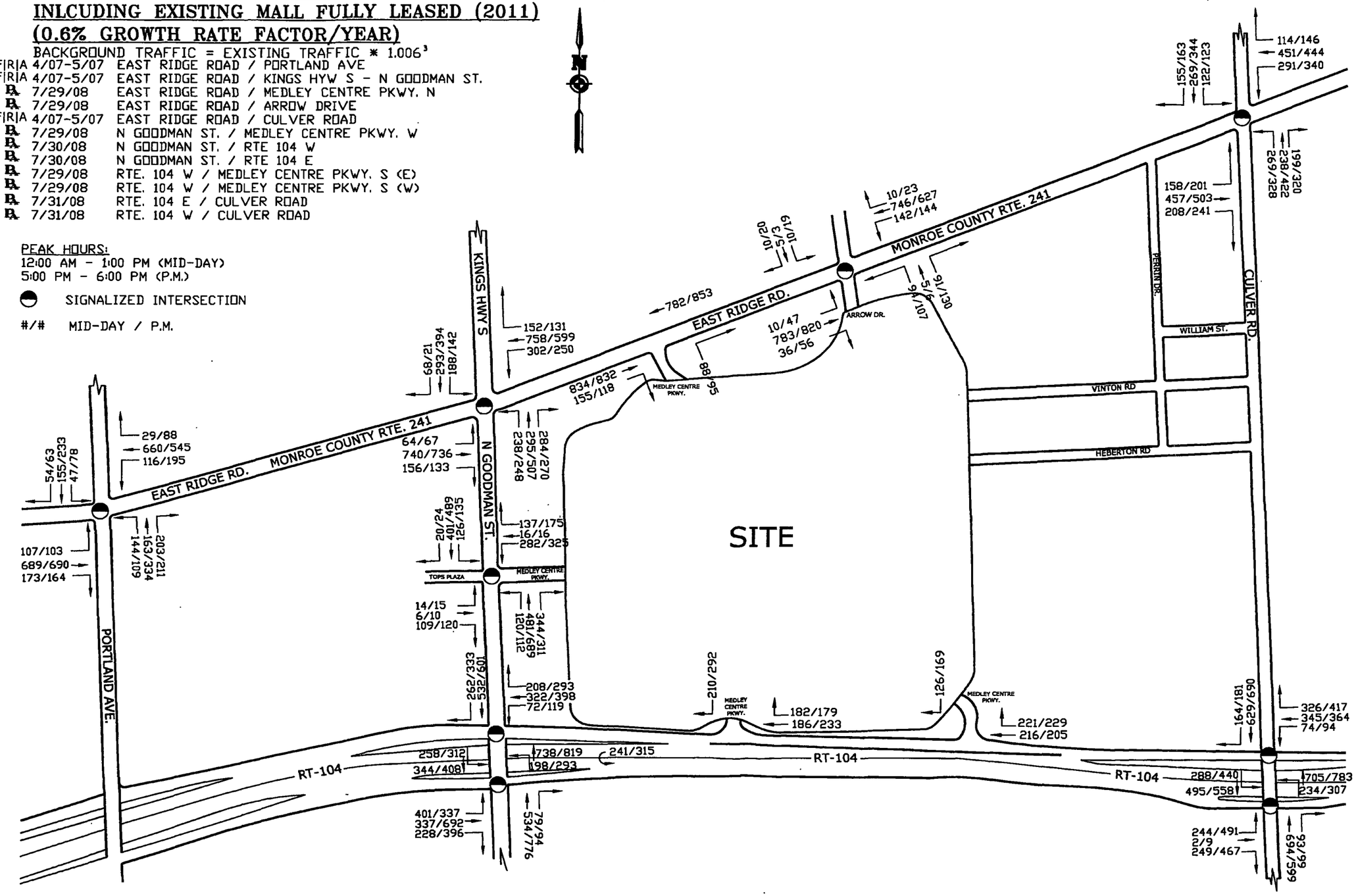
BACKGROUND TRAFFIC = EXISTING TRAFFIC * 1.006^3

F|R|A 4/07-5/07 EAST RIDGE ROAD / PORTLAND AVE
F|R|A 4/07-5/07 EAST RIDGE ROAD / KINGS HYW S – N GOODMAN ST.
BA 7/29/08 EAST RIDGE ROAD / MEDLEY CENTRE PKWY. N
BA 7/29/08 EAST RIDGE ROAD / ARROW DRIVE
F|R|A 4/07-5/07 EAST RIDGE ROAD / CULVER ROAD
BA 7/29/08 N GOODMAN ST. / MEDLEY CENTRE PKWY. W
BA 7/30/08 N GOODMAN ST. / RTE 104 W
BA 7/30/08 N GOODMAN ST. / RTE 104 E
BA 7/29/08 RTE. 104 W / MEDLEY CENTRE PKWY. S (E)
BA 7/29/08 RTE. 104 W / MEDLEY CENTRE PKWY. S (W)
BA 7/31/08 RTE. 104 E / CULVER ROAD
BA 7/31/08 RTE. 104 W / CULVER ROAD

PEAK HOURS:
12:00 AM – 1:00 PM (MID-DAY)
5:00 PM – 6:00 PM (P.M.)

SIGNALIZED INTERSECTION

#/# MID-DAY / P.M.



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Traffic Analysis

Medley Centre
Background Traffic
Wkday

Town of Irondequoit, Monroe County, New York

Project No.: 2008512.01
Drawing No.: T 4-1
Sheet No.: 7
Scale: N.T.S.
Date: July 2008

BACKGROUND TRAFFIC VOLUMES WEEKEND (MIDDAY) INCLUDING EXISTING MALL FULLY LEASED (2011) (0.6% GROWTH RATE FACTOR/YEAR)

BACKGROUND TRAFFIC = EXISTING TRAFFIC * 1.006³

F|R|A	4/07-5/07	EAST RIDGE ROAD / PORTLAND AVE
F|R|A	4/07-5/07	EAST RIDGE ROAD / KINGS HYW S - N GOODMAN ST.
R	7/29/08	EAST RIDGE ROAD / MEDLEY CENTRE PKWY. N
R	7/29/08	EAST RIDGE ROAD / ARROW DRIVE
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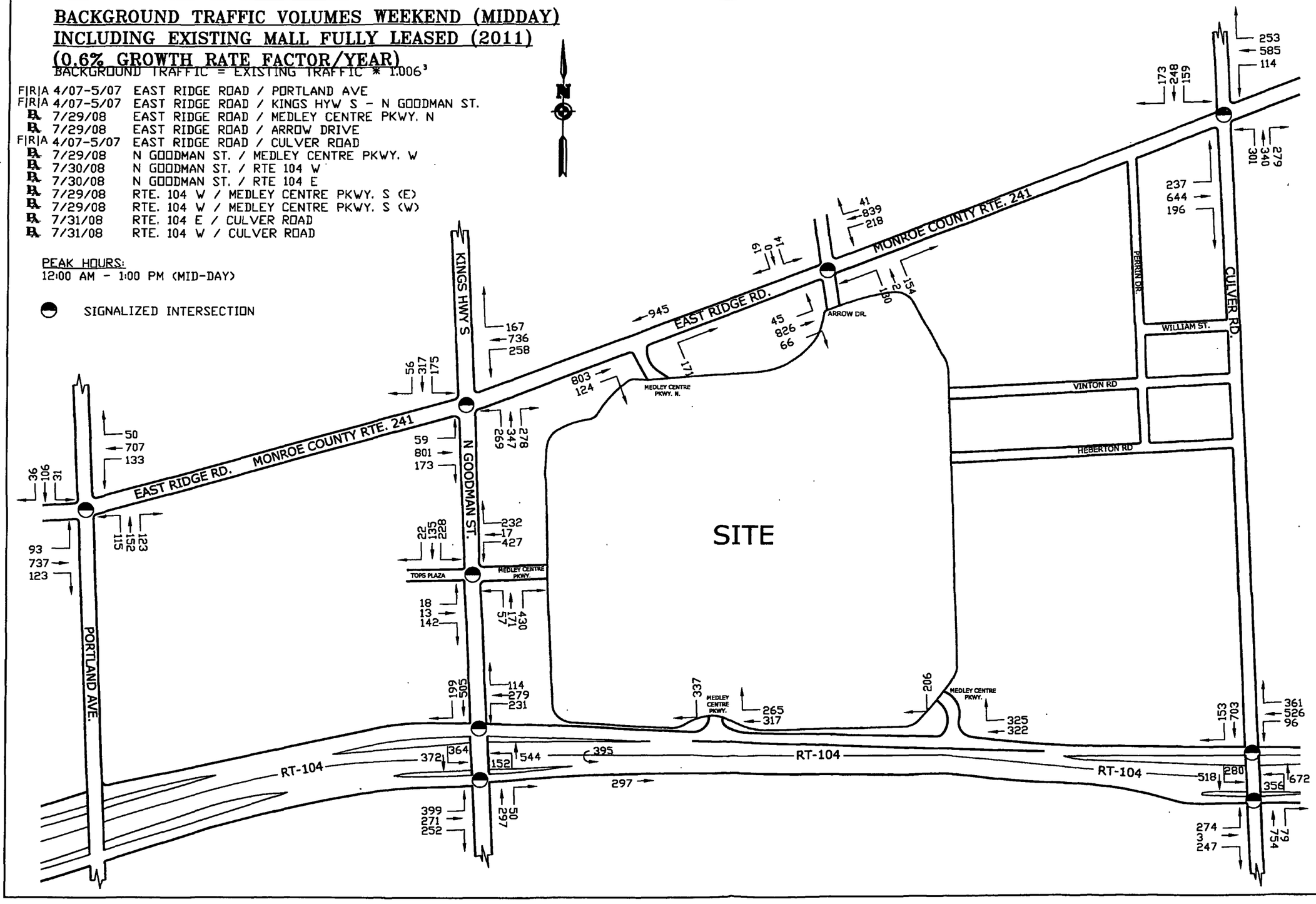
R	7/29/08	RTE. 104 W / MEDLEY CENTRE PKWY. S (W)
R	7/31/08	RTE. 104 E / CULVER ROAD
R	7/31/08	RTE. 104 W / CULVER ROAD

PEAK HOURS:
12:00 AM - 1:00 PM (MID-DAY)

SIGNALIZED INTERSECTION



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No.	Date	By	Description

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Traffic Analysis

Medley Centre
Background Traffic
Wkend

Town of Irondequoit, Monroe County, New York

Project No.	2008512.01
Drawing No	T 4-2
Sheet No.	8
Scale:	N.T.S.
Date	July 2008

APPENDIX 4

APPENDIX 4: PEAK HOUR DETERMINATION

Weekday Midday Peak Hour Tabulation

E Ridge Road and Medley Centre Pkwy N
Tues

	EBR	NBR	EBT	WBT		
11:00 AM					0	
11:15 AM	11	8	157	104	176	
11:30 AM	19	10	152	139	181	357
11:45 AM	31	15	150	150	196	553
12:00 PM	17	16	225	175	258	811
12:15 PM	24	8	200	182	232	867
12:30 PM	25	7	207	173	239	925
12:45 PM	18	10	172	168	200	929
1:00 PM	13	11	164	172	208	879
	158	85	1447	1263	Total	
	84	41	804	698	Peak hour Total	

E Ridge Road and Arrow Drive
Tues

	EBT	EBR	WBT	WBL	NBL	NBR		
11:00 AM							0	
11:15 AM	175	7	140	6	15	18	361	
11:30 AM	152	7	156	4	8	17	344	705
11:45 AM	169	4	186	8	6	13	386	1091
12:00 PM	189	3	168	9	6	6	381	1472
12:15 PM	168	6	184	12	2	15	387	1498
12:30 PM	146	3	154	3	7	8	321	1475
12:45 PM	221	9	227	10	7	15	489	1578
1:00 PM	152	9	140	12	5	8	326	1523
	1372	48	1355	64	56	100	Total	
	724	21	733	34	22	44	Peak hour Total	

Route 104 W and Culver Road
Thurs

	NBT	NBL	SBT	SBR	WBT	WBL	WBR		
11:00 AM								0	
11:15 AM	167	41	127	39	15	19	74	482	
11:30 AM	140	45	138	41	19	8	81	472	954
11:45 AM	171	43	159	46	18	18	77	532	1486
12:00 PM	154	49	163	43	19	19	94	541	2027
12:15 PM	202	63	153	28	14	14	76	550	2095
12:30 PM	185	54	144	46	14	16	82	541	2164
12:45 PM	151	26	158	44	11	24	68	482	2114
1:00 PM	158	46	139	53	11	16	65	488	2061
	1328	367	1181	340	121	134	617	Total	
	692	192	618	161	58	73	320	Peak hour Total	

Route 104 E and Culver Road
Thurs

	NBT	NBR	SBT	SBL	EBT	EBL	EBR		
11:00 AM								0	
11:15 AM	181	10	106	57	2	42	48	446	
11:30 AM	138	18	99	72	0	61	47	435	881
11:45 AM	188	13	129	73	0	58	51	522	1403
12:00 PM	168	23	116	64	1	61	61	494	1897
12:15 PM	265	28	127	78	0	74	49	621	2072
12:30 PM	182	22	98	64	0	49	47	462	2099
12:45 PM	178	18	145	77	1	56	55	530	2107
1:00 PM	263	16	110	78	0	52	37	556	2169
	1563	148	930	563	4	463	395	Total	
	793	91	486	283	2	240	212	Peak hour Total	

Route 104 W and Medley Centre Pkwy. S (E)
Tues

	WBR	WBT	SBR		
11:00 AM				0	
11:15 AM	13	9	3	25	
11:30 AM	22	20	2	44	69
11:45 AM	12	9	3	24	93
12:00 PM	16	12	3	31	124
12:15 PM	17	18	3	38	137
12:30 PM	7	15	1	23	116
12:45 PM	10	16	7	33	125
1:00 PM	4	13	2	19	113
	101	112	24	Total	
	50	61	14	Peak hour Total	

Route 104 W and Medley Centre Pkwy. S (W)
Tues

	WBR	WBT	SBR		
11:00 AM				0	
11:15 AM	4	7	10	21	
11:30 AM	5	10	7	22	43
11:45 AM	4	9	12	25	68
12:00 PM	5	9	10	24	92
12:15 PM	7	8	12	27	98
12:30 PM	4	13	16	33	109
12:45 PM	11	10	6	27	111
1:00 PM	5	10	20	35	122
	45	76	93	Total	
	27	40	44	Peak hour Total	

Weekday Midday Peak Hour Tabulation

Route 104 W and N Goodman St.
Wed

	NBT	NBL	SBT	SBR	WBT	WBL	WBR		
11:00 AM								0	
11:15 AM	99	31	80	29	71	11	40	361	
11:30 AM	101	35	114	49	80	9	64	452	813
11:45 AM	122	52	105	51	78	16	39	463	1276
12:00 PM	124	46	106	66	89	12	51	494	1770
12:15 PM	134	53	111	60	69	12	42	481	1890
12:30 PM	160	52	125	37	53	16	54	497	1935
12:45 PM	132	43	83	42	60	11	57	428	1900
1:00 PM	102	45	115	57	70	10	46	445	1851
	974	357	839	391	570	97	393	Total	
	550	194	425	205	271	51	204	Peak hour Total	

Route 104 E and N Goodman St.
Wed

	NBT	NBR	SBT	SBL	EBT	EBL	EBR		
11:00 AM								0	
11:15 AM	69	15	32	30	51	30	24	251	
11:30 AM	121	24	102	50	119	61	52	529	780
11:45 AM	197	25	142	82	82	46	56	630	1410
12:00 PM	113	20	75	54	97	69	42	470	1880
12:15 PM	148	27	105	75	96	55	48	554	2183
12:30 PM	191	18	159	49	72	63	59	611	2265
12:45 PM	174	13	121	133	66	93	75	675	2310
1:00 PM								0	1840
	1013	142	736	473	583	417	356	Total	
	626	78	460	311	331	280	224	Peak hour Total	

N Goodman St. and Medley Centre Pkwy W - Tops Plaza
Tues

	NBT	NBL	NBR	SBT	SBL	SBR	EBT	EBL	EBR	WBT	WBL	WBR		
11:00 AM													0	
11:15 AM	111	17	35	89	16	11	3	2	16	5	33	19	357	
11:30 AM	124	30	24	93	12	8	5	1	23	5	25	15	365	722
11:45 AM	113	23	23	107	7	9	2	7	31	4	29	15	370	1092
12:00 PM	130	35	39	105	10	5	3	3	18	3	22	17	390	1482
12:15 PM	111	20	35	102	13	3	1	3	30	4	33	23	378	1503
12:30 PM	141	30	38	106	10	4	0	3	26	6	33	21	418	1556
12:45 PM	123	33	51	123	15	8	2	5	33	3	41	9	446	1632
1:00 PM	109	19	22	96	12	3	2	3	20	5	28	14	333	1575
	962	207	267	821	95	51	18	27	197	35	244	133	Total	
	505	118	163	436	48	20	6	14	107	16	129	70	Peak hour Total	

Weekday PM Peak Hour Tabulation

E Ridge Road and Medley Centre Pkwy N
Tues

	EBR	NBR	EBT	WBT		
4:00 PM					0	
4:15 PM	28	15	161	201	405	
4:30 PM	20	4	182	172	378	783
4:45 PM	10	11	204	194	419	1202
5:00 PM	13	4	213	176	406	1608
5:15 PM	16	12	205	203	436	1639
5:30 PM	15	11	210	189	425	1686
5:45 PM	20	4	201	176	401	1688
6:00 PM	18	15	178	192	403	1665
	140	76	1554	1503	Total	
	69	42	794	760	Peak hour Total	

E Ridge Road and Arrow Drive
Tues

	EBT	EBR	WBT	WBL	NBL	NBR		
4:00 PM							0	
4:15 PM	178	5	188	8	8	14	401	
4:30 PM	158	10	136	8	6	10	328	729
4:45 PM	192	3	129	3	8	14	349	1078
5:00 PM	194	7	164	12	3	8	388	1466
5:15 PM	209	5	158	6	5	19	402	1467
5:30 PM	193	9	131	10	7	15	365	1504
5:45 PM	189	6	161	6	7	14	383	1538
6:00 PM	163	11	166	9	8	11	368	1518
	1476	56	1233	62	52	105	Total	
	754	31	616	31	27	59	Peak hour Total	

Route 104 W and Culver Road
Thurs

	NBT	NBL	SBT	SBR	WBT	WBL	WBR		
4:00 PM								0	
4:15 PM	197	41	176	47	11	24	97	593	
4:30 PM	180	54	130	53	10	19	88	534	1127
4:45 PM	241	54	221	71	11	28	135	762	1889
5:00 PM	154	25	103	30	6	15	68	401	2290
5:15 PM	203	67	146	44	11	23	114	608	2305
5:30 PM	164	60	165	33	20	33	104	579	2350
5:45 PM	203	62	177	51	12	17	99	621	2209
6:00 PM	199	73	190	50	20	19	93	644	2452
	1541	436	1308	379	101	178	799	Total	
	769	262	678	178	63	92	410	Peak hour Total	

Route 104 E and Culver Road
Thurs

	NBT	NBR	SBT	SBL	EBT	EBL	EBR		
4:00 PM								0	
4:15 PM	210	15	106	94	1	35	39	500	
4:30 PM	190	15	122	114	3	99	65	608	1108
4:45 PM	187	35	118	85	0	52	46	533	1641
5:00 PM	250	31	19	90	1	104	96	591	2232
5:15 PM	265	27	152	126	3	110	69	752	2484
5:30 PM	283	23	123	79	2	126	110	746	2622
5:45 PM	224	24	145	113	3	134	128	771	2860
6:00 PM	464	23	128	114	1	112	108	950	3219
	2073	193	913	815	14	782	661	Total	
	1236	97	548	432	9	482	415	Peak hour Total	

Route 104 W and Medley Centre Pkwy. S (E)
Tues

	WBR	WBT	SBR		
4:00 PM				0	
4:15 PM	13	11	4	28	
4:30 PM	17	8	2	27	55
4:45 PM	7	14	3	24	79
5:00 PM	12	10	5	27	106
5:15 PM	11	8	6	25	103
5:30 PM	7	14	6	27	103
5:45 PM	12	7	6	25	104
6:00 PM	19	14	2	35	112
	98	86	34	Total	
	49	43	20	Peak hour Total	

Route 104 W and Medley Centre Pkwy. S (W)
Tues

	WBR	WBT	SBR		
4:00 PM				0	
4:15 PM	5	10	15	30	
4:30 PM	9	8	9	26	56
4:45 PM	4	15	15	34	90
5:00 PM	8	10	11	29	119
5:15 PM	4	10	28	42	131
5:30 PM	7	12	14	33	138
5:45 PM	4	6	17	27	131
6:00 PM	3	12	13	28	130
	44	83	122	Total	
	18	40	72	Peak hour Total	

Weekday PM Peak Hour Tabulation

Route 104 W and N Goodman St.
Wed

	NBT	NBL	SBT	SBR	WBT	WBL	WBR		
4:00 PM								0	
4:15 PM	121	52	123	65	88	15	61	525	
4:30 PM	159	73	114	61	81	19	68	575	1100
4:45 PM	158	75	127	73	67	12	85	597	1697
5:00 PM	162	81	118	70	95	16	72	614	2311
5:15 PM	156	68	140	68	73	17	54	576	2362
5:30 PM	205	84	127	86	117	15	90	724	2511
5:45 PM	117	77	102	55	61	26	48	486	2400
6:00 PM	144	59	93	49	80	33	96	554	2340
	1222	569	944	527	662	153	574	Total	
	622	288	462	258	331	91	288	Peak hour Total	

Route 104 E and N Goodman St.
Wed

	NBT	NBR	SBT	SBL	EBT	EBL	EBR		
4:00 PM								0	
4:15 PM	158	41	101	67	159	65	58	649	
4:30 PM	221	40	132	66	133	51	74	717	1366
4:45 PM	182	18	111	71	190	70	80	702	2068
5:00 PM	136	21	79	73	141	77	59	586	2654
5:15 PM	152	21	92	75	147	63	61	611	2616
5:30 PM	229	19	115	66	139	77	85	730	2629
5:45 PM	197	29	117	96	206	77	104	826	2753
6:00 PM	248	23	117	119	188	-5	139	829	2996
	1503	212	864	633	1303	475	660	Total	
	826	92	441	356	680	212	389	Peak hour Total	

N Goodman St. and Medley Centre Pkwy W - Tops Plaza
Tues

	NBT	NBL	NBR	SBT	SBL	SBR	EBT	EBL	EBR	WBT	WBL	WBR		
4:00 PM													0	
4:15 PM		23	35		8	7	1	8	26	5	30	20	163	
4:30 PM		34	32		10	7	3	6	23	2	31	15	163	326
4:45 PM		19	35		20	10	2	3	28	5	34	24	180	506
5:00 PM		32	32		6	14	1	4	38	3	29	20	179	685
5:15 PM		14	28		7	7	2	7	27	8	39	21	160	682
5:30 PM		30	37		6	4	4	4	26	0	26	16	153	672
5:45 PM		30	26		10	6	1	3	36	6	34	15	167	659
6:00 PM		36	32		14	7	3	1	29	2	23	17	164	644
	0	218	257	0	81	62	17	36	233	31	246	146	Total	
	0	110	123	0	37	24	10	15	118	16	122	69	Peak hour Total	

Weekend Saturday Peak Hour Tabulation

E Ridge Road and Medley Centre Pkwy N
Tues

	EBR	NBR		
11:00 AM			0	
11:15 AM	30	10	40	
11:30 AM	30	15	45	85
11:45 AM	23	6	29	114
12:00 PM	23	11	34	148
12:15 PM	25	11	36	144
12:30 PM	19	15	34	133
12:45 PM	20	15	35	139
1:00 PM	28	11	39	144
1:15 PM	21	20	41	149
1:30 PM	26	21	47	162
1:45 PM	25	14	39	166
2:00 PM	15	9	24	151
	285	158	Total	
	92	52	Peak hour Total	

E Ridge Road and Arrow Drive
Tues

	EBT	EBR	WBT	WBL	NBL	NBR		
11:00 AM							0	
11:15 AM	188	9	193	22	4	23	439	
11:30 AM	169	11	179	11	12	21	403	842
11:45 AM	193	8	200	19	6	16	443	1285
12:00 PM	171	8	187	12	5	23	406	1691
12:15 PM	183	8	210	13	6	19	439	1691
12:30 PM	142	9	196	14	10	16	387	1675
12:45 PM	197	7	221	12	9	17	463	1695
1:00 PM	214	5	197	11	5	24	456	1745
1:15 PM	169	6	205	20	4	18	422	1728
1:30 PM	188	9	171	8	13	19	408	1747
1:45 PM	178	6	180	11	4	27	406	1690
2:00 PM	186	5	157	7	4	14	353	1587
	2156	91	2296	160	81	239	Total	
	736	29	824	50	30	76	Peak hour Total	

Route 104 W and Culver Road
Thurs

	NBT	NBL	SBT	SBR	WBT	WBL	WBR		
11:00 AM								0	
11:15 AM	72	20	66	22	21	18	57	276	
11:30 AM	163	111	197	57	35	25	81	669	945
11:45 AM	141	50	92	42	19	25	82	451	1396
12:00 PM	65	22	43	15	4	9	22	180	1576
12:15 PM	200	70	210	38	33	26	96	675	1975
12:30 PM	170	70	155	33	18	23	84	553	1859
12:45 PM	125	78	120	42	17	18	76	474	1882
1:00 PM	165	75	205	37	15	25	99	621	2323
1:15 PM	172	70	186	47	22	25	70	592	2240
1:30 PM	146	61	155	29	20	20	74	505	2192
1:45 PM	155	55	180	52	17	28	65	552	2270
2:00 PM	172	78	185	47	22	38	94	636	2285
	1746	758	1794	461	243	282	900	Total	
	660	291	690	150	83	94	355	Peak hour Total	

Route 104 E and Culver Road
Thurs

	NBT	NBR	SBT	SBL	EBT	EBL	EBR		
11:00 AM								0	
11:15 AM		1		9	1	9	4	24	
11:30 AM		19		51	1	42	32	145	169
11:45 AM		12		63	0	51	59	185	354
12:00 PM		24		47	0	56	42	169	523
12:15 PM		21		62	0	77	59	219	718
12:30 PM		24		69	2	75	42	212	785
12:45 PM		21		71	1	60	40	193	793
1:00 PM		12		73	0	57	48	190	814
1:15 PM		22		84	0	60	53	219	814
1:30 PM		19		67	0	60	39	185	787
1:45 PM		18		72	1	49	44	184	778
2:00 PM		23		85	1	65	44	218	806
	0	216	0	753	7	661	506	Total	
	0	78	0	275	3	269	189	Peak hour Total	

Route 104 W and Medley Centre Pkwy. S (E)

	WBR	SBR	WBT		
11:00 AM				0	
11:15 AM	12	1	11	24	
11:30 AM	20	1	23	44	68
11:45 AM	14	2	20	36	104
12:00 PM	18	2	18	38	142
12:15 PM	18	6	20	44	162
12:30 PM	20	3	17	40	158
12:45 PM	8	6	20	34	156
1:00 PM	16	4	24	44	162
1:15 PM	10	3	17	30	148
1:30 PM	21	3	16	40	148
1:45 PM	17	7	18	42	156
2:00 PM	20	5	18	43	155
	194	43	222	Total	
	62	19	81	Peak hour Total	

Route 104 W and Medley Centre Pkwy. S (W)

	WBR	SBR	WBT		
11:00 AM				0	
11:15 AM	7	9	7	23	
11:30 AM	9	11	10	30	53
11:45 AM	6	19	13	38	91
12:00 PM	5	15	14	34	125
12:15 PM	7	13	15	35	137
12:30 PM	9	16	15	40	147
12:45 PM	5	17	15	37	146
1:00 PM	8	12	16	36	148
1:15 PM	4	18	15	37	150
1:30 PM	4	10	13	27	137
1:45 PM	7	18	16	41	141
2:00 PM	7	17	16	40	145
	78	175	165	Total	
	29	58	61	Peak hour Total	

Weekend Saturday Peak Hour Tabulation

Route 104 W and N Goodman St.
Wed

	NBT	NBL	SBT	SBR	WBT	WBL	WBR		
11:00 AM								0	
11:15 AM	85	33	59	38	49	32	18	314	
11:30 AM	123	46	95	40	36	49	16	405	719
11:45 AM	103	34	115	41	40	40	22	395	1114
12:00 PM	74	55	78	42	56	57	30	392	1506
12:15 PM	84	35	82	35	58	56	33	383	1575
12:30 PM	66	38	76	28	44	38	27	317	1487
12:45 PM	69	47	100	29	60	60	36	401	1493
1:00 PM	46	29	76	17	36	40	16	260	1361
1:15 PM	49	43	74	31	60	52	28	337	1315
1:30 PM	45	21	52	20	56	57	32	283	1281
1:45 PM	63	36	84	27	44	33	22	309	1189
2:00 PM	66	26	54	34	37	33	17	267	1196
	873	443	945	382	576	547	297	Total	
	265	149	334	109	198	194	112	Peak hour Total	

Route 104 E and N Goodman St.
Wed

	NBT	NBR	SBT	SBL	EBT	EBL	EBR		
11:00 AM								0	
11:15 AM		8		25	49	26	26	134	
11:30 AM		10		55	74	45	48	232	366
11:45 AM		8		55	71	38	45	217	583
12:00 PM		15		44	72	59	67	257	840
12:15 PM		11		69	78	47	57	262	968
12:30 PM		8		58	72	64	54	254	990
12:45 PM		16		71	59	47	74	267	1040
1:00 PM		14		53	57	58	62	244	1027
1:15 PM		19		65	72	52	57	265	1030
1:30 PM		24		61	68	54	33	240	1016
1:45 PM		18		64	83	46	45	256	1005
2:00 PM		13		69	57	44	55	238	999
	0	164	0	667	812	580	623	Total	
	0	49	0	249	266	216	247	Peak hour Total	

N Goodman St. and Medley Centre Pkwy W - Tops Plaza

	NBT	NBL	NBR	SBT	SBL	SBR	EBT	EBL	EBR	WBT	WBL	WBR		
11:00 AM													0	
11:15 AM			28		17		0			1	17	21	84	
11:30 AM			37		17		3			2	38	31	128	212
11:45 AM			41		13		2			1	38	26	121	333
12:00 PM			22		18		2			4	37	33	116	449
12:15 PM			38		21		7			7	52	28	153	518
12:30 PM			35		14		2			1	31	31	115	505
12:45 PM			42		20		2			4	43	23	134	518
1:00 PM			37		28		2			5	45	18	133	535
1:15 PM			34		17		3			8	50	32	144	526
1:30 PM			25		8		2			7	46	25	113	524
1:45 PM			43		15		3			3	46	17	127	517
2:00 PM			52		10		4			4	34	24	128	512
	0	0	435	0	198	0	32	0	0	47	477	307	Total	
	0	0	153	0	83	0	13	0	0	17	171	98	Peak hour Total	

APPENDIX 5

APPENDIX 5: TRIP GENERATIONS

TRIP GENERATIONS

1. Trip Summary

Trips generated by the theatre are not considered at the weekday midday peak hour since the maximum anticipated traffic of this use does not occur concurrently with the other uses. Trips generated by the office are not considered during the Saturday peak hour since the maximum anticipated traffic of this use does not occur concurrently with the other uses.

Proposed Trip Generations Summary in vehicles per hour (vph): (Peak hour)

	MID	PM	Saturday
Existing Retail	1430	1682	2291
Office (290,000sf)	202	404	0
Restaurant (120,000 sf)	764	899	1304
Residential (330 units)	136	160	138
Total Proposed Retail	2547	2996	4045
Hotel (425 keys)	211	248	295
Theatre (16 screens)	184	368	296
Total	4,044 vph	5,075 vph	6,078 vph

Multi Use credit = 25% (*as explained in body of report.*)

	MID	PM	Saturday
Total	3,033 vph	3,806 vph	4,559 vph

The trip ends illustrated above reflect the anticipated volume of traffic during the peak hour at Medley Centre under full build out.

PA 109

Exiting v. Entering summary:

	MID		PM		SAT	
	Enter	Exit	Enter	Exit	Enter	Exit
Ex. Retail	772	658	807	874	1191	1100
Office	109	93	69	335	0	0
Restaurant	382	382	602	297	769	535
Residential	68	68	107	53	75	63
Total Retail	1375	1172	1438	1558	2103	1942
Hotel	112	99	131	117	165	130
Theatre	99	85	221	147	213	83
Total	**2145**	**1899**	**2568**	**2507**	**3325**	**2753**
- 25%*	**1609**	**1282**	**1926**	**1880**	**2494**	**2065**

** Multiple use credit as explained in body of report.*

3. Trip End Calculations

Office:

Trip Generations were based on land use 710, General Office Building ITE Trip Generation Manual, 7th Edition.

Midday trip generation is taken to be 50% of the PM peak hour traffic generation.

(T) = 0.50(X) → T = 0.50(404)

T = 202 trips (54% entering, 46% exiting)

Weekday P.M. Peak Hour.
X=1000 Sq. Feet Gross Floor Area (290,000)
T=Average Vehicle Trip Ends

T = 1.12(X) + 78.81 → T = 1.12(290) + 78.81

T= 404 trips (17% entering, 83% exiting)

PA 109

Quality Restaurant:

Trip Generations were based on land use 931, Quality Restaurant from the ITE Trip Generation Manual, 7th Edition.

Midday trip generation is taken to be 85% of the PM peak hour traffic generation (shown below) based on the observed ratio of the two peak hours.

(T) = 0.85(X) → T = 0.85(899)
T = 764 trips (50% entering, 50% exiting)

Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.
X=1000 Sq. Feet Gross Leaseable Floor Area (120,000)
T=Average Vehicle Trip Ends

Fitted Curve Equation not given: Use Average Rate (7.49)
(T) = 7.49(X) → T = 7.49(120)
T= 899 trips (67% entering, 33% exiting)

Saturday, Peak Hour of Generator
X=1000 Sq. Feet Gross Leaseable Floor Area (120,000)
T=Average Vehicle Trip Ends

T = 10.87(X) – 0.46 → T = 10.87(120) – 0.46
T= 1304 trips (59% entering, 41% exiting)

Rental Residential:

Trip Generations were based on land use 230, Residential Condominium/Townhouse ITE Trip Generation Manual, 7th Edition.

Midday trip generation is taken to be 85% of the PM peak hour traffic generation based on the observed ratio of the two peak hours.

(T) = 0.85(X) → T = 0.85(160)
T = 136 trips (50% entering, 50% exiting)

Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.
X=Dwelling units (330)
T=Average Vehicle Trip Ends

LN(T) = 0.82 LN(X) + 0.32 → T = e^0.82 LN(330) + 0.32
T= 160 trips (67% entering, 33% exiting)

Saturday, Peak hour of Generator.
X= Dwelling Units (330)
T=Average Vehicle Trip Ends

T = 0.29(X) + 42.63 → T = 0.29(330) + 42.63
T= 138 trips (54% entering, 46% exiting)

Shopping Center:

Trip Generations were based on land use 820, Shopping Center ITE Trip Generation Manual, 7th Edition.

At full design the proposed Medley Centre will occupy 1,600,000 total sf of Retail space. Of this number, 780,000 sf is existing square footage. The following calculations will account for the 15% of space that is currently leased and a conversion (67%) from total square footage to Gross Leasable Area.

1,600,000 sf – 780,000 sf = 820,000 total proposed square footage.

Existing Retail Space Generation:

784,000 s.f. * 0.85 (85% unoccupied) = 666,400 s.f.
666,400 sf * 0.67 leasable area / total area = 446,488 sf GLA

Midday trip generation is taken to be 85% of the PM peak hour traffic generation based on the observed ratio of the two peak hours.

(T) = 0.85(X) → T = 0.85(1,682)
T = 1,430 trips (54% entering, 46% exiting)

Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.
X=1000 Sq. Feet Gross Floor Area (446,488 s.f.) = 447
T=Average Vehicle Trip Ends

LN(T) = 0.66 LN(X) + 3.40 → T = e^0.66 LN(447) + 3.40
T= 1,682 trips (48% entering, 52% exiting)

Saturday, Peak Hour of Generator.
X=1000 Sq. Feet Gross Floor Area (447)
T=Average Vehicle Trip Ends

LN(T) = 0.65 LN(X) + 3.77 → T = e^0.65 LN(447) + 3.77
T= 2,291 trips (52% entering, 48% exiting)

Proposed Retail Space:
1,600,000 sf * 0.67 leasable area / total area = 1,072,000 sf GLA

Midday trip generation is taken to be 85% of the PM peak hour traffic generation based on the observed ratio of the two peak hours.

(T) = 0.85(X) → T = 0.85(2,996)
T = 2,547 trips (54% entering, 46% exiting)

Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.
X=1000 Sq. Feet Gross Floor Area (1,072,000 s.f.) = 1072
T=Average Vehicle Trip Ends

LN(T) = 0.66 LN(X) + 3.40 → T = e^0.66 LN(1072) + 3.40
T= 2,996 trips (48% entering, 52% exiting)

Saturday, Peak Hour of Generator.
X=1000 Sq. Feet Gross Floor Area (550)
T=Average Vehicle Trip Ends

LN(T) = 0.65 LN(X) + 3.77 → T = e^0.65 LN(1072) + 3.77
T= 4,045 trips (52% entering, 48% exiting)

Hotel Trip Generation:

Trip Generations were based on land use 310, Hotel from the ITE Trip Generation Manual, 7th Edition.

Midday trip generation is taken to be 85% of the PM peak hour traffic generation based on the observed ratio of the two peak hours.

(T) = 0.85(X) → T = 0.85(248)
T = 211 trips (53% entering, 47% exiting)

Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.
X=Number of Rooms (421)
T=Average Vehicle Trip Ends

Fitted Curve Equation not given: Use Average Rate (0.59)
T= 248 trips (53% entering, 47% exiting)

Saturday Peak hour of Generator.
X=Number of Rooms (421)
T=Average Vehicle Trip Ends

(T) = 0.69(X) + 4.32 → T = 0.69(421) + 4.32
T= 295 trips (56% entering, 44% exiting)

Theatre:

Trip Generations were based on land use 445, Multiplex Movie Theatre ITE Trip Generation Manual, 7th Edition.

Midday trip generation is taken to be 50% of the PM peak hour traffic generation.

(T) = 0.50(X) → T = 0.50(368)
T = 184 trips (54% entering, 46% exiting)

Weekday, Peak hour of adjacent street traffic 1 hour between 4 and 6 pm.
X=Movie Screens (16)
T=Average Vehicle Trip Ends

Fitted Curve Equation not given: Use Average Rate (23.02)
T= 368 trips (60% entering, 40% exiting)

Saturday, Peak hour of adjacent street traffic 1 hour between 11 am and 1 pm.
X=Movie Screens (16)
T=Average Vehicle Trip Ends

T = 30.28(X) – 188.62 → T = 30.82(16) – 188.62
T= 296 trips (72% entering, 28% exiting)

General Office Building
(710)

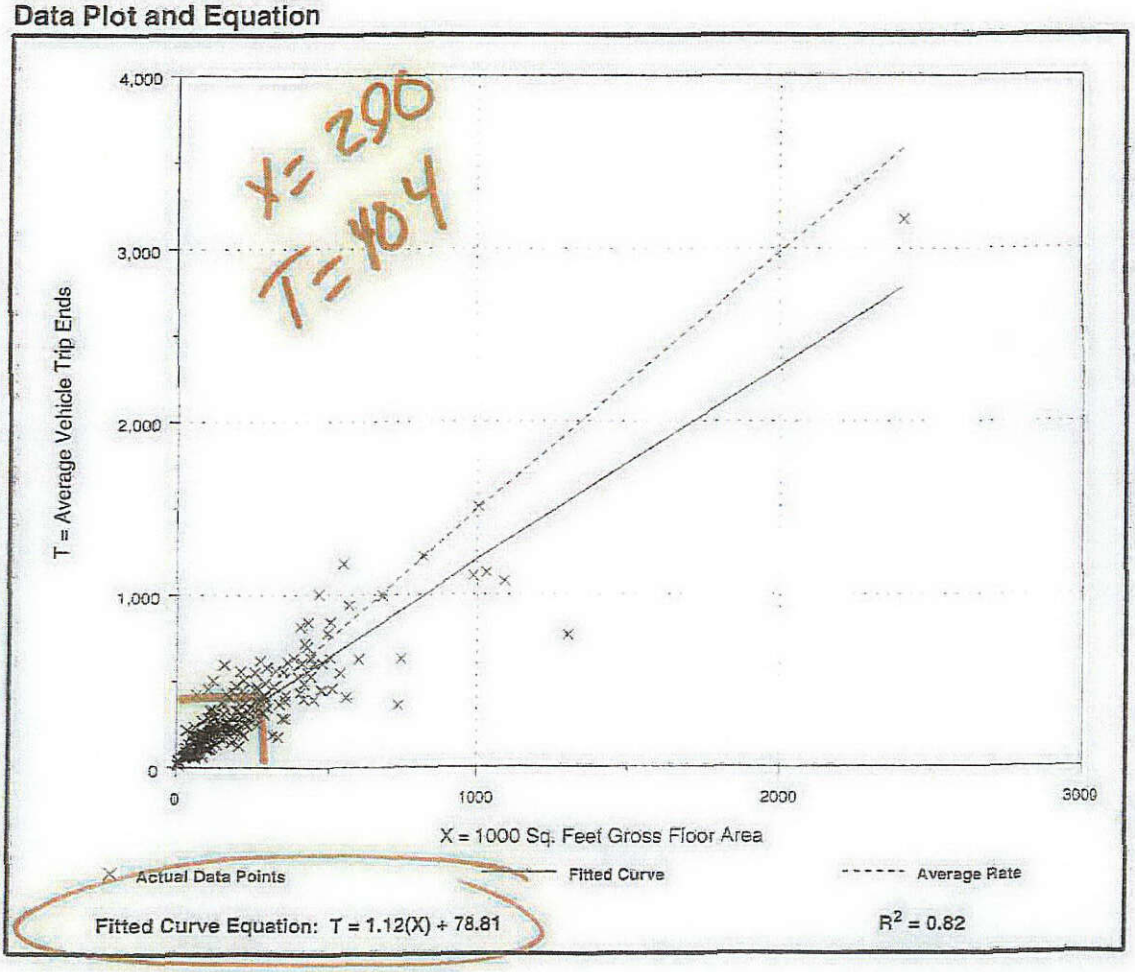
Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area
On a: Weekday,
P.M. Peak Hour

Number of Studies: 235
Average 1000 Sq. Feet GFA: 216
Directional Distribution: 17% entering, 83% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
1.49	0.49 - 6.39	1.37

Data Plot and Equation



Quality Restaurant
(931)

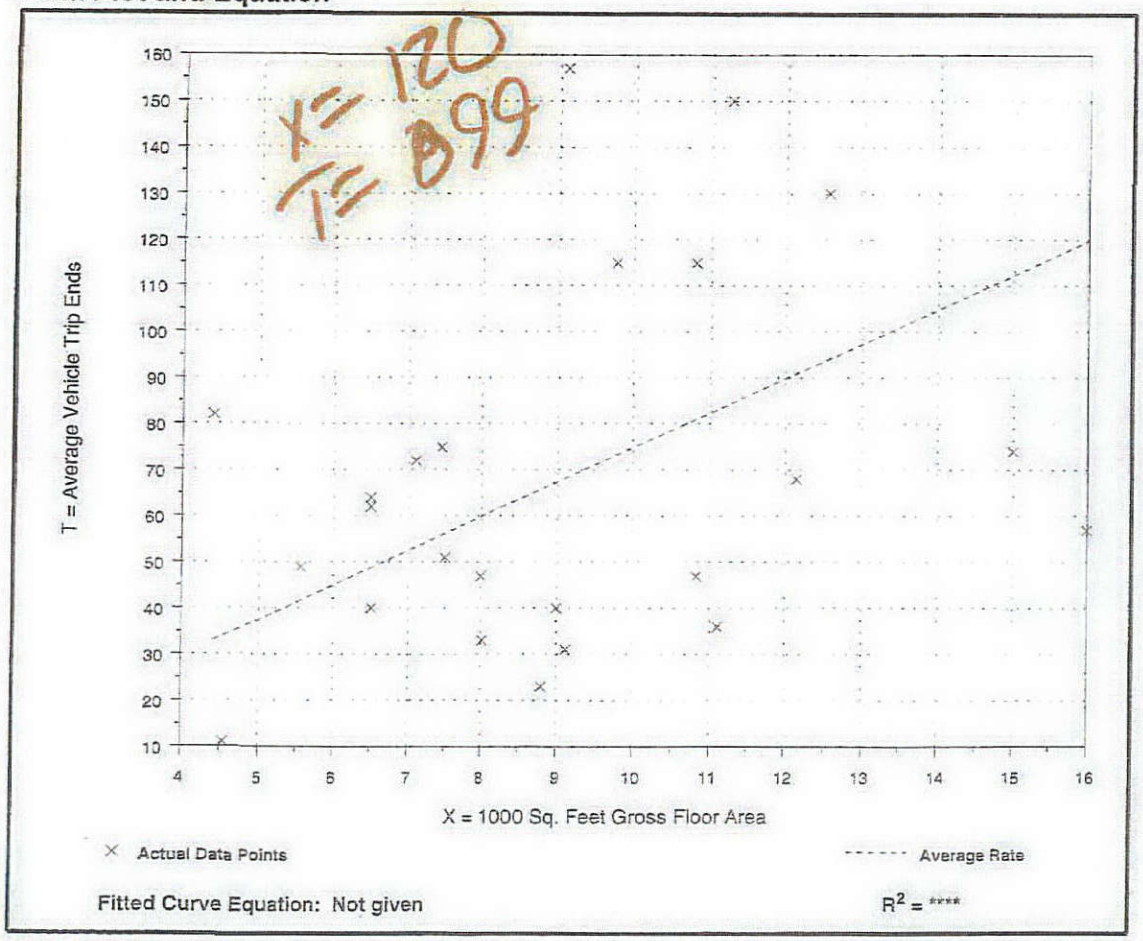
Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Number of Studies: 24
Average 1000 Sq. Feet GFA: 9
Directional Distribution: 67% entering, 33% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
7.49	2.42 - 18.64	4.89

Data Plot and Equation



Quality Restaurant
(931)

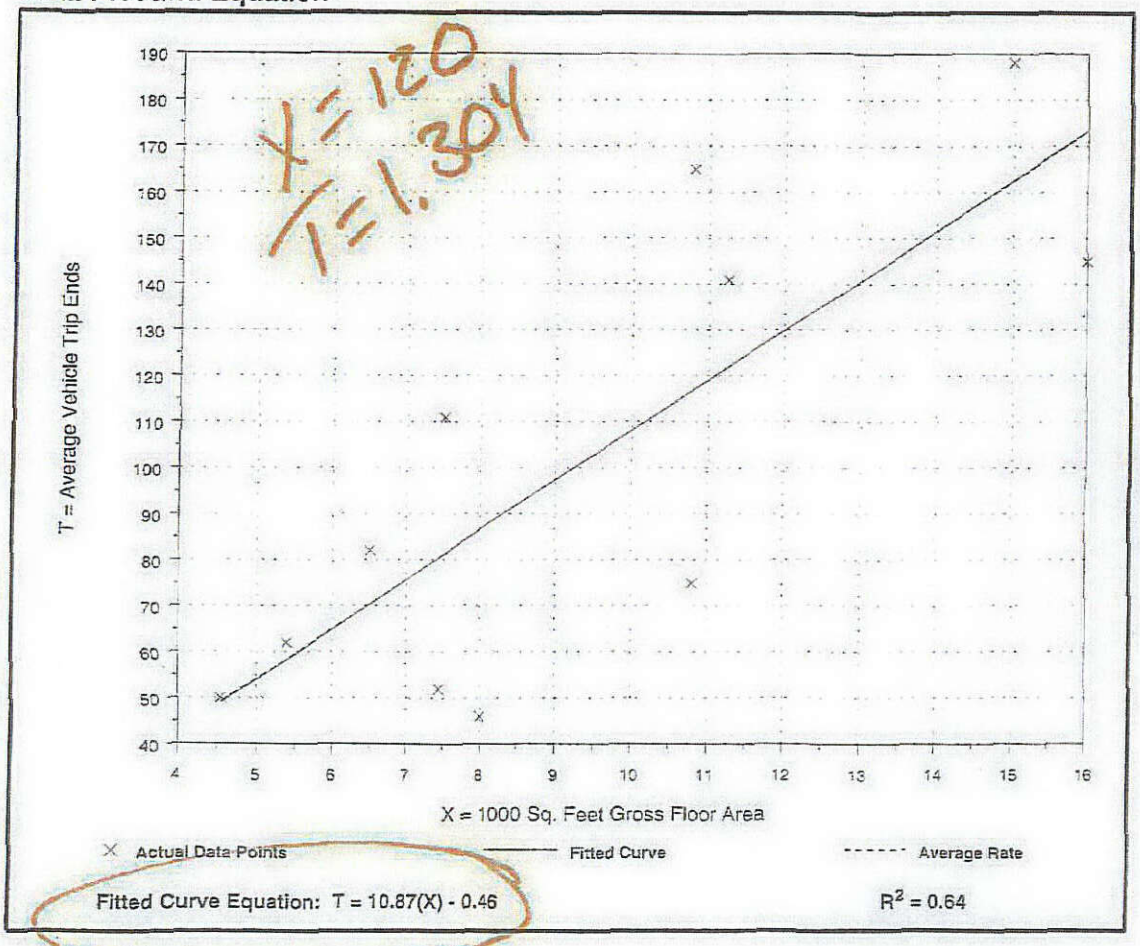
Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area
On a: Saturday,
Peak Hour of Generator

Number of Studies: 11
Average 1000 Sq. Feet GFA: 9
Directional Distribution: 59% entering, 41% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
10.82	5.75 - 15.28	4.38

Data Plot and Equation



Residential Condominium/Townhouse
(230)

11

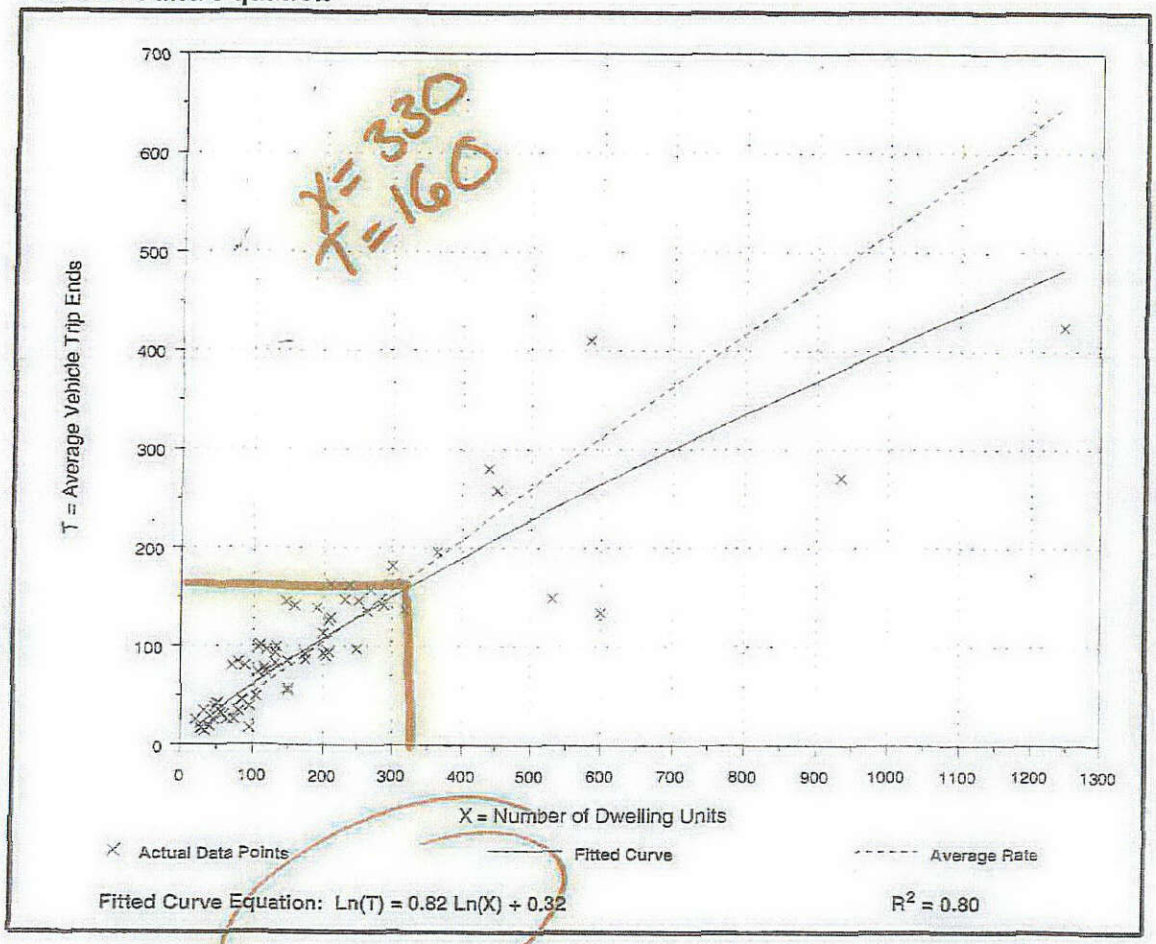
Average Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Number of Studies: 62
Avg. Number of Dwelling Units: 205
Directional Distribution: 67% entering, 33% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.52	0.18 - 1.24	0.75

Data Plot and Equation



Residential Condominium/Townhouse
(230)

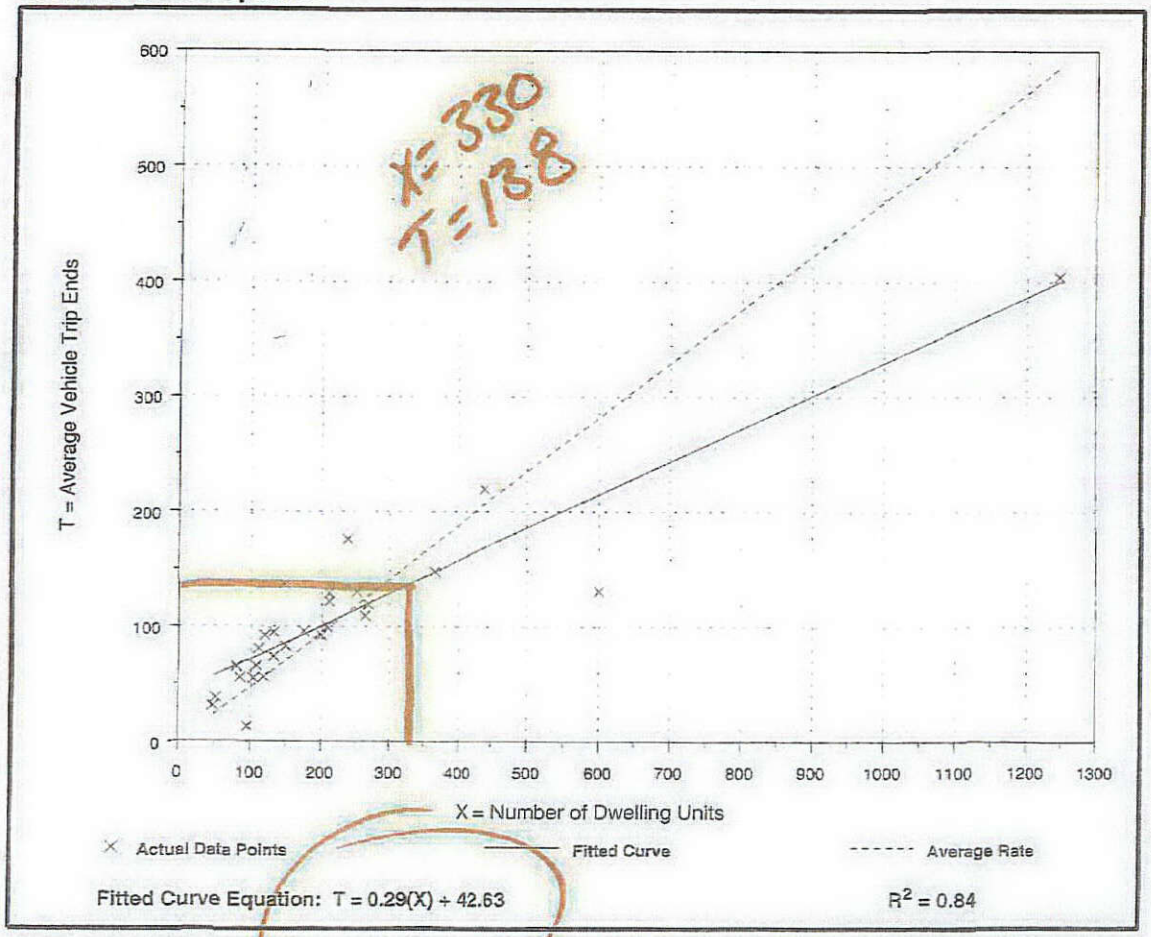
Average Vehicle Trip Ends vs: Dwelling Units
On a: Saturday,
Peak Hour of Generator

Number of Studies: 27
Avg. Number of Dwelling Units: 228
Directional Distribution: 54% entering, 46% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.47	0.14 - 0.93	0.71

Data Plot and Equation



Exhibit

Shopping Center
(820)

Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Leasable Area
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

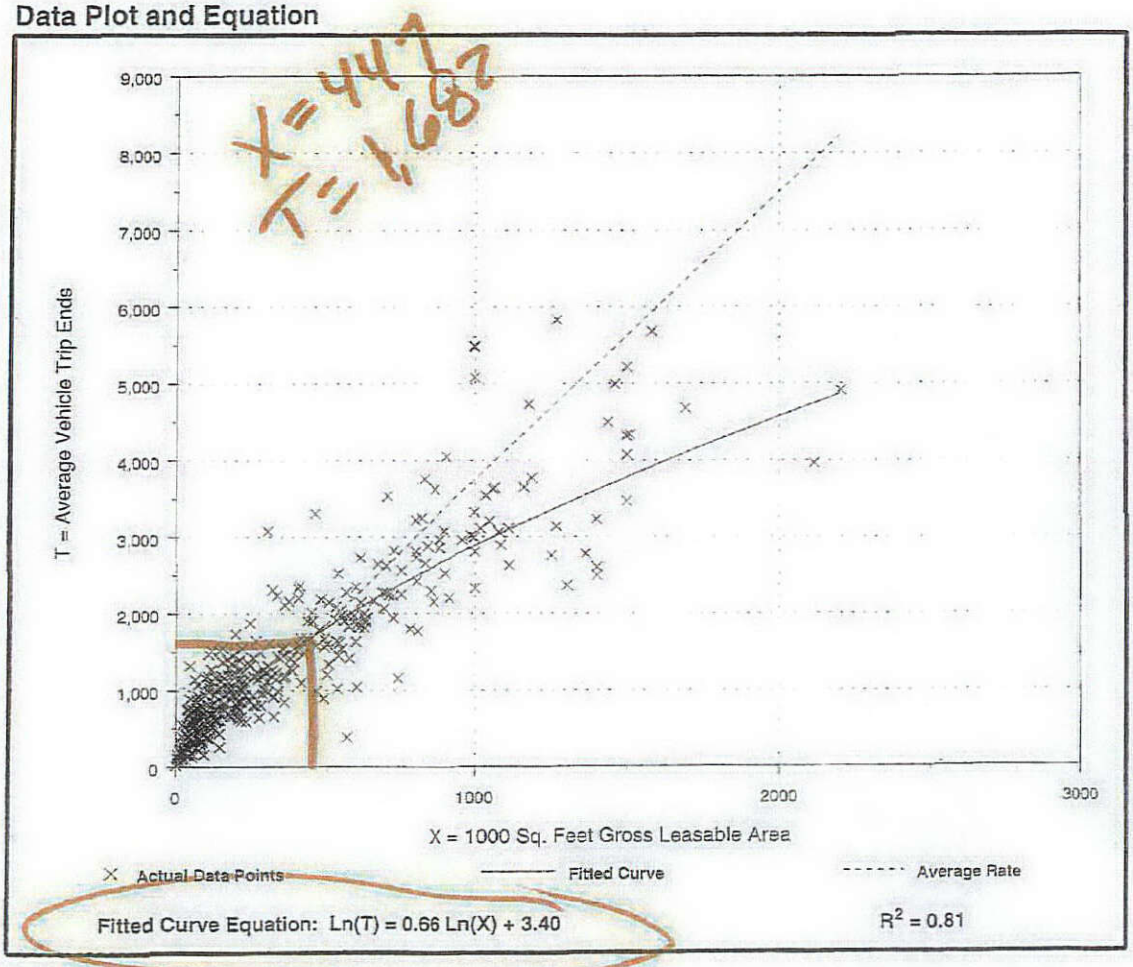
Number of Studies: 407
Average 1000 Sq. Feet GLA: 379
Directional Distribution: 48% entering, 52% exiting

Trip Generation per 1000 Sq. Feet Gross Leasable Area

Average Rate	Range of Rates	Standard Deviation
3.75	0.68 - 29.27	2.75

Data Plot and Equation

X = 44.7
T = 168



COST

Shopping Center
(820)

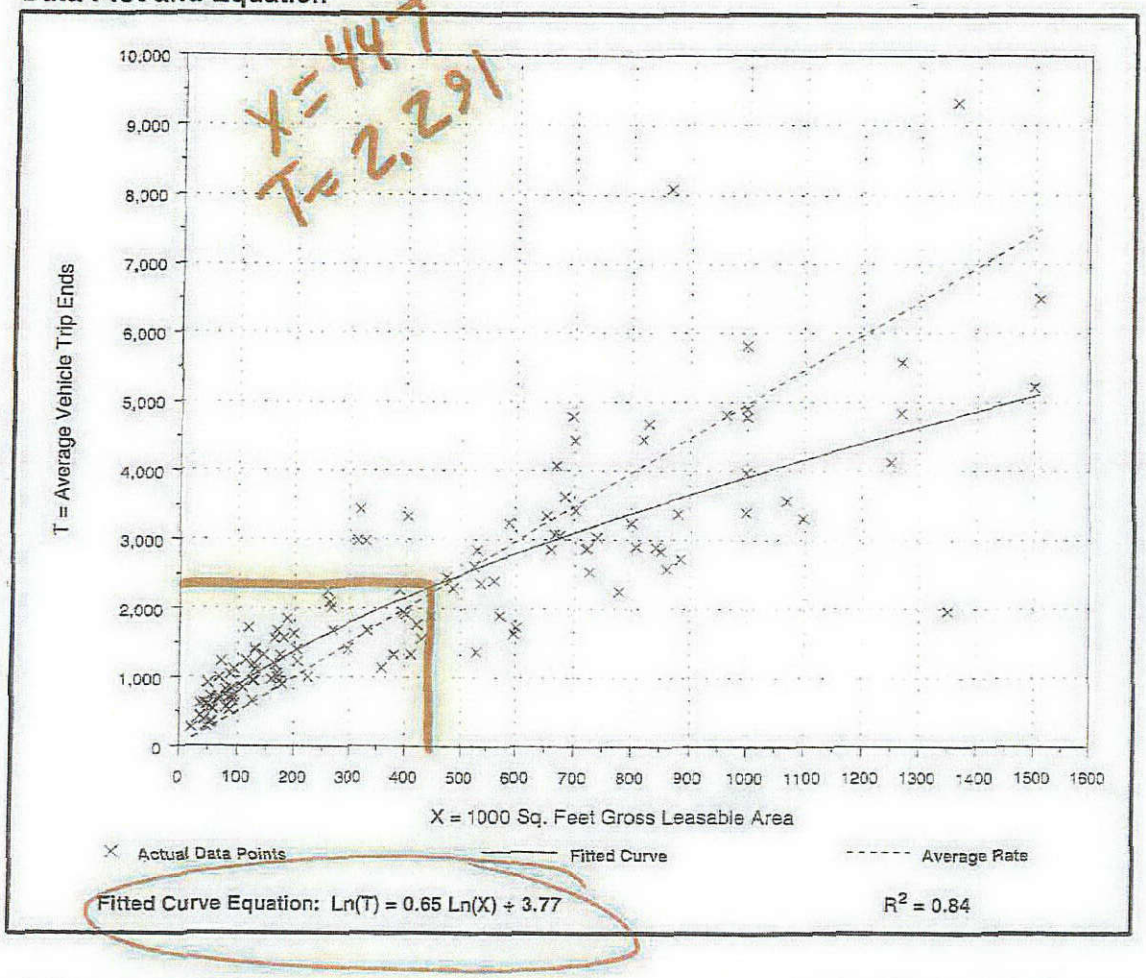
Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Leasable Area
On a: Saturday,
Peak Hour of Generator

Number of Studies: 124
Average 1000 Sq. Feet GLA: 447
Directional Distribution: 52% entering, 48% exiting

Trip Generation per 1000 Sq. Feet Gross Leasable Area

Average Rate	Range of Rates	Standard Deviation
4.97	1.46 - 18.32	3.11

Data Plot and Equation



Prop

Shopping Center
(820)

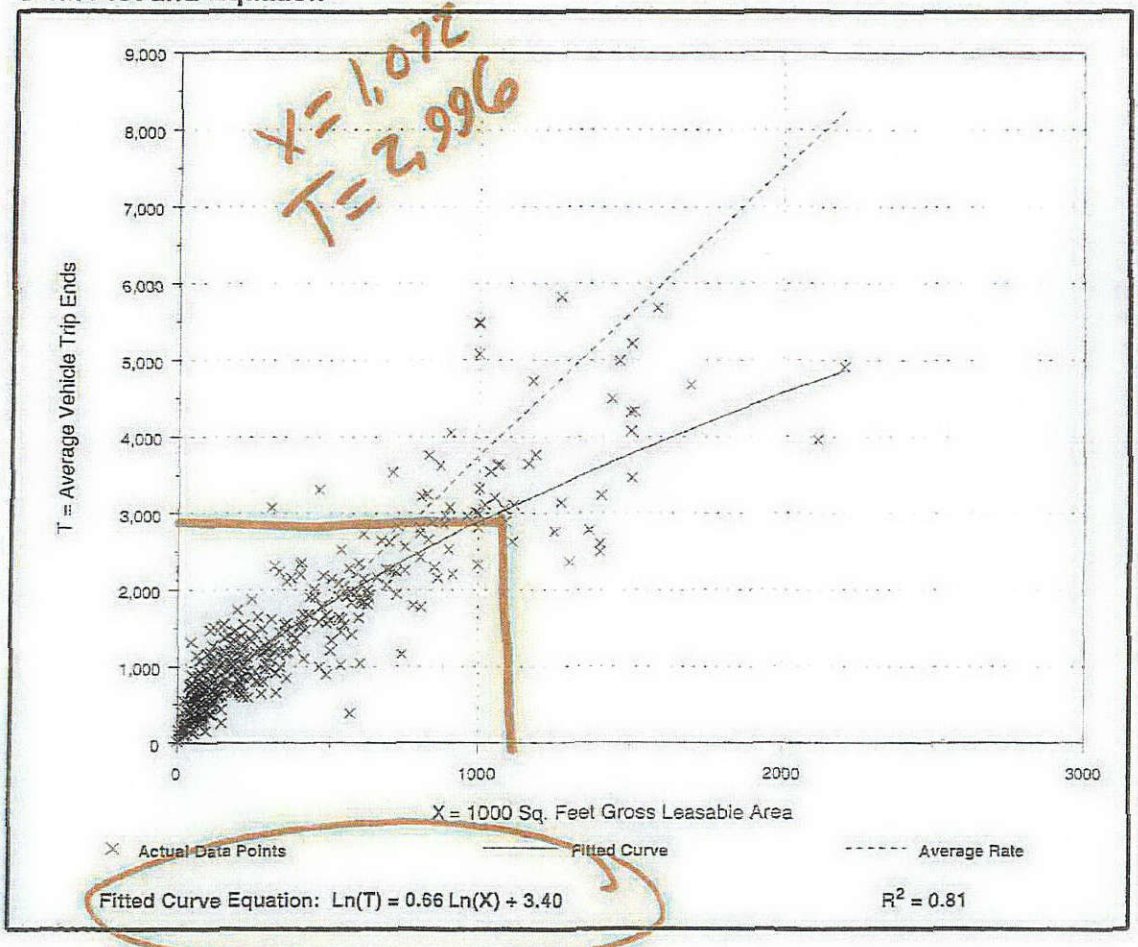
Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Leasable Area
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Number of Studies: 407
Average 1000 Sq. Feet GLA: 379
Directional Distribution: 48% entering, 52% exiting

Trip Generation per 1000 Sq. Feet Gross Leasable Area

Average Rate	Range of Rates	Standard Deviation
3.75	0.68 - 29.27	2.75

Data Plot and Equation



PLOT

Shopping Center
(820)

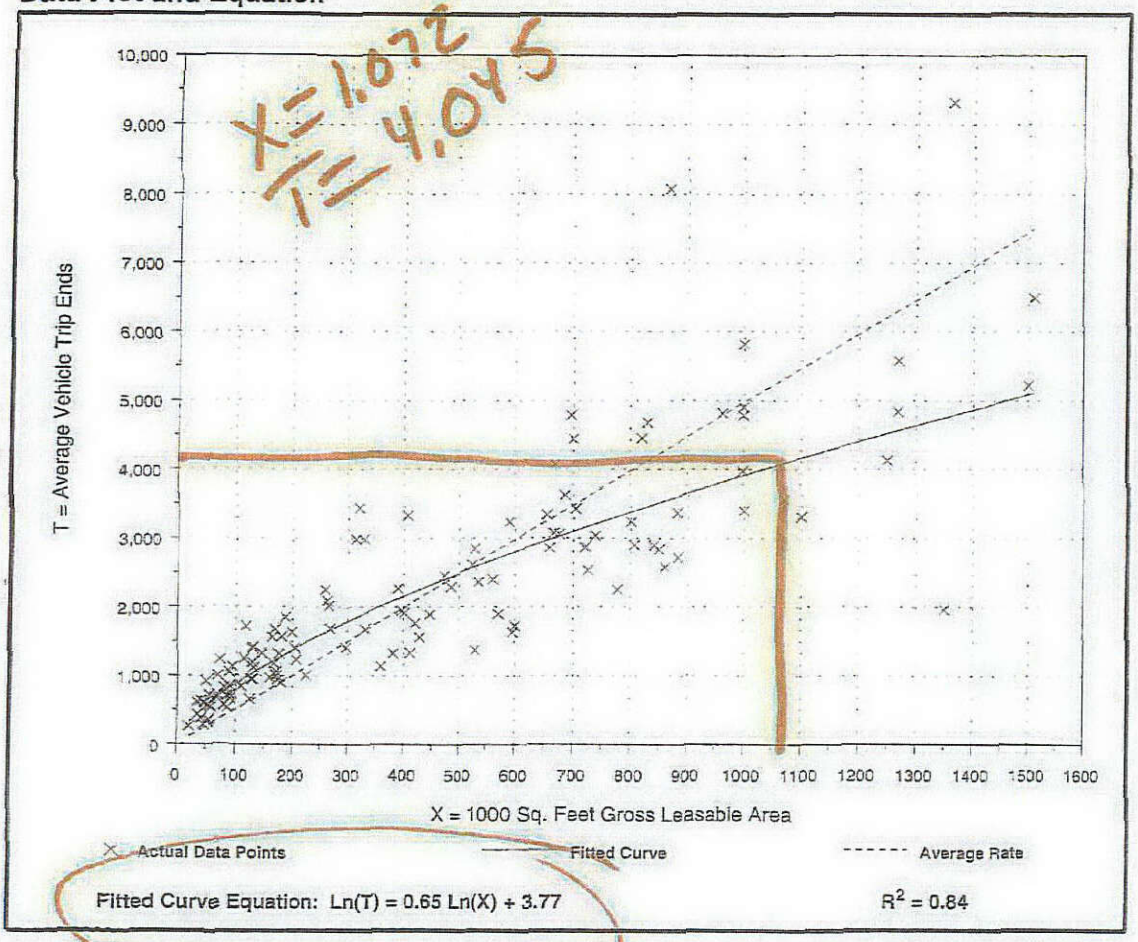
Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Leasable Area
On a: Saturday,
Peak Hour of Generator

Number of Studies: 124
Average 1000 Sq. Feet GLA: 447
Directional Distribution: 52% entering, 48% exiting

Trip Generation per 1000 Sq. Feet Gross Leasable Area

Average Rate	Range of Rates	Standard Deviation
4.97	1.46 - 18.32	3.11

Data Plot and Equation



Hotel
(310)

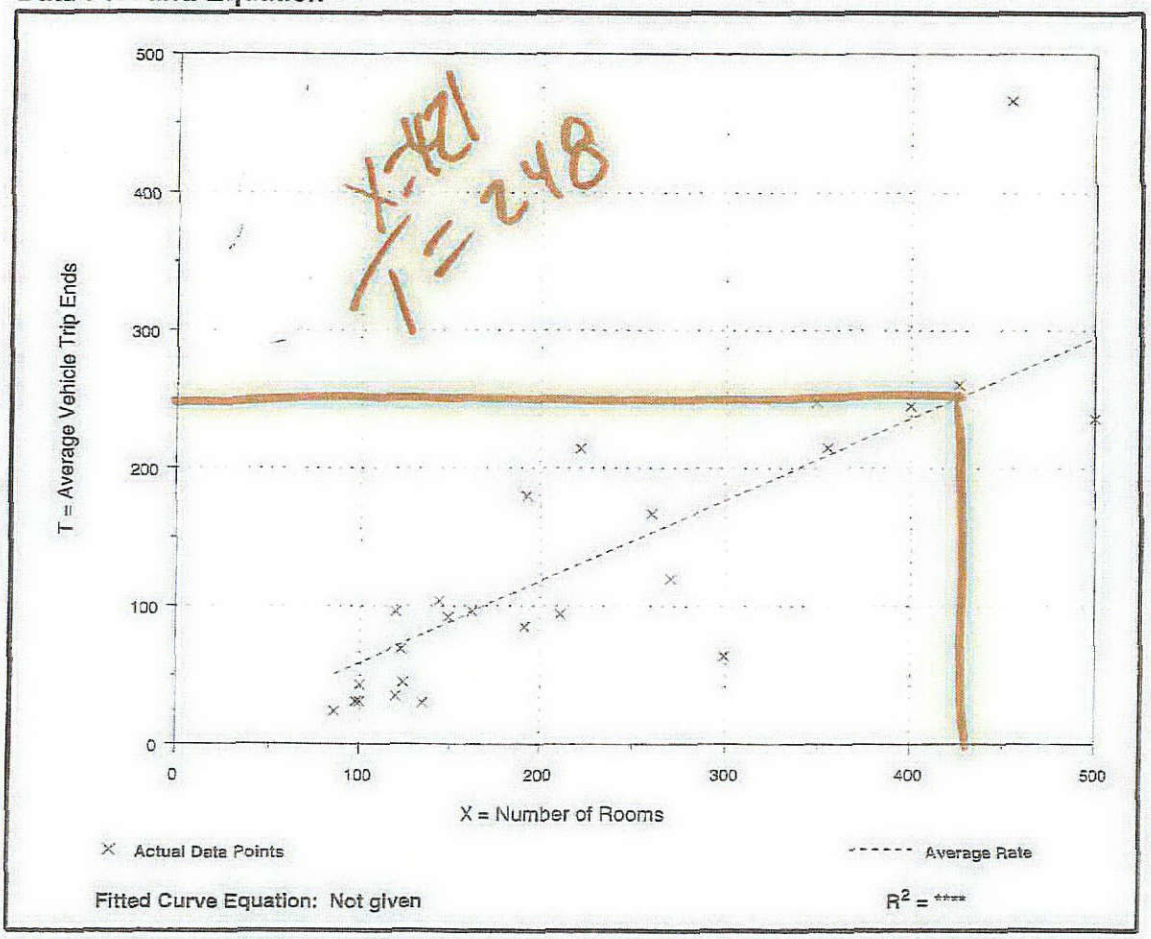
Average Vehicle Trip Ends vs: Rooms
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Number of Studies: 25
Average Number of Rooms: 224
Directional Distribution: 53% entering, 47% exiting

Trip Generation per Room

Average Rate	Range of Rates	Standard Deviation
0.59	0.21 - 1.03	0.80

Data Plot and Equation



Hotel
(310)

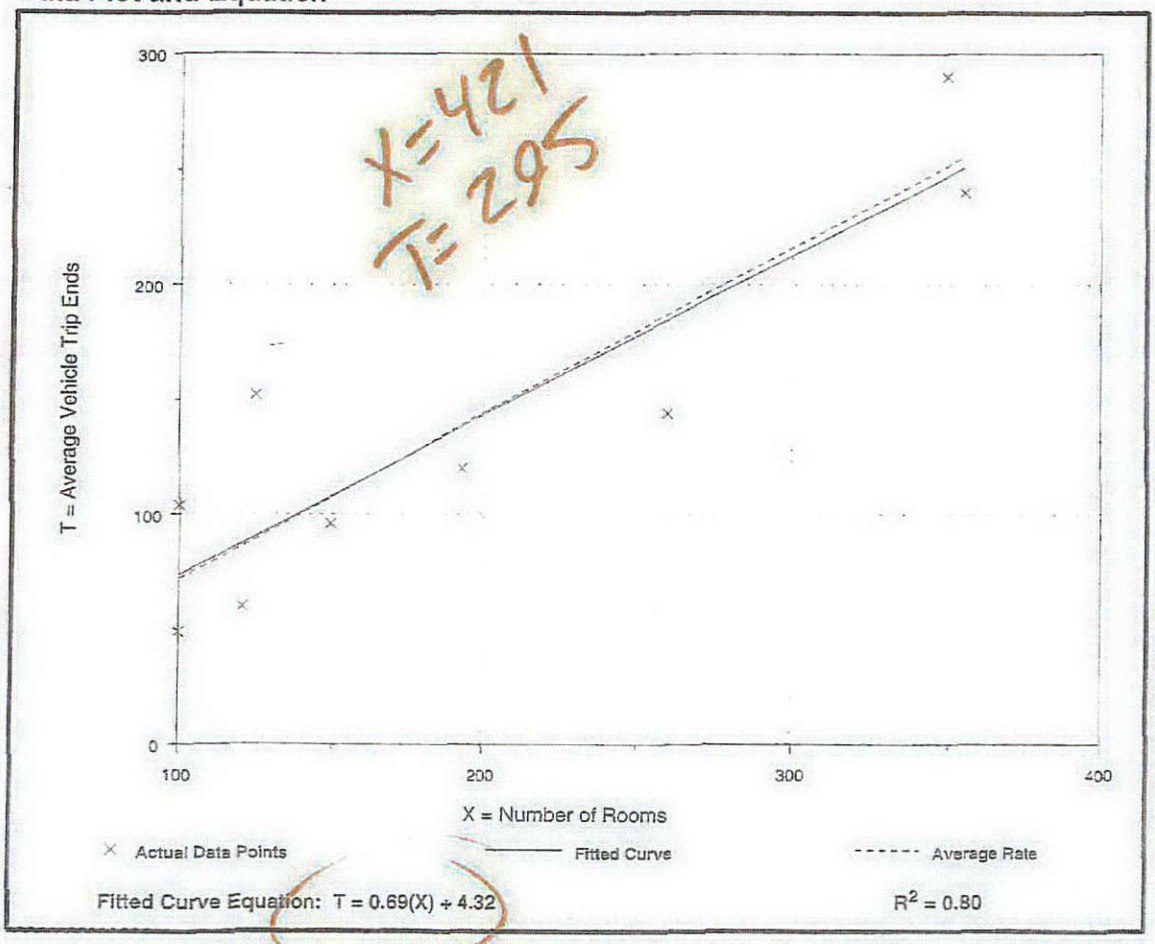
Average Vehicle Trip Ends vs: Rooms
On a: Saturday,
Peak Hour of Generator

Number of Studies: 9
Average Number of Rooms: 194
Directional Distribution: 56% entering, 44% exiting

Trip Generation per Room

Average Rate	Range of Rates	Standard Deviation
0.72	0.49 - 1.23	0.87

Data Plot and Equation



Multiplex Movie Theater
(445)

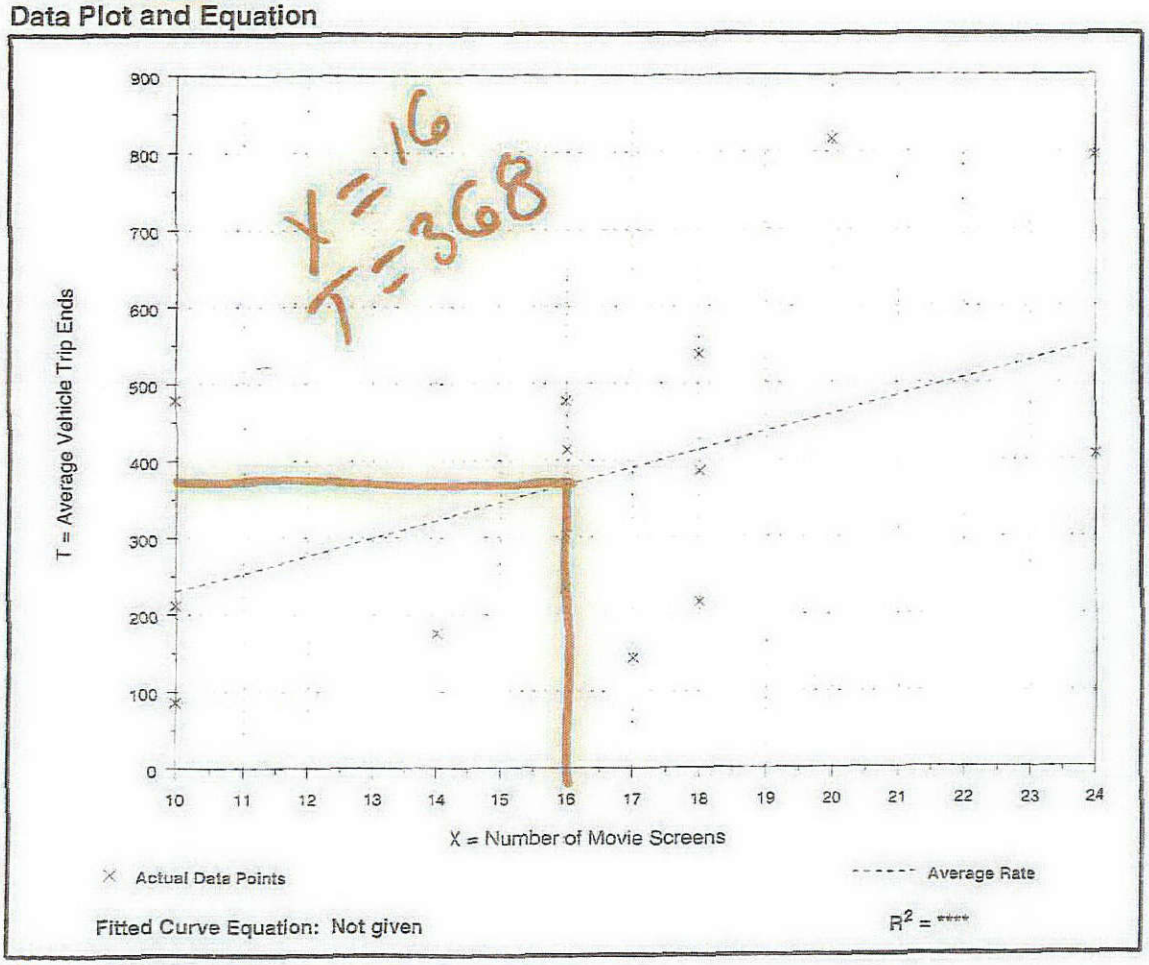
Average Vehicle Trip Ends vs: Movie Screens
On a: Friday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Number of Studies: 15
Average Number of Movie Screens: 16
Directional Distribution: 60% entering, 40% exiting

Trip Generation per Movie Screen

Average Rate	Range of Rates	Standard Deviation
23.02	8.41 - 47.90	11.72

Data Plot and Equation



Multiplex Movie Theater
(445)

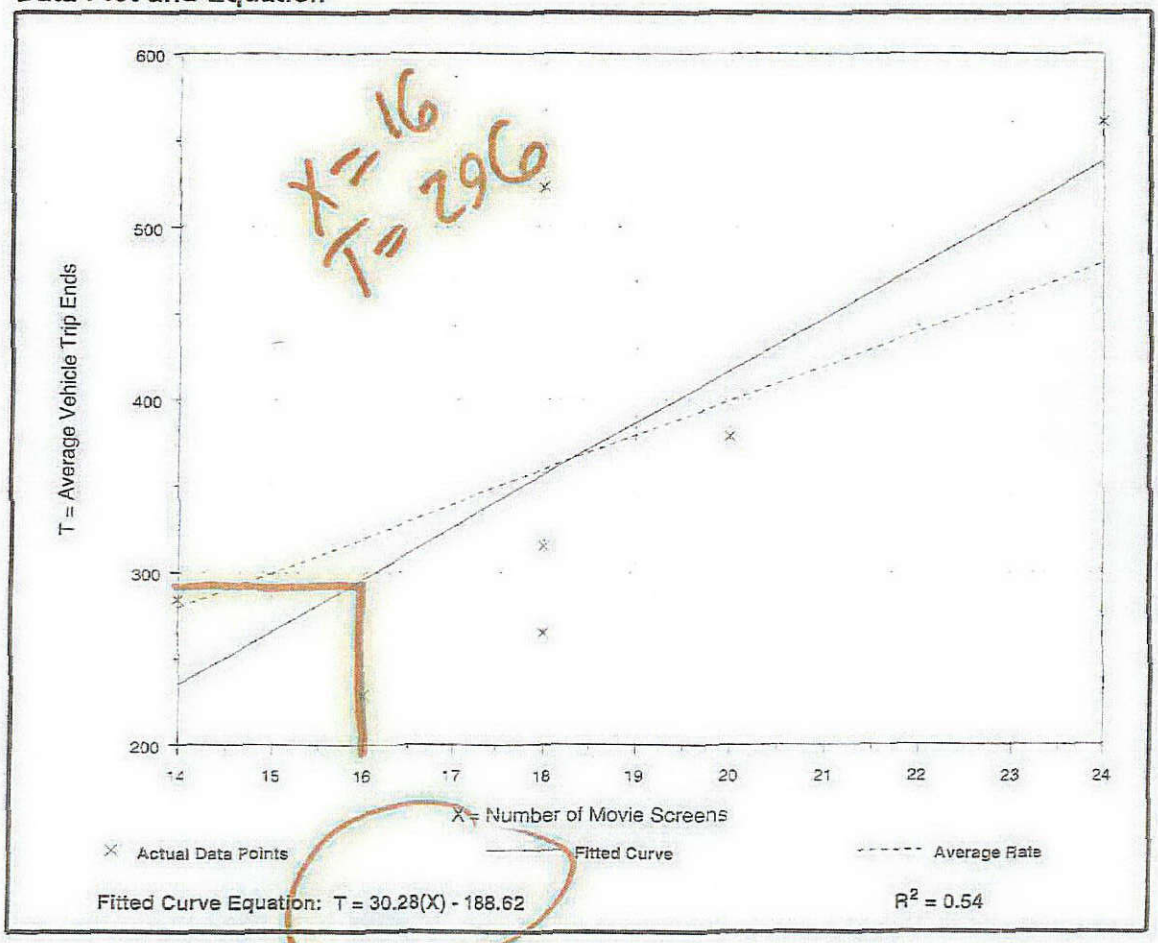
Average Vehicle Trip Ends vs: Movie Screens
On a: Saturday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 11 a.m. and 1 p.m.

Number of Studies: 7
Average Number of Movie Screens: 18
Directional Distribution: 72% entering, 28% exiting

Trip Generation per Movie Screen

Average Rate	Range of Rates	Standard Deviation
19.97	14.31 - 29.06	6.47

Data Plot and Equation



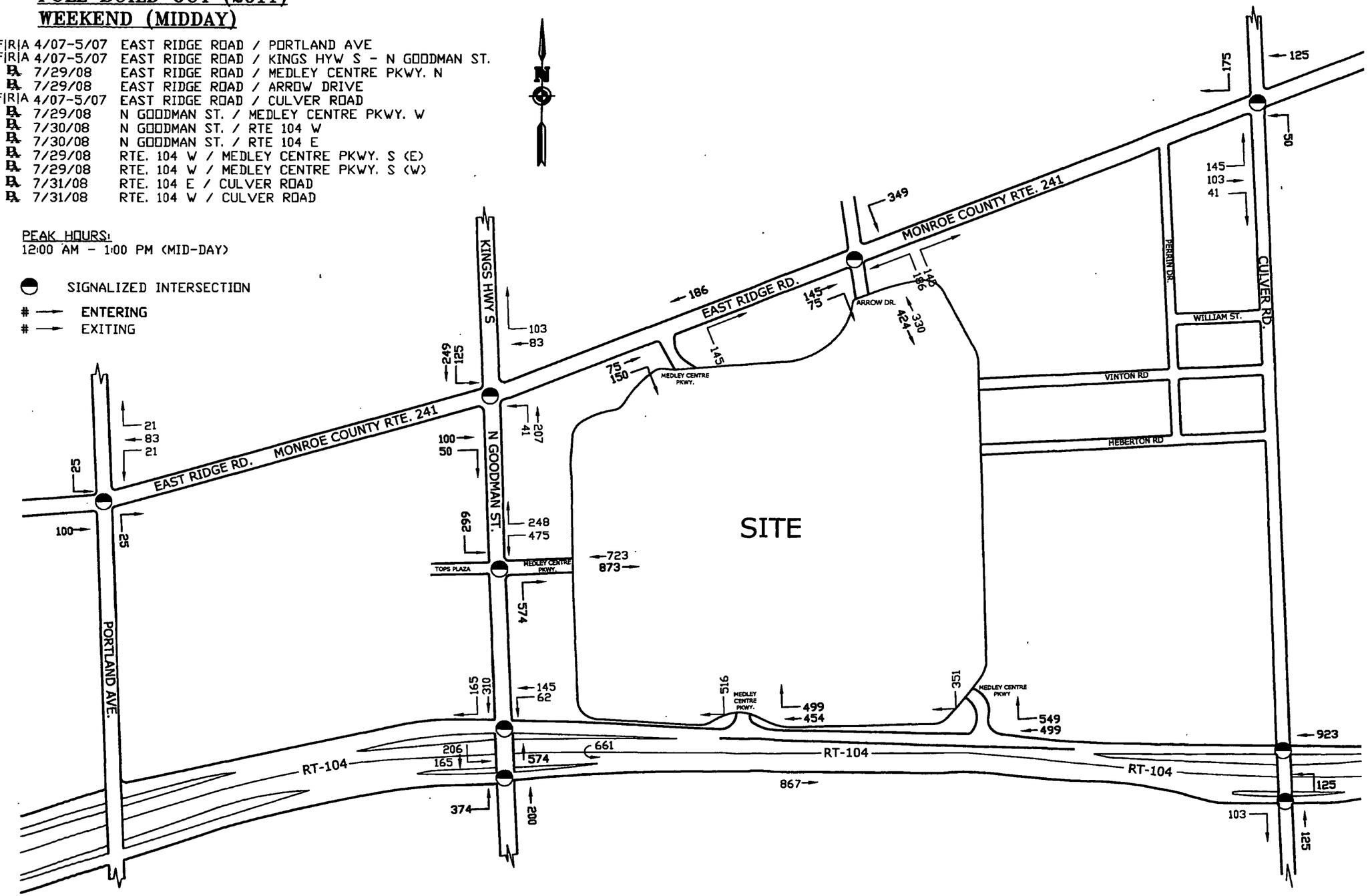
X = 16
T = 296

TRIP GENERATION (VEHICLES)
FULL BUILD OUT (2011)
WEEKEND (MIDDAY)

F|R|A	4/07-5/07	EAST RIDGE ROAD / PORTLAND AVE
F|R|A	4/07-5/07	EAST RIDGE ROAD / KINGS HYW S - N GOODMAN ST.
B.A.	7/29/08	EAST RIDGE ROAD / MEDLEY CENTRE PKWY. N
B.A.	7/29/08	EAST RIDGE ROAD / ARROW DRIVE
F|R|A	4/07-5/07	EAST RIDGE ROAD / CULVER ROAD
B.A.	7/29/08	N GOODMAN ST. / MEDLEY CENTRE PKWY. W
B.A.	7/30/08	N GOODMAN ST. / RTE 104 W
B.A.	7/30/08	N GOODMAN ST. / RTE 104 E
B.A.	7/29/08	RTE. 104 W / MEDLEY CENTRE PKWY. S (E)
B.A.	7/29/08	RTE. 104 W / MEDLEY CENTRE PKWY. S (W)
B.A.	7/31/08	RTE. 104 E / CULVER ROAD
B.A.	7/31/08	RTE. 104 W / CULVER ROAD

PEAK HOURS:
12:00 AM - 1:00 PM (MID-DAY)

SIGNALIZED INTERSECTION
ENTERING
EXITING



Revisions

No.	Date	By	Description

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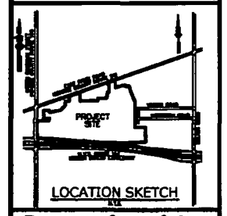


LOCATION SKETCH
N.T.S.

Passero Associates
120 Liberty Pole Way, Rochester, NY 14604
(585) 325-1000
Fax: (585) 325-1691
Principal-in-Charge: John F. Caruso, P.E.
Project Manager: JFC
Designed by: Jess D. Sudol

Gilberti Stinziano Heintz & Smith, P.C.
555 East Genesee St.
Syracuse, NY 13202
Phone: 315-442-0100

Traffic Analysis

Medley Centre
Trip Generation
Wkend (vehs)

Town of Irondequoit, Monroe County, New York

Project No.: 2008512.01
Drawing No.: T 5-2b
Sheet No.: 10
Scale: N.T.S.
Date: July 2008

TRIP GENERATION (VEHICLES)
FULL BUILD OUT (2011)
WEEKDAY (MIDDAY-PM)

F|R|A	4/07-5/07	EAST RIDGE ROAD / PORTLAND AVE
F|R|A	4/07-5/07	EAST RIDGE ROAD / KINGS HYW S - N GOODMAN ST.
R A	7/29/08	EAST RIDGE ROAD / MEDLEY CENTRE PKWY. N
R A	7/29/08	EAST RIDGE ROAD / ARROW DRIVE
F|R|A	4/07-5/07	EAST RIDGE ROAD / CULVER ROAD
R A	7/29/08	N GOODMAN ST. / MEDLEY CENTRE PKWY. W
R A	7/30/08	N GOODMAN ST. / RTE 104 W
R A	7/30/08	N GOODMAN ST. / RTE 104 E
R A	7/29/08	RTE. 104 W / MEDLEY CENTRE PKWY. S (E)
R A	7/29/08	RTE. 104 W / MEDLEY CENTRE PKWY. S (W)
R A	7/31/08	RTE. 104 E / CULVER ROAD
R A	7/31/08	RTE. 104 W / CULVER ROAD

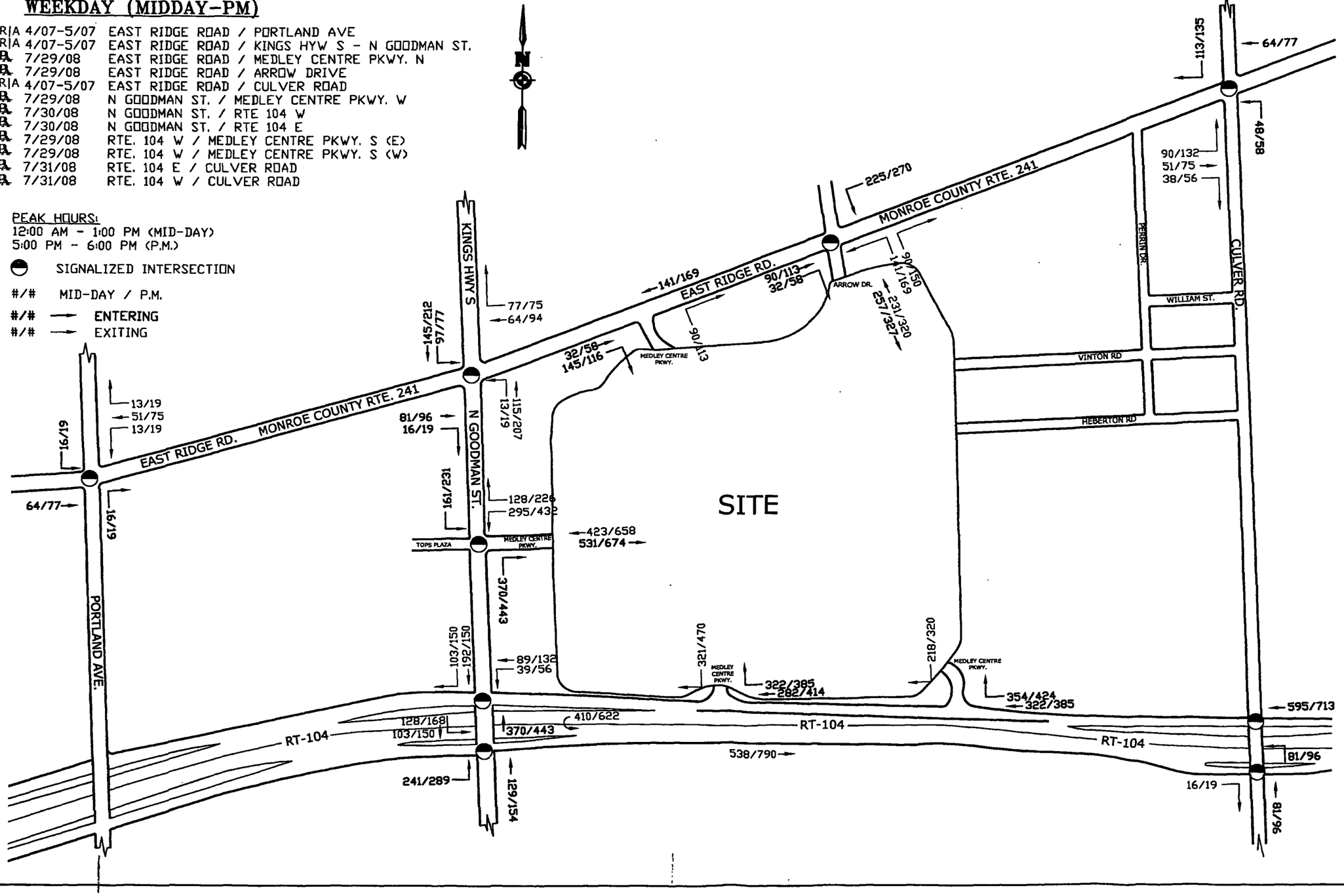
PEAK HOURS:
12:00 AM - 1:00 PM (MID-DAY)
5:00 PM - 6:00 PM (P.M.)

SIGNALIZED INTERSECTION

#/# MID-DAY / P.M.

#/# → ENTERING

#/# → EXITING



Revisions
No. | Date | By | Description

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LOCATION SKETCH

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Project Manager: JFC
Designed by: Jess D. Sudol

Gilberti Stinziano Heintz & Smith, P.C.
555 East Genesee St.
Syracuse, NY 13202
Phone: 315-442-0100

Traffic Analysis

Medley Centre
Trip Generation
Wkday (vehs)

Town of Irondequoit, Monroe County, New York

Project No. 2008512.01

Drawing No. T 5-1b | Sheet No. 9

Scale: N.T.S.

Date: July 2008

APPENDIX 6

APPENDIX 6: TRIP DISTRIBUTIONS

TRIP DISTRIBUTON (%)
WEEKDAY (MIDDAY-PM)

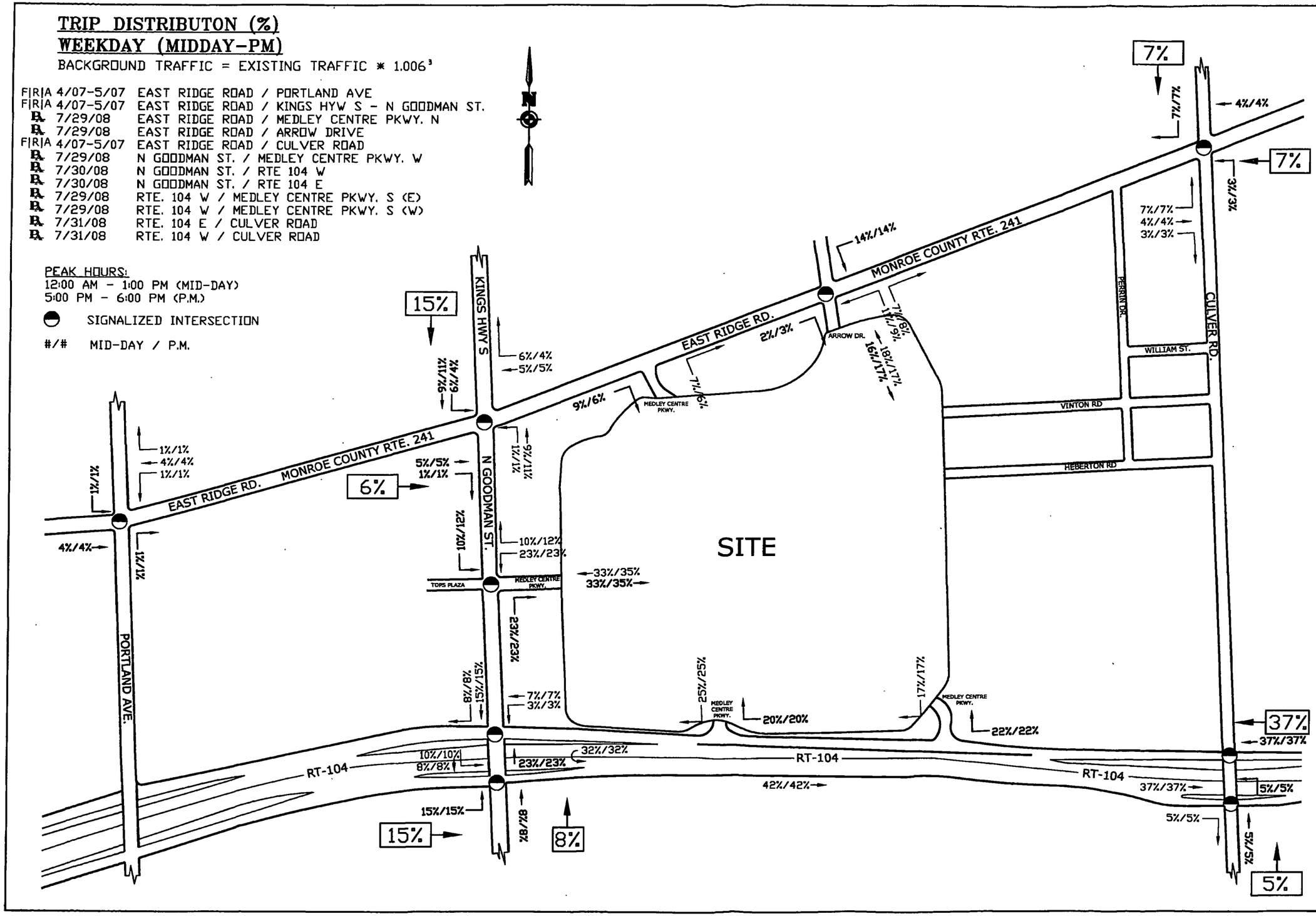
BACKGROUND TRAFFIC = EXISTING TRAFFIC * 1.006[3]

F|R|A	4/07-5/07	EAST RIDGE ROAD / PORTLAND AVE
F|R|A	4/07-5/07	EAST RIDGE ROAD / KINGS HYW S - N GOODMAN ST.
B.A.	7/29/08	EAST RIDGE ROAD / MEDLEY CENTRE PKWY. N
B.A.	7/29/08	EAST RIDGE ROAD / ARROW DRIVE
F|R|A	4/07-5/07	EAST RIDGE ROAD / CULVER ROAD
B.A.	7/29/08	N GOODMAN ST. / MEDLEY CENTRE PKWY. W
B.A.	7/30/08	N GOODMAN ST. / RTE 104 W
B.A.	7/30/08	N GOODMAN ST. / RTE 104 E
B.A.	7/29/08	RTE. 104 W / MEDLEY CENTRE PKWY. S (E)
B.A.	7/29/08	RTE. 104 W / MEDLEY CENTRE PKWY. S (W)
B.A.	7/31/08	RTE. 104 E / CULVER ROAD
B.A.	7/31/08	RTE. 104 W / CULVER ROAD

PEAK HOURS:
12:00 AM - 1:00 PM (MID-DAY)
5:00 PM - 6:00 PM (P.M.)

SIGNALIZED INTERSECTION

#/# MID-DAY / P.M.



B.A.

Revisions

No.	Date	By	Description

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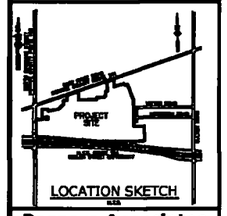

LOCATION SKETCH

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Principal-in-Charge	John F. Caruso, P.E.
Project Manager	JFC
Designed by	Jess D. Sudol

Gilberti Stinziano Heintz & Smith, P.C.
555 East Genesee St.
Syracuse, NY 13202
Phone: 315-442-0100

Traffic Analysis

Medley Centre
Trip Distribution
Wkday (%)

Town of Irondequoit, Monroe County, New York

Project No.	2008512.01
Drawing No.	T-3a
Sheet No.	
Scale:	N.T.S.
Date	July 2008

TRIP DISTRIBUTON (%)
WEEKEND (MIDDAY)

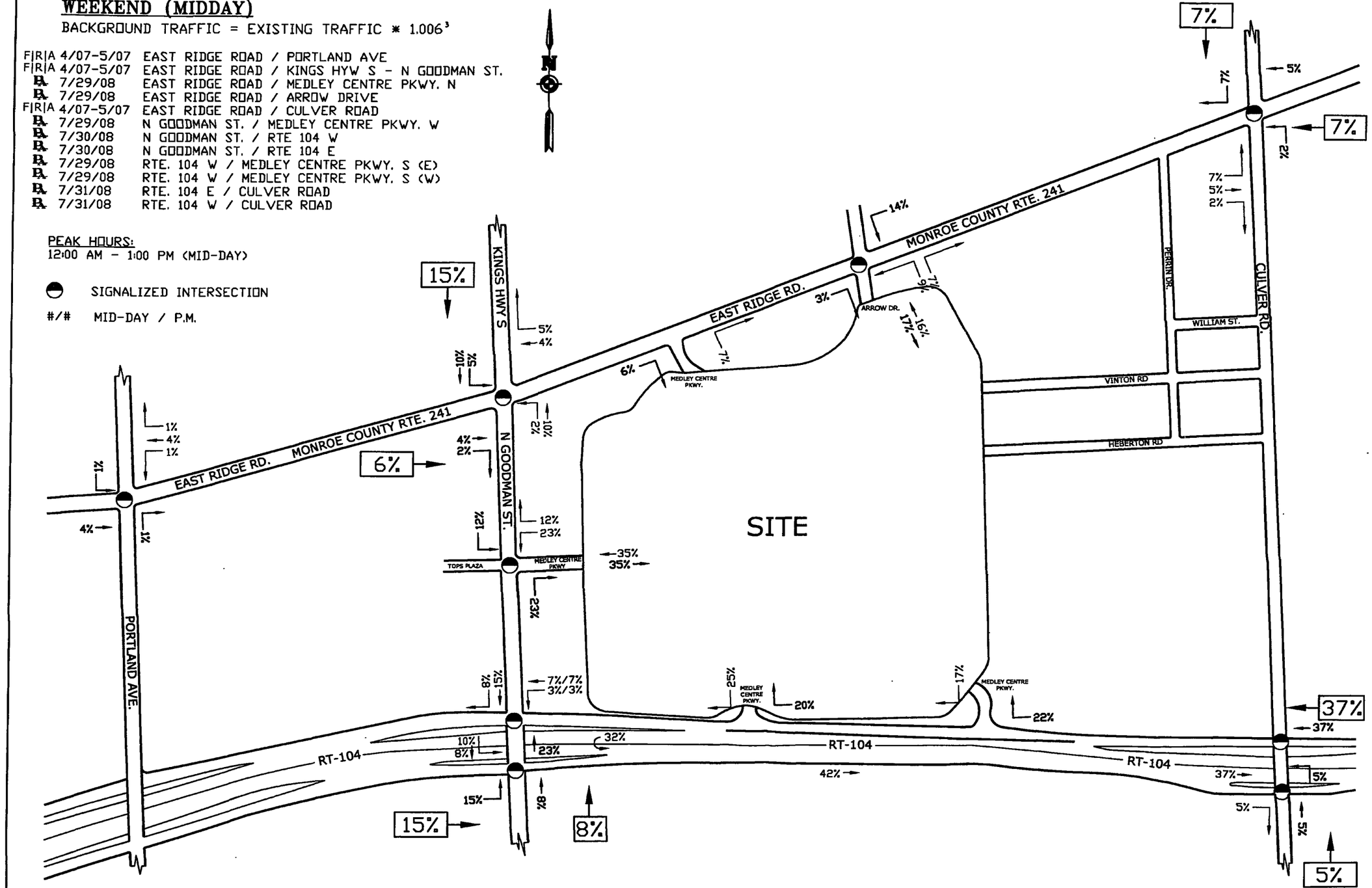
BACKGROUND TRAFFIC = EXISTING TRAFFIC * 1.006[3]

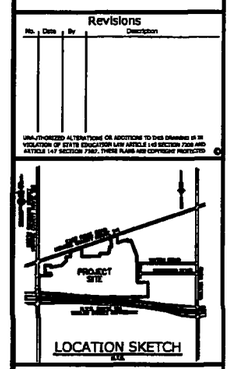
F|R|A	4/07-5/07	EAST RIDGE ROAD / PORTLAND AVE
F|R|A	4/07-5/07	EAST RIDGE ROAD / KINGS HYW S - N GOODMAN ST.
B.A.	7/29/08	EAST RIDGE ROAD / MEDLEY CENTRE PKWY. N
B.A.	7/29/08	EAST RIDGE ROAD / ARROW DRIVE
F|R|A	4/07-5/07	EAST RIDGE ROAD / CULVER ROAD
B.A.	7/29/08	N GOODMAN ST. / MEDLEY CENTRE PKWY. W
B.A.	7/30/08	N GOODMAN ST. / RTE 104 W
B.A.	7/30/08	N GOODMAN ST. / RTE 104 E
B.A.	7/29/08	RTE. 104 W / MEDLEY CENTRE PKWY. S (E)
B.A.	7/29/08	RTE. 104 W / MEDLEY CENTRE PKWY. S (W)
B.A.	7/31/08	RTE. 104 E / CULVER ROAD
B.A.	7/31/08	RTE. 104 W / CULVER ROAD

PEAK HOURS:
12:00 AM - 1:00 PM (MID-DAY)

SIGNALIZED INTERSECTION

#/# MID-DAY / P.M.





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Traffic Analysis

Medley Centre
Trip Distribution
Wkend (%)

Town of Irondequoit, Monroe County, New York

Project No.: 2008512.01
Drawing No.: T-3b
Sheet No.:
Scale: N.T.S.
Date: July 2008

Revisions

APPENDIX 7

APPENDIX 7: PROJECTED TRAFFIC VOLUMES WITH FULL PROJECT BUILD-OUT (2011)

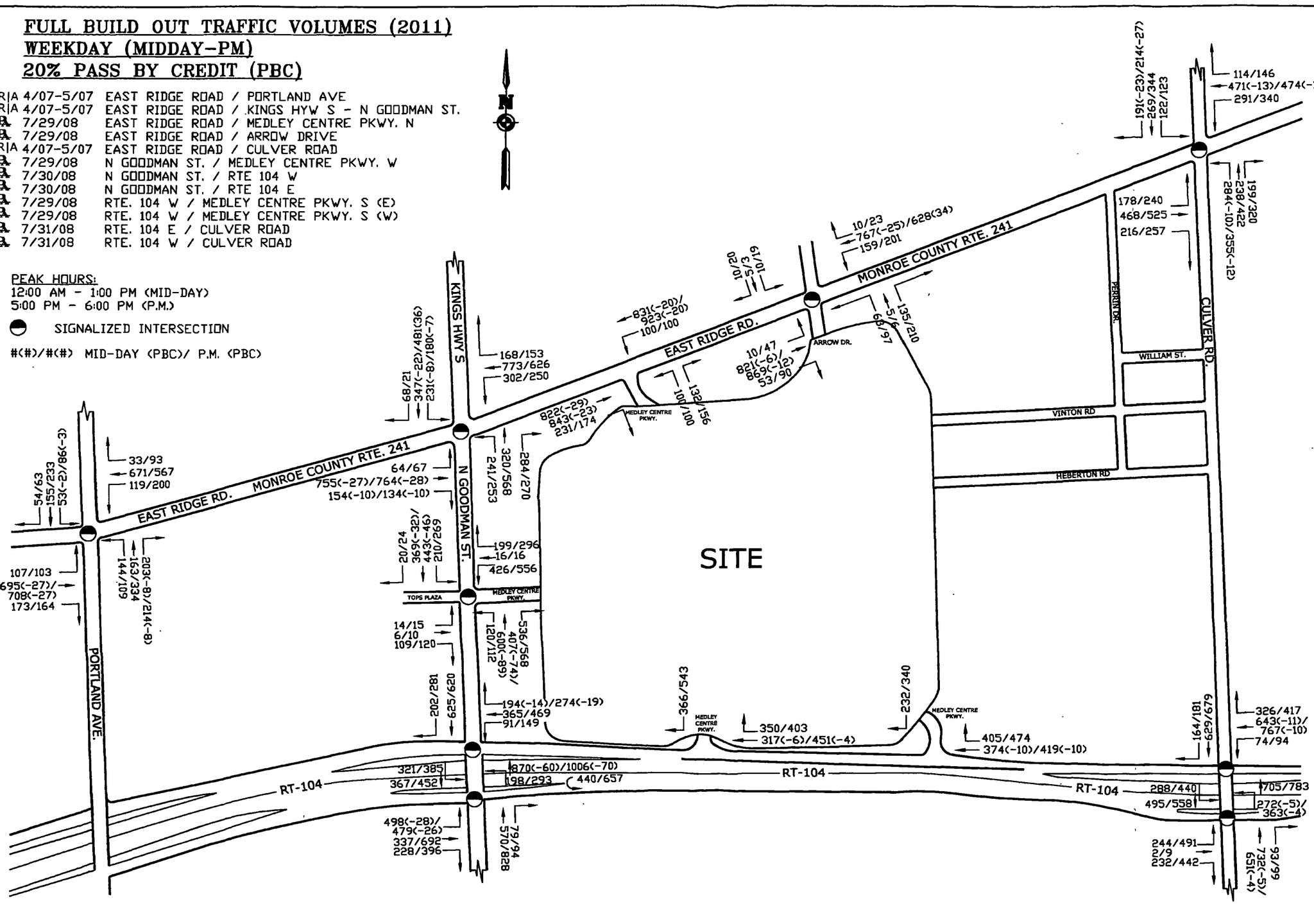
FULL BUILD OUT TRAFFIC VOLUMES (2011)
WEEKDAY (MIDDAY-PM)
20% PASS BY CREDIT (PBC)

F|R|A 4/07-5/07 EAST RIDGE ROAD / PORTLAND AVE
F|R|A 4/07-5/07 EAST RIDGE ROAD / KINGS HYW S - N GOODMAN ST.
B.A. 7/29/08 EAST RIDGE ROAD / MEDLEY CENTRE PKWY. N
B.A. 7/29/08 EAST RIDGE ROAD / ARROW DRIVE
F|R|A 4/07-5/07 EAST RIDGE ROAD / CULVER ROAD
B.A. 7/29/08 N GOODMAN ST. / MEDLEY CENTRE PKWY. W
B.A. 7/30/08 N GOODMAN ST. / RTE 104 W
B.A. 7/30/08 N GOODMAN ST. / RTE 104 E
B.A. 7/29/08 RTE. 104 W / MEDLEY CENTRE PKWY. S (E)
B.A. 7/29/08 RTE. 104 W / MEDLEY CENTRE PKWY. S (W)
B.A. 7/31/08 RTE. 104 E / CULVER ROAD
B.A. 7/31/08 RTE. 104 W / CULVER ROAD

PEAK HOURS:
12:00 AM - 1:00 PM (MID-DAY)
5:00 PM - 6:00 PM (P.M.)

SIGNALIZED INTERSECTION

#(#)/#(#) MID-DAY (PBC)/ P.M. (PBC)



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Revisions

No.	Date	By	Description

LOCATION SKETCH

Traffic Analysis

Medley Centre
Full Build Out
Wkday

Town of Irondequoit, Monroe County, New York

Project No. 2008512.01
Drawing No. T 6-1b
Sheet No. 11
Scale: N.T.S.
Date: July 2008

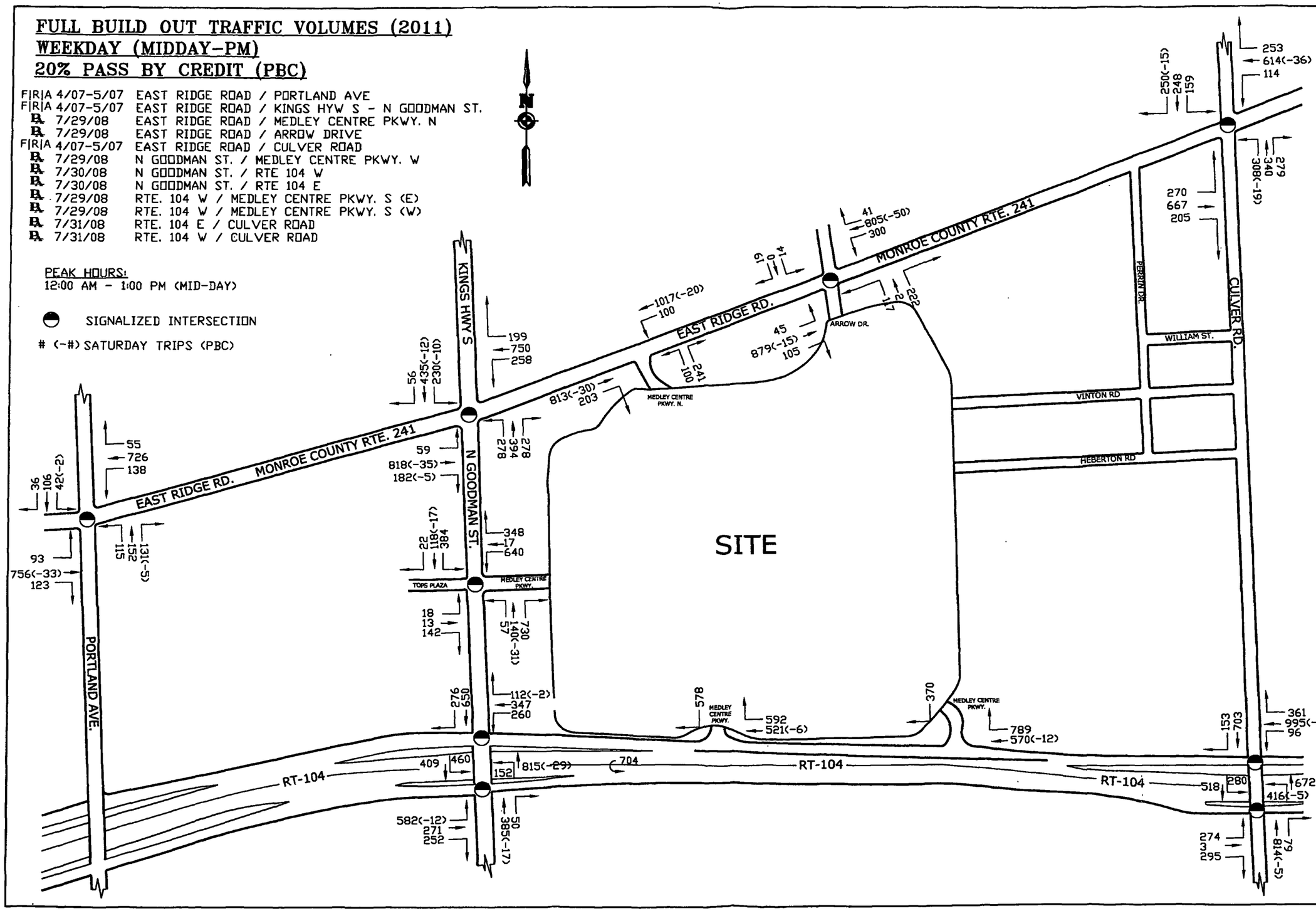
FULL BUILD OUT TRAFFIC VOLUMES (2011)
WEEKDAY (MIDDAY-PM)
20% PASS BY CREDIT (PBC)

F|R|A	4/07-5/07	EAST RIDGE ROAD / PORTLAND AVE
F|R|A	4/07-5/07	EAST RIDGE ROAD / KINGS HYW S - N GOODMAN ST.
B.A.	7/29/08	EAST RIDGE ROAD / MEDLEY CENTRE PKWY. N
B.A.	7/29/08	EAST RIDGE ROAD / ARROW DRIVE
F|R|A	4/07-5/07	EAST RIDGE ROAD / CULVER ROAD
B.A.	7/29/08	N GOODMAN ST. / MEDLEY CENTRE PKWY. W
B.A.	7/30/08	N GOODMAN ST. / RTE 104 W
B.A.	7/30/08	N GOODMAN ST. / RTE 104 E
B.A.	7/29/08	RTE. 104 W / MEDLEY CENTRE PKWY. S (E)
B.A.	7/29/08	RTE. 104 W / MEDLEY CENTRE PKWY. S (W)
B.A.	7/31/08	RTE. 104 E / CULVER ROAD
B.A.	7/31/08	RTE. 104 W / CULVER ROAD

PEAK HOURS:
12:00 AM - 1:00 PM (MID-DAY)

SIGNALIZED INTERSECTION

(-#) SATURDAY TRIPS (PBC)



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Revisions

No.	Date	By	Description

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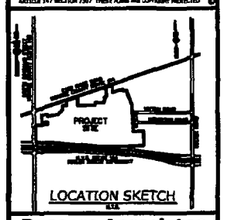

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Traffic Analysis

Medley Centre
Full Build Out
Wkend

Town of Irondequoit, Monroe County, New York

Project No.: 2008512.01
Drawing No.: T 6-2b
Sheet No.: 12
Scale: N.T.S.
Date: July 2008

APPENDIX 8

APPENDIX 8

Please reference Volume IV

APPENDIX 9

APPENDIX 9: GAP STUDY

Gap Study

Objective: Calculate the gap-acceptance of a two way unsignalized intersection.

Given:

1.) Calculated per the Highway Capacity Manual (updated October 1994)
2.) Calculations exhibit the Saturday peak hour which is the worst case scenario.
3.) Subject movement: Right Turn for Minor Street. (See Attachments)

Calculations:

vph = vehicles per hour / pcph = passenger cars per hour (see attached)
$V_3 = 0$ for stop/yield controlled intersections

1.) Medley Centre Parkway South (East Access)

V2 = 570 vph, V3 = 789 vph

Conflicting Traffic (V_9) = ½ (V_3) + V_2

$V_9 = 0 + V_2$

V_9 = 570 vph projected

Use the attached chart to determine right turn capacity:

570 vph = 660 pcph (see attached chart)

660 pcph > 370 Projected (290 difference)

Assume each 100 vph difference represents 1 LOS unit and 700 or greater vph or greater = LOS of "F" therefore Southbound LOS = C

➔ ***Intersection has adequate potential capacity for anticipated traffic***

PA 109

2.) Medley Centre Parkway South (West Access)

V2 = 521 vph, V3 = 592 vph

Conflicting Traffic (V_9) = ½ (V_3) + V_2

V_9 = 0 + V_2

V_9 = 521 vph projected

Use the attached chart to determine right turn capacity:

521 vph = 750 pcph(see attached chart)

750 pcph < 578 Projected (172 difference)

Assume each 100 vph difference represents 1 LOS unit and 800 or greater vph or greater = LOS of "F" therefore Southbound LOS = D

➔ ***Intersection has adequate potential capacity for anticipated traffic***

TABLE 10-2. CRITICAL GAPS t_g AND FOLLOW-UP TIMES t_f FOR TWSC INTERSECTIONS

VEHICLE MANEUVER	CRITICAL GAP t_g: TWO-LANE MAJOR ROAD	CRITICAL GAP t_g: FOUR-LANE MAJOR ROAD	FOLLOW-UP TIME t_f (SEC)
Left turn, major street	5.0	5.5	2.1
Right turn, minor street	5.5	5.5	2.6
Through traffic, minor street	6.0	6.5	3.3
Left turn, minor street	6.5	7.0	3.4

NOTE: The critical gap and follow-up time values presented in this table reflect data obtained on roadways where the average approach speed of the major street through vehicles approximated 30 mph. In cases where no better data are available, these same values may be used to approximate t_g and t_f for roadways with approach speeds other than 30 mph.

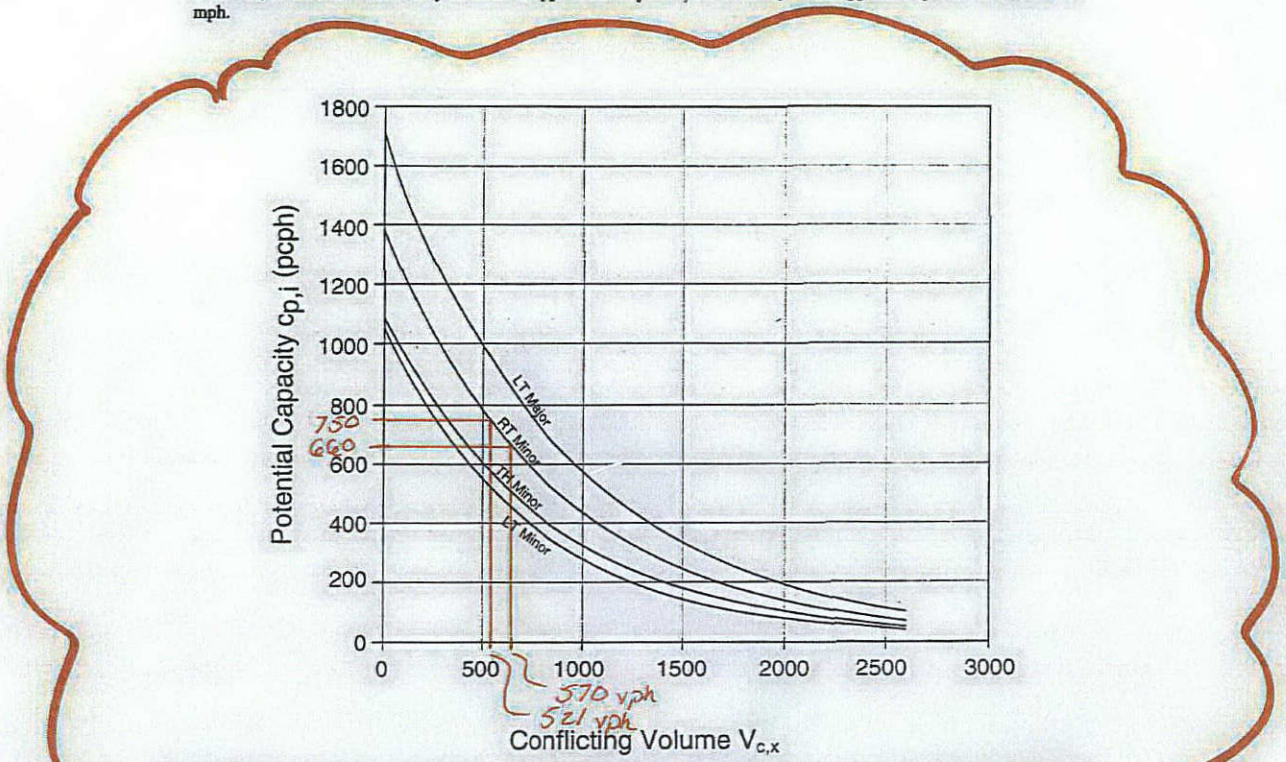


Figure 10-4. Potential capacity based on conflicting volume and movement type (two-lane roadways).

are observed, this will lead to an increase in capacity in comparison with those values shown in Table 10-2. If larger values for t_g and t_f are used, the result will be a decrease in capacity. Empirical observations of maximum capacity (i.e., discharge rates from a minor approach with continuous queueing) as well as measurements of critical gaps and follow-up times should be used in such cases to calibrate the methodology to local conditions.

POTENTIAL CAPACITY FOR A MOVEMENT

The potential capacity of a movement is denoted as $c_{p,x}$ (for movement x), and is defined as the capacity under ideal conditions for a specific subject movement, assuming the following conditions:

1. Traffic from nearby intersections does not back up into the intersection under consideration.

2. A separate lane is provided for the exclusive use of each minor street movement under consideration. A separate lane is also provided for the exclusive use of each major street left-turn movement.

3. No other movements of Ranks 2, 3, or 4 impede the subject movement.

The potential capacity $c_{p,x}$ of the individual minor traffic streams is given in Figure 10-4 for a two-lane major road and in Figure 10-5 for a four-lane major road. These figures depict the application of Equation 10-1 with the values presented in Table 10-2. The potential capacity is expressed in passenger cars per hour. It can be seen from these figures that the potential capacity is a function of the conflicting volume $V_{c,x}$ expressed as an hourly rate, as well as the particular minor street movement being analyzed. The figure is entered on the horizontal axis with the value of $V_{c,x}$. A vertical line is drawn upward to the appropriate minor movement curve. A horizontal line is then drawn from the intersection with

Gap Study

Objective: Calculate the potential capacity for the U-Turn loop road at Goodman Street and the Route 104 Eastbound On-Ramp.

Given:

1.) Calculated per the Highway Capacity Manual (updated October 1994)

2.) Calculations exhibit the Midday, PM & Saturday peak hour which is the worst case scenario.

3.) Critical Gap is 4. Seconds based on the Traffic Study prepared by Sear Brown. (See SDEIS Volume III, Tab H, Page 288.)

Calculations:

Conflicting Volume = Eastbound through traffic at 104 EB and Goodman, Northbound Right and southbound left.

1.) Midday Peak Hour
- Conflicting Volume = 337 + 79 + 321 = 737
- Potential Capacity = 750
- Capacity Required = 410

2.) PM Peak Hour
- Conflicting Volume = 692 + 94 + 393 = 1179
- Potential Capacity = 500
- Capacity Required = 602

3.) Saturday Peak Hour
- Conflicting Volume = 271 + 460 + 50 = 781
- Potential Capacity = 700
- Capacity Required = 661

The study shows that the U-turn loop has adequate capacity during the weekday midday peak hour and the Saturday peak hour. During the PM peak hour the projected trips exceed the capacity of the loop. This is primarily due to the large number of vehicles traveling eastbound through the adjacent intersection. Due to the presence of the signalized intersection immediately adjacent to the merge between the U-turn and eastbound entrance ramp, it is reasonable to assume that the capacity for the loop is under estimated (See attachment-"Methodology" A-3)and that the intersection will perform at a better level of service then projected because the signalized light is the gap generator. Moreover, the gaps generated are longer because of the tight platooning. Additionally this situation is only present during the peak hour when vehicles are leaving Rochester General. During this period it is possible that vehicles will safely queue through the loop.

number of lanes on the major street which must be crossed, and the type of control.

In general, the critical gap increases as the complexity of the movement increases. Thus, a left turn from the minor street requires a larger gap than a through vehicle from the minor street. Critical gaps are, in general, longer for STOP control than for YIELD control. In the latter case, at least some vehicles are starting from a rolling or slow-moving position and can take advantage of smaller gaps which vehicles starting from a dead stop could not utilize. The critical gap also increases as the approach speed of major-street vehicles increases and as the number of lanes on the major street increases.

The lower portion of Table 19-2 allows the critical-gap values selected from the primary portion of the table to be adjusted. Several of the adjustments lead to a lowering of the critical-gap values (population, curb radius, approach angle), while one would increase critical-gap values (restricted sight distance).

In the sample problem, there are no conditions which would warrant adjustment of the values selected from the main portion of the table. Thus, the following critical-gap values are found:

1. RT from minor street: 5.5 sec.
2. LT from major street: 5.0 sec.
3. TH from minor street: 6.0 sec.
4. LT from minor street: 6.5 sec.

All values are found from Table 19-2.

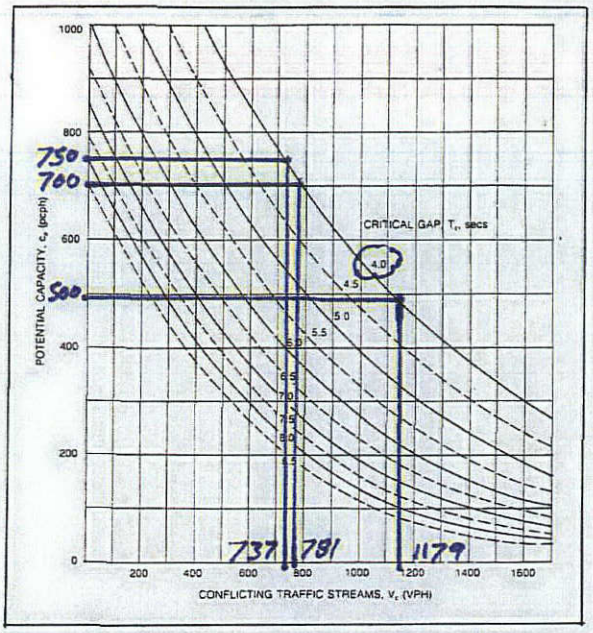
D. Finding Potential Capacity

Potential capacity is the "ideal" capacity of a given movement, assuming the following conditions:

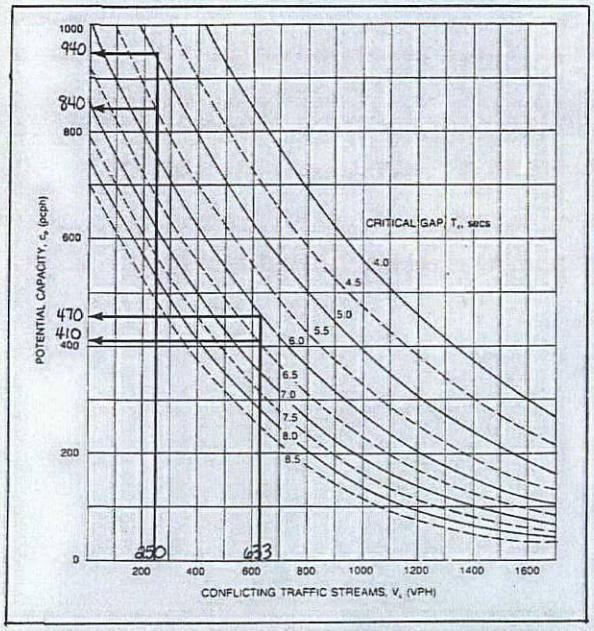
1. Traffic on the major roadway does not block the minor street.
2. Traffic from nearby intersections does not back up into the intersection under study.
3. A separate lane is provided for the exclusive use of each movement.
4. No other movements impede the subject movement.

Potential capacity is a function of the conflicting volume, V_c, and the critical gap, T_c. The relationship is shown in Figure 19-3. The figure is entered with V_c on the horizontal axis. A vertical line is drawn to the intersection of the appropriate T_c curve. From this intersection, a horizontal is drawn, and the result is read from the vertical axis. Figure 19-4 illustrates this procedure for the four movements of the sample problem.

From Figure 19-3 the following values of potential capacity are derived for the sample problem:



(a) Curves for determining potential capacity, c_p



(b) Sample problem solution for potential capacity, c_p

FIGURE 19-3 Finding potential capacity for unsignalized-intersection movement.

SOURCE: *Highway Capacity Manual,* Special Report 209, Transportation Research Board, Washington, DC, 1985, Fig. 10-3, p. 10-7.

1. RT from minor street: c_p = 940 pcph.
2. LT from major street: c_p = 840 pcph.
3. TH from minor street: c_p = 470 pcph.
4. LT from minor street: c_p = 410 pcph.

DIFFICULTIES WITH THE METHODOLOGY

There are several difficulties with this methodology, and interpretation of results is often complex. The sections that follow discuss some of these issues.

A. Underestimating Capacity

The methodology frequently underestimates capacity—for three reasons:

1. The method assumes that the critical gap remains constant over time. Field observations confirm that the size of the gap accepted tends to decrease with the amount of time the driver waits.
2. The method assumes that major-street traffic is never affected or interrupted by side-street traffic. In many cases, side-street drivers will force their way into small gaps, causing main-street drivers to give way by slowing down.
3. The method assumes that major-street traffic arrives randomly, and that the available gap distribution reflects random arrivals. In most cases this is not true, as most major streets would be part of progressive signal control systems. In these cases, arrivals clearly reflect a degree of platooning, which is substantially different from random arrivals.

The last item can have a significant impact on capacity of the controlled approach. Consider Figure 19-7. It shows opposing major-street platoons moving through a progressive signal system. Vehicles 1 and 2 are at two different STOP-controlled approaches attempting to move through the major-street flow. Their locations represent two extremes in a continuous range of platoon configurations which could exist.

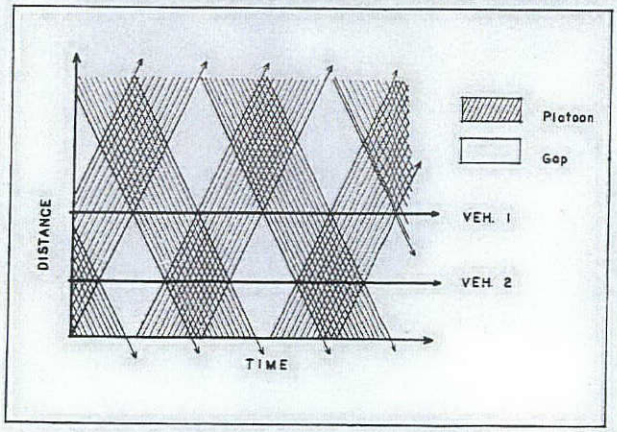


FIGURE 19-7 Impact of platoon flow on gaps.
SOURCE: *Highway Capacity Manual*, Special Report 209, Transportation Research Board, Washington, DC, 1985, Fig. 10-1, p. 10-2.

Vehicle 1 is faced with alternating platoons. Just as the NB platoon passes, the SB platoon arrives. Vehicle 1 must pass *through* a platoon in one direction at all times. Instead of random arrivals, vehicle 1 sees heavy platoon flow in one direction and virtually no flow in the other.

Vehicle 2 faces a very different situation. At some times, both the NB and SB platoons are passing simultaneously. At others, no platoon is passing. During periods when no platoons are passing, side-street vehicles at position 2 have a much easier task in crossing the major street than they do when both platoons pass. Moreover, they have a much easier task than a vehicle at position 1 *at any time*.

The 1985 *HCM* contains an appendix in which each portion of time during which platoon flows vary is separately analyzed. The capacity at position 1 is shown to be equal to the capacity computed for random arrivals. The capacity at position 2, however, can be as much as 25% to 30% higher than that computed for random arrivals.

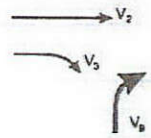
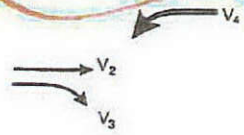
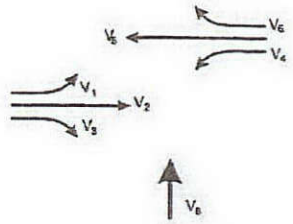
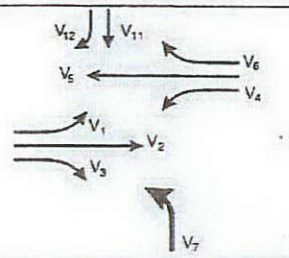
Rarely will a driver experience the ideal crossing situation represented by position 2 in Figure 19-7. The combination of nonrandom arrivals, assumed constant critical gap, and the assumed noninterference with main-street traffic, can, however, lead to underestimating STOP- or YIELD-controlled approach capacity, often in the range of 10% to 20%. Unfortunately, additional field studies and research are needed to resolve some of these difficulties and better calibrate the procedure to account for them.

B. What Is Failure?

Given the previous discussion, what is the correct interpretation of an analysis which results in a level-of-service F prediction? Occasionally, such a result will be found for an existing situation which appears to be operating acceptably from field observations.

First, LOS F may have resulted from an underestimate of capacity, owing primarily to the existence of nonrandom flow on the major street. If this factor is eliminated, "failure" indicates that the intersection is not operating according to the presumed mode defined by the analysis methodology. Under the pressure of demand, the strict order of priority of movements may not be observed by drivers.

Under pressure, critical gap times may be reduced, and major-street traffic may be forced to give way to accommodate side-street vehicles. Thus, while the operating mode may have "broken down," there may not be a long side-street queue or the obvious congestion which accompanies most other facility types when operating at LOS F.

Subject Movement	Conflicting Traffic, $V_{c,x}$	Illustration
1. RIGHT TURN from minor street ($V_{c,9}$)	$1/2(V_3)$ ① + V_2 ②	
2. LEFT TURN from major street ($V_{c,4}$)	$V_2 + V_3$ ③	
3. THROUGH MOVEMENT from minor street ($V_{c,8}$)	$1/2(V_3)$ ① + $V_2 + V_1$ + V_6 ⑤ + $V_5 + V_4$	
4. LEFT TURN from minor street ($V_{c,7}$)	$1/2(V_3)$ ① + $V_2 + V_1$ + $1/2(V_6)$ ⑤ + $V_5 + V_4$ + $1/2(V_{11} + V_{12}$ ④)	

① Where a right-turn lane is provided on major street, and/or where V_3 is STOP-/YIELD-controlled, eliminate V_3

② V_2 includes only the volume in the right hand lane.

③ Where the right-turn is STOP- or YIELD-controlled, eliminate V_3 , V_6

④ V_{12} should be eliminated on multi-lane major streets.

⑤ Where a right-turn lane is provided on major street, and/or where V_6 is STOP-/YIELD-controlled, and/or on multi-lane major streets, eliminate V_6

Figure 10-3(a). Definition and computation of conflicting traffic volumes for two minor approaches.

largest rejected gap < driver's critical gap ≤ accepted gap

Even this relationship might not always be entirely true, because drivers may not always act consistently and may occasionally reject gaps that were of greater length than the accepted gap.

The time span between the departure of one vehicle from the minor street and the departure of the next, under a condition of continuous queueing, is called the follow-up time, t_f. Put another way, t_f is the headway that would define the saturation flow rate for the approach if there were no conflicting vehicles on movements of higher rank.

Values of t_g and t_f for passenger cars are given in Table 10-2. These values appear to be typical from internationally based empirical studies and are believed to be representative of U.S. conditions as well. The values presented in Table 10-2 reflect data obtained from roadways where the approach speeds of major street through

APPENDIX 10

APPENDIX 10: IMPROVEMENTS SUMMARY

Medley Centre Phased Mitigation Plan 1/12/09 (Revised 2/2/09)

SCHEDULE "A" ONSET OF CONSTRUCTION

IMPROVEMENT AREA	North-South Approach	East-West Approach	Failing Turning Movement	Suggested Improvement
1	Goodman Street	Tops - Medley Centre PKWY	Westbound Left	1. Add a second west bound unrestricted left turn lane
				2. Adjust signal phasing 12 seconds from eastbound traffic to westbound
				3. Adjust signal phasing 5 seconds from N-S phase to E-W Phase
2	Culver Road	NYS Rt. 104 Ramp(s)	Westbound through	1. Optimize phasing (v/c ratio <1.0)
				2. Adjust signal phasing to provide 30 sec.s for northbound left movement
				3. Restripe back to back left turn pockets to provide full length left turn
				lane for northbound left movement. Adjust southbound lane to through-left
				and make required signal adjustments.

SCHEDULE "B" IMPLEMENT AT 50% BUILD OUT

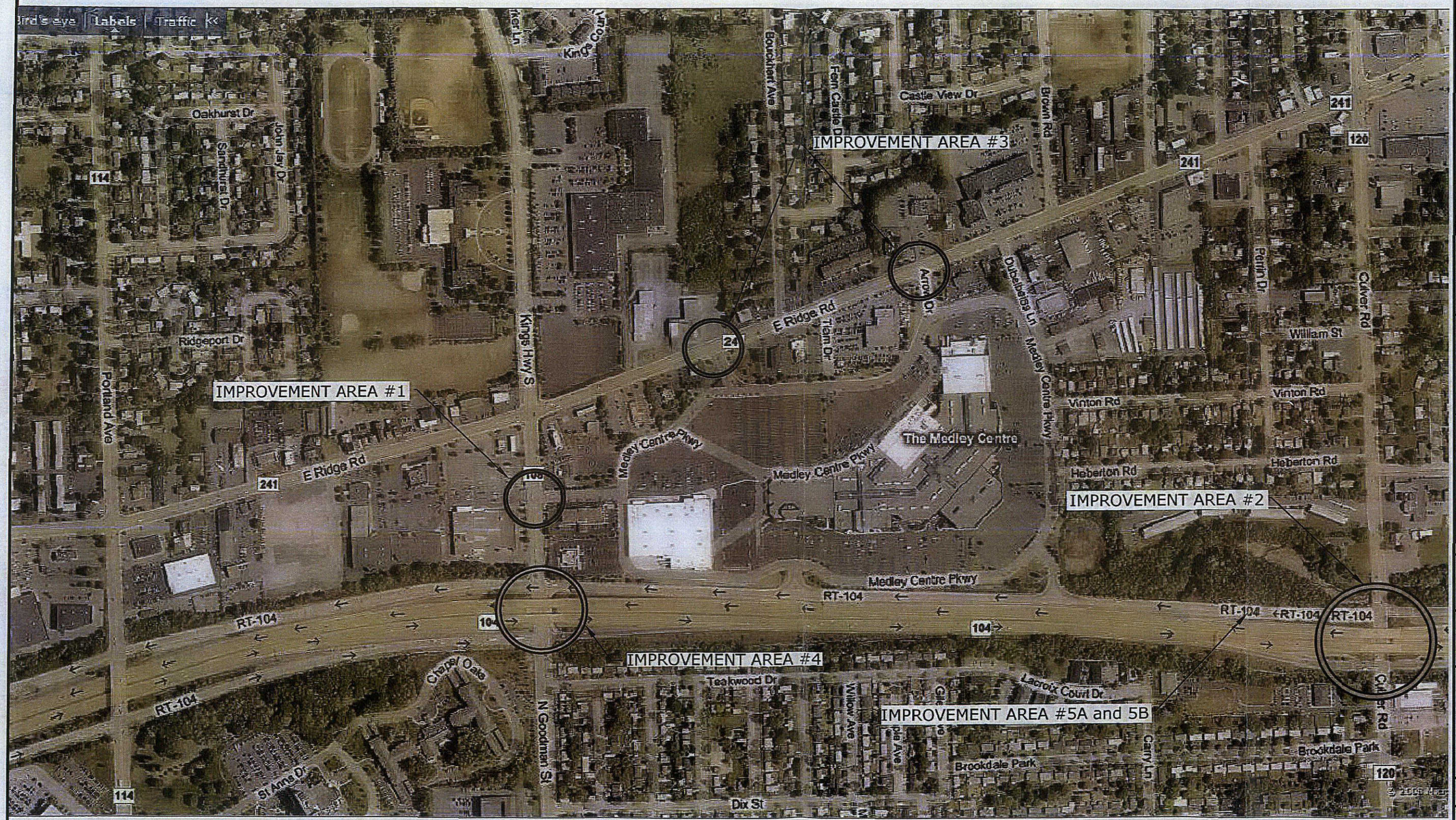
IMPROVEMENT AREA	North-South Approach	East-West Approach	Failing Turning Movement	Suggested Improvement
3	Medley Centre PKWY North	East Ridge Road (CR 241)	n/a	1. Add a 3 color- 4 direction traffic control light within the county's cooridated
				signal system. The new signal light will improve the distribution of traffic from
				Arrow Drive at East Ridge Road to the Northwest Entrance. This will alleviate
				failing left in and left out movements at Arrow Drive. Provide signage along
				East Ridge frontage directing traffic to second entrance.
4	Goodman Street	Route 104	Westbound/Eastbound	1. Add 10 seconds of time to phases 3 & 7 from phase 6 during pm peak hour
				Add 5 seconds of time to phase 5 from phase 6 during mid day peak hour
				2. Change dedicated through lane on eastbound ramp to Goodman to
				through-left lane creating dual lefts.

CONDUCT AND UPDATE TRAFFIC IMPACT STUDY @ 60% FULL BUILD OUT TRAFFIC VOLUMES

SCHEDULE "C" IMPLEMENT AT 85% BUILD OUT

IMPROVEMENT AREA	North-South Approach	East-West Approach	Failing Turning Movement	Suggested Improvement
5a	N/A	Route 104	Route 104 at Culver	Bypass Westbound ramp at Culver road pending results of future traffic study
				commencing at 60% buildout.
				Improvement includes fly over of existing on ramp to 104 and new lane
				along northside of frontage road with modified access to Medley Centre.
				Signage required along Route 104.
5b	N/A	Route 104	Route 104 at Culver	Bypass Westbound ramp at Culver road pending results of future traffic study
				commencing at 60% buildout
				Improvement includes fly over of existing on ramp to 104 and onto the
				existing southern travel lane of the frontage road. Required lane shift of existing
				frontage road to the north. Signage required along Route 104.

*See section 4.0 for a detailed explanation of improvements.



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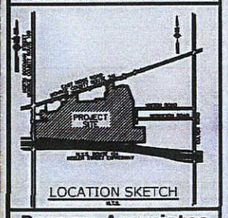
NOT FOR CONSTRUCTION

SRC development

Revisions

No.	Date	By	Description



LOCATION SKETCH

Passero Associates

100 Liberty Pole Way, Rochester, NY 14604	(585) 325-1000, Fax: (585) 325-1691
Principal-in-Charge	John F. Caruso, P.E.
Project Manager	JFC
Designed by	Jess D. Sudol

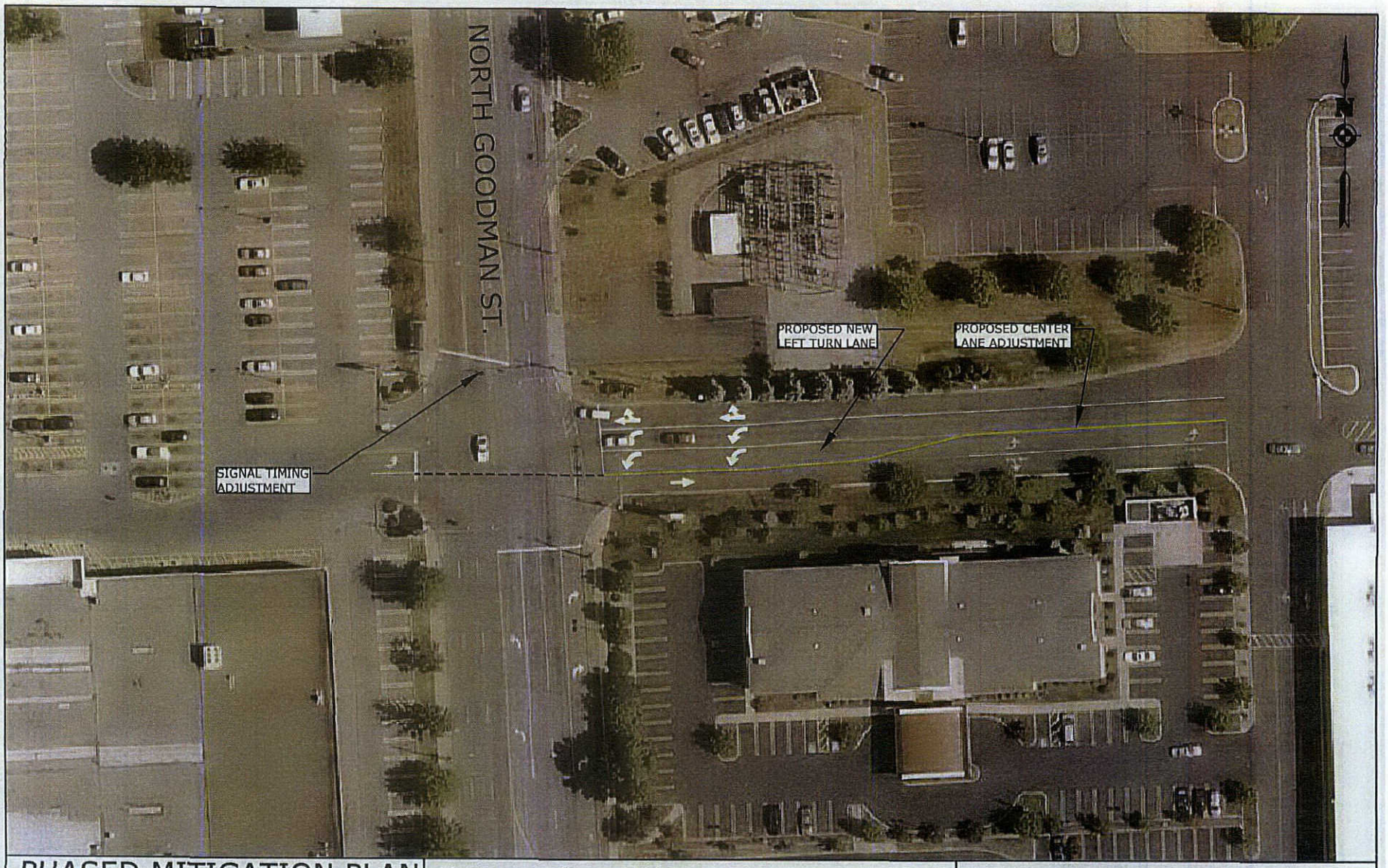
Gilberti Stinziano Heintz & Smith, P.C.
555 East Genesee St.
Syracuse, NY 13202
Phone: 315-442-0100

MEDLEY CENTRE

OVERALL PHASED MITIGATION PLAN

Town of Irondequoit, Monroe County, New York

Project No.	2008512.01B
Drawing No.	Sheet No. 4-1
Scale:	1" = 200'
Date	AUGUST 2008



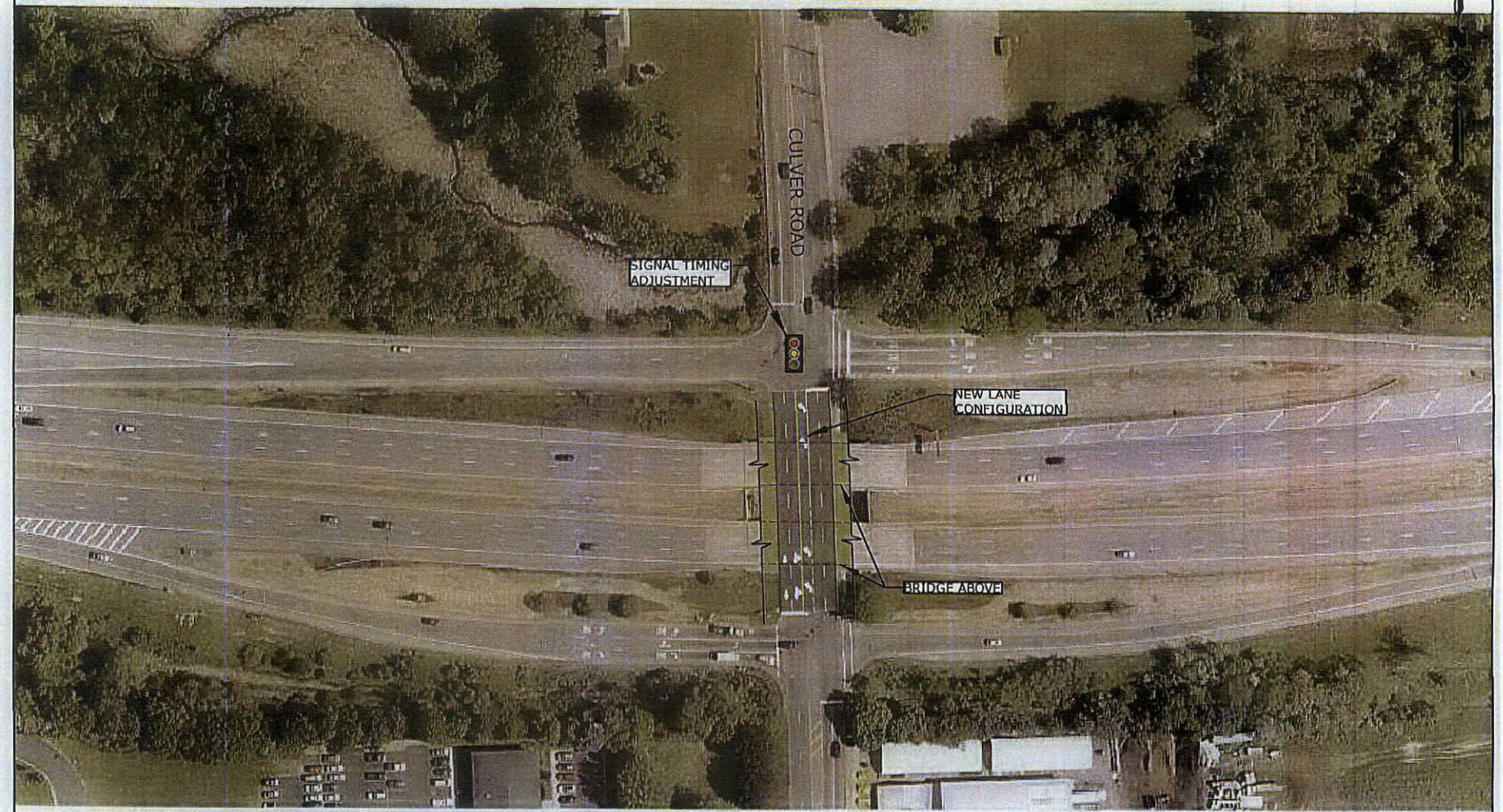
PHASED MITIGATION PLAN
IMPROVEMENT AREA #1
GOODMAN @ TOPS/
MEDLEY CENTRE
SCHEDULE: "A" ONSET OF CONSTRUCTION

Passero Associates
100 Liberty Pole Way, Rochester, NY 14604
585-325-1000 FAX: 585-760-8539

Engineering Surveying
Architecture Planning

2008512.01B

MEDLEY CENTRE
TRAFFIC STUDY



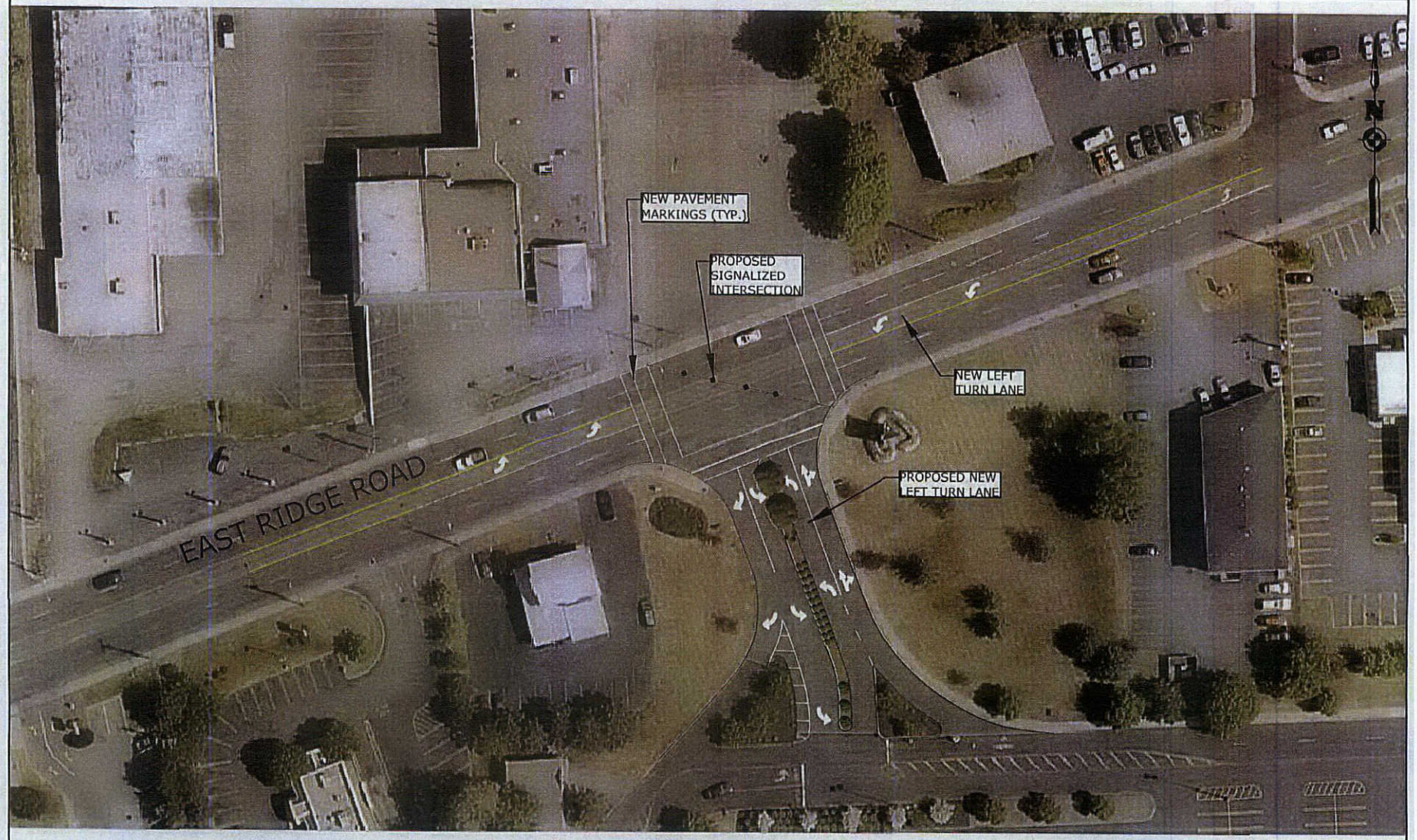
PHASED MITIGATION PLAN
IMPROVEMENT AREA #2
CULVER RD. @ (RT. 104)
SCHEDULE: "A" ONSET OF CONSTRUCTION

Passero Associates
100 Liberty Pole Way, Rochester, NY 14604
585-325-1000 FAX: 585-760-8539

Engineering Surveying
Architecture Planning

2008512.01B

MEDLEY CENTRE
TRAFFIC STUDY



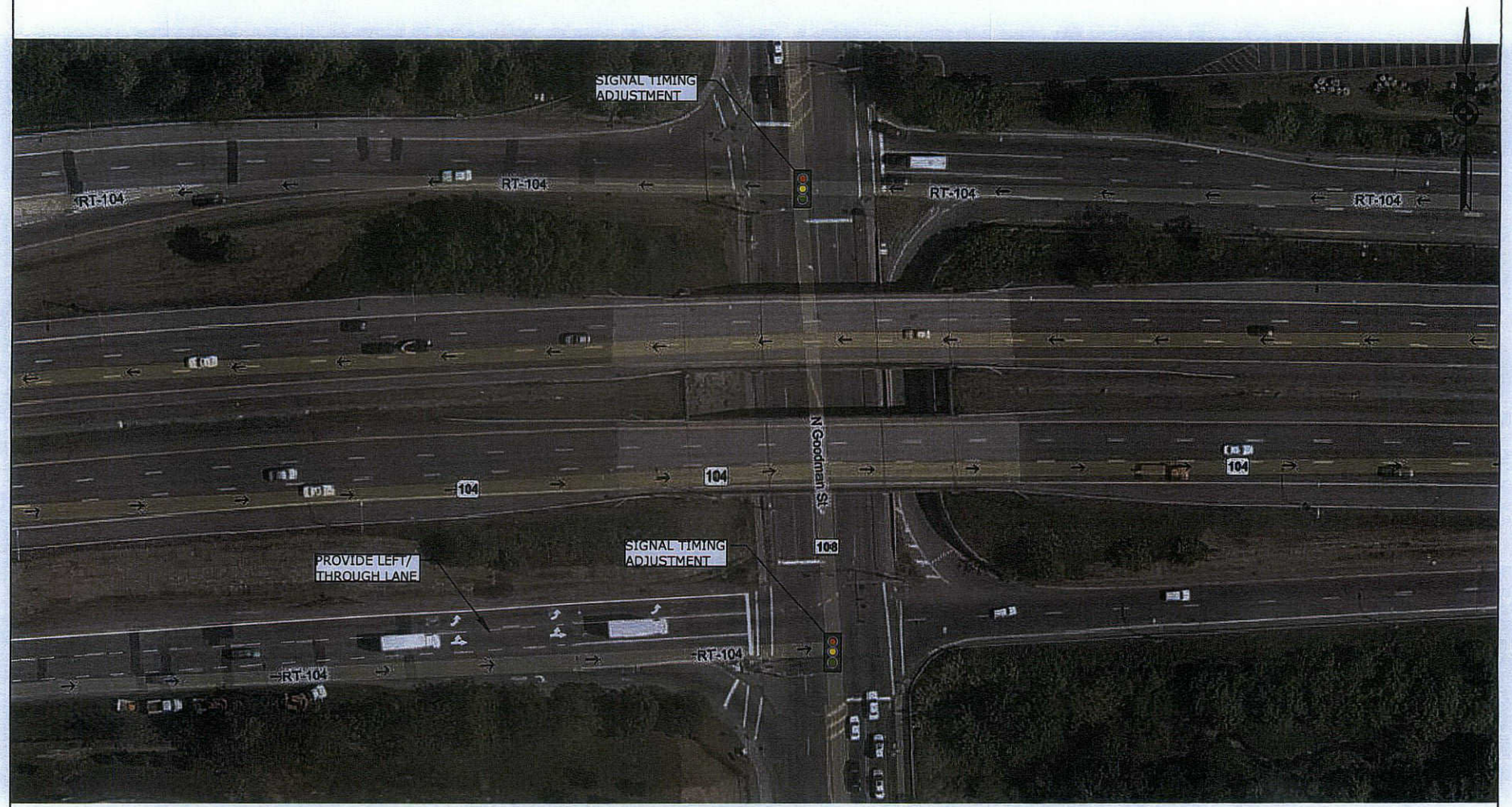
PHASED MITIGATION PLAN
IMPROVEMENT AREA #3
MEDLEY CENTRE PKWY. NORTH
@ EAST RIDGE ROAD
SCHEDULE: "B" IMPLEMENT AT 50% BUILD OUT

Passero Associates
100 Liberty Pole Way, Rochester, NY 14604
585-325-1000 FAX: 585-760-8539

Engineering Surveying
Architecture Planning

2008512.01B

MEDLEY CENTRE
TRAFFIC STUDY



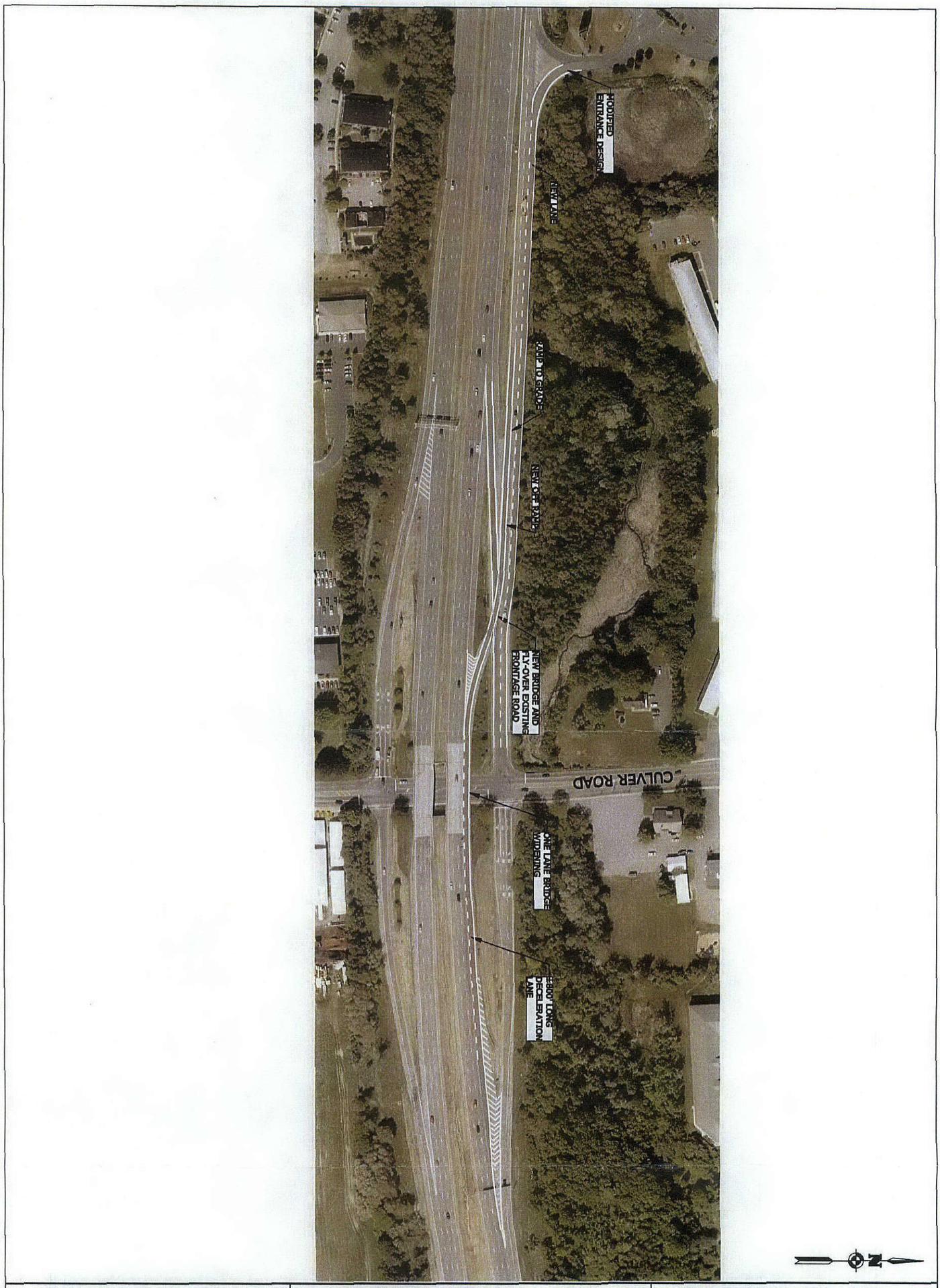
PHASED MITIGATION PLAN
IMPROVEMENT AREA #4
GOODMAN ST. @ (RT. 104)
SCHEDULE: "B" IMPLEMENT AT 50% BUILD OUT

Passero Associates
100 Liberty Pole Way, Rochester, NY 14604
585-325-1000 FAX: 585-760-8539

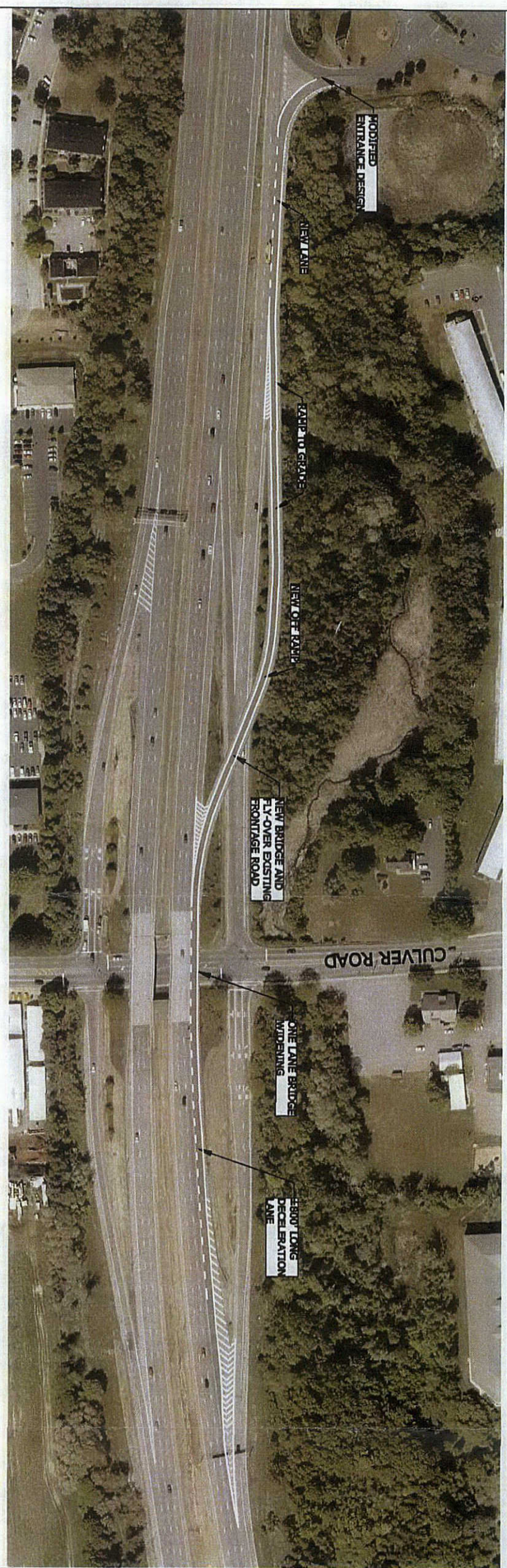
Engineering
Architecture
Surveying
Planning

2008512.01B

MEDLEY CENTRE
TRAFFIC STUDY



PHASED MITIGATION PLAN IMPROVEMENT AREA #5B CULVER ROAD @ NYS ROUTE 104 SCHEDULE: "C" IMPLEMENT AT 85% BUILD OUT	Passero Associates 100 Liberty Pole Way, Rochester, NY 14604 585-325-1000 FAX: 585-760-8539 Engineering Surveying Architecture Planning	2008512.01B MEDLEY CENTRE TRAFFIC STUDY



PHASED MITIGATION PLAN IMPROVEMENT AREA #5A CULVER ROAD @ NYS ROUTE 104 SCHEDULE: "C" IMPLEMENT AT 85% BUILD OUT	Passero Associates 100 Liberty Pole Way, Rochester, NY 14604 585-325-1000 FAX: 585-760-8539 Engineering Surveying Architecture Planning	2008512.01B MEDLEY CENTRE TRAFFIC STUDY

APPENDIX 11

APPENDIX 11: MCDOT East Ridge Road Draft Design Report

DRAFT DESIGN REPORT

Chapters I and II

East Ridge Road Rehabilitation

(City Line to Culver Road)

Town of Irondequoit
County of Monroe

March 2008

PREPARED BY:

FRA
530 Summit Point Drive
Henrietta, NY 14467
p. 585-359-0280

PREPARED FOR:

Monroe County Department of Transportation
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CONTACT:
Scott Leathersich, Sr. Physical Services Planner

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Rochester, NY 14623
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FHWA

DRAFT DESIGN REPORT
Chapters I and II

East Ridge Road Rehabilitation

Town of Irondequoit
County of Monroe

P.I.N. 4753.59
County Route 241

Prepared for
Monroe County Department of Transportation

Prepared by:
FRA Engineering, P.C.

March 2008

It is the policy of the NYSDOT to use metric units for all projects to be let for construction after September 30, 1996. This project is being designed using metric units and the text of this report uses metric units.

The following table of approximate conversion factors provides the relationship between metric and inch-pound units for some of the more frequently used units in highway design. The table allows one to calculate the Inch-Pound Unit by multiplying the corresponding Metric Unit by the given factor.

	Metric Unit	x	Factor	=	Inch-Pound Unit
Length	kilometer (km)	x	0.621	=	miles (mi)
	meter (m)	x	3.281	=	feet (ft.)
Area	hectare (ha)	x	2.471	=	acres (a)
	square meter (m^2)	x	1.196	=	square yards (sy)
	square meter (m^2)	x	10.764	=	square feet (sf)
Volume	cubic meter (m^3)	x	1.308	=	cubic yards (cy)
	cubic meter (m^3)	x	35.315	=	cubic feet (cf)
Speed	kilometer per hour (km/h)	x	0.621	=	miles per hour (mph)
	meter per second (m/s)	x	3.281	=	feet per second (ft/s)

Table of Contents

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ABBREVIATIONS

AADT	-	Average Annual Daily Traffic
AASHTO	-	American Assoc. of State Highway Transportation Officials
ACC/MVKM	-	Accidents per Million Vehicle Kilometers
ADAAG	-	Americans with Disabilities Act Accessibility Guideline for Buildings & Facilities
BIN	-	Bridge Identification Number
BM	-	NYSDOT Bridge Manual
COE	-	Corps of Engineers
DHV	-	Design Hourly Volume (Two-Way)
DDHV	-	Directional Design Hourly Volume (One-Way)
DR	-	Design Report
EAP	-	Environmental Action Plan
EPA	-	Environmental Protection Agency
ETC	-	Estimated Time of Completion
FEMA	-	Federal Emergency Management Administration (U.S.)
FHWA	-	Federal Highway Administration
FIPS	-	Federal Information Processing Standard
HDM	-	New York State Department of Transportation Highway Design Manual
HSD	-	Headlight Sight Distance
LOS	-	Level of Service
NEPA	-	National Environmental Policy Act
NHS	-	National Highway System
NWI	-	National Wetlands Inventory
NYSDEC	-	New York State Department of Environmental Conservation
NYSDOT	-	New York State Department of Transportation
PE	-	Permanent Easement
PIN	-	Project Identification Number
PS&E	-	Plans, Specifications and Estimate
RMM	-	Reference Mile Marker
ROW	-	Right-of-Way
SEQR	-	State Environmental Quality Review
SH	-	State Highway
SPDES	-	Stormwater Pollutant Discharge Elimination System
SR	-	State Route
SSD	-	Stopping Sight Distance
USCG	-	United States Coast Guard

CHAPTER I - INTRODUCTION

Purpose: This is a Locally Administered Federal Aid (Pass-Through) project administered by the Monroe County Department of Transportation. This report has been prepared in accordance with the requirements of the NYSDOT Design Procedure Manual.

Location: East Ridge Road is an east–west, urban-minor arterial located in Monroe County within the Town of Irondequoit. The project extends from the City of Rochester/Town of Irondequoit line, (90 meters (300 feet) east of Seneca Avenue) to and including Culver Road and its approaches, through the town's main commercial corridor. The total project length is approximately 4000 meters (2.5 miles). Refer to the Figure II-1, Project Location Map, on the following page.

Conditions & Needs: East Ridge Road pavement is in poor condition, drainage systems are failing, there currently are no bicycle facilities, and there are some poor pedestrian accommodations. Continued economic development and traffic increases are likely to continue to contribute to congestion, reduction in traffic safety, and accelerated deterioration of the roadway. Higher than average accident rates were identified at the Hudson Avenue, Carter Street, Portland Avenue and Goodman Street intersections.

Objectives: The primary objectives are to improve pavement conditions, improve traffic safety, and reduce accidents. This project will restore the pavement serviceability, improve drainage, address congestion, improve access management and provide bicycle facilities and improved pedestrian facilities, to the maximum extent practicable.

Alternatives: To be determined as the project is developed.

Cost & Schedule: To be determined

Environmental Classification: The project is classified as a National Environmental Policy Act (NEPA) Class II in accordance with 23 CFR 771 and a State Environmental Quality Review Act (SEQR) Type II in accordance with 17 NYCRR Part 15. The Federal Highway Administration (FHWA) is the lead agency for NEPA and NYSDOT is the lead agency for SEQR.

Contact: Further information regarding this project or the contents of this report may be obtained by contacting:

Monroe County Department of Transportation
CityPlace, Suite 6100
50 West Main Street
Rochester, NY 14614
Attn: Scott Leathersich, Sr. Physical Services Planner

Correspondence regarding this project should refer to PIN 4753.59.

CHAPTER II - PROJECT IDENTIFICATION, EVOLUTION, CONDITIONS AND NEEDS, AND OBJECTIVES

A. Project Identification

1. Project Type

This project consists of the roadway rehabilitation of approximately 4000 meters (2.5 miles) of East Ridge Road in the Town of Irondequoit, from 90 meters (300 feet) east of Seneca Avenue (the City line) to Culver Road. Major project components include: pavement rehabilitation; upgrades to the signal systems; drainage, and sidewalk improvements; and evaluation of the existing lighting systems.

2. Project Description/Location

a. Description

(1) Route Name – East Ridge Road
(2) Monroe County Road Number - 241
(3) Official highway description – Urban Minor Arterial
(4) Municipality – Town of Irondequoit
(5) County - Monroe
(6) Length – 4000 m (2.5 miles)
(7) Termini – City/Town Line to Culver Road

The Irondequoit Land Use and Zoning within 800 meters (½ mile) of East Ridge Road are shown on **Figure II-2 and II-3.** The East Ridge Road Corridor consists of mostly commercial properties, with other uses mixed in, surrounded primarily by residential areas. The **Table II-1** below shows land uses by type for a half mile buffer around the study area.

Table II-1
Existing Land Uses within 800 meters (1/2 Mile) of East Ridge Road Study Area

Land Use	Acreage	% of Total
Single-Family Residential	798.50	46.64
Commercial/Retail	320.08	18.69
Community Facilities	226.64	13.24
Multi-Family Residential	208.01	12.15
Vacant	90.22	5.27
Industrial	31.35	1.83
Other	24.85	1.45
Parking	12.55	0.73
TOTAL	**1712.20**	**100**

Chapter IV – Social, Economic and Environmental Considerations, will include additional information on local planning and community and social consequences.

b. Project Mapping
The project location map is in the previous chapter of this report. Following this page are:

Figure II-2	Land Use
Figure II-3	Zoning
Figure II-4a thru II-4d	Aerial maps

A complete set of Roadway Plans and Profiles (existing conditions only) are included as part of this report, but submitted under separate cover.

B. Project Evolution

East Ridge Road within the project limits was originally a NYSDOT road constructed in 1911 (based on available record), which was conveyed to the County in the 1980's. The roadway was rehabilitated in 1977. The need for this project was identified by the County of Monroe.

The need for this project was programmed by Monroe County Department of Transportation, with support from NYSDOT Region 4 and was included in the Transportation Improvement Plan. The Initial Project Proposal (IPP) was approved by the NYS DOT Regional Director on 4/28/2003.

This project is being administered by Monroe County Department of Transportation (MC DOT).

C. Conditions and Needs

1. Transportation Conditions, Deficiencies and Engineering Considerations

a. Functional Classification and National Highway System -

(1) Functional Class: East Ridge Road is classified as an Urban Minor Arterial street.

(2) NHS: East Ridge Road is not on the National Highway System (NHS).

(3) Qualifying or Access Highway: East Ridge Road (CR 241) is on the list of Highways Designated as Qualifying or Access Highways for Larger Dimension Vehicles between Kings Highway/Goodman Street and NY 590. East Ridge Road is 0.28 meters (0.17 miles) from NY Route 104, a Qualifying highway.

b. Ownership and Maintenance Jurisdiction – Monroe County owns and maintains East Ridge Road.

c. Culture, Terrain, and Climatic Conditions

(1) Area Type: The area within and adjacent to the project limits is primarily Urban in nature. The primary land use is commercial.

(2) Terrain: The terrain in the project area is level.

(3) Unusual Weather Conditions: There are no unusual climatic conditions that would affect the design of the roadway.

d. Control of Access –This is an uncontrolled access corridor along the project length. Major intersections are controlled by signals, as is the mall east entrance, some larger commercial sites, and a few intersecting side streets. Access to and from the roadway is controlled by multiple driveways; 153 curb cuts exist along East Ridge Road within the project limits.

e. Existing Highway Section - Refer to **Figure II- 5** for a typical section.

(1) Right of Way width - The existing right-of-way along East Ridge Road within the project limits is 20 m (66 ft).

(2) Lanes and Shoulders:

East Ridge Road lane configurations and widths are summarized in **Table II-2** on page II-4. In general, it is a four-lane section between the eastern project limit and Hudson Avenue, where it transitions into a 5-lane section for the remainder of the project length. The center lane is a 3.0 m (10 ft) two-way left turn lane. The two-way left turn lane transitions into exclusive left turn lanes at the major intersections, and at various commercial access points. There are no shoulders on East Ridge Road within the project limits.

Table II-2

EAST RIDGE ROAD REHABILITATION PROJECT

LANE CONFIGURATIONS

Section	Lane Widths (feet)			
	Eastbound	Westbound	Center 2-way Turn lane	Turn Lanes
City/Town Line to Hudson Avenue: 4-lane section	2 - 3.3m (11 ft)	2 - 3.3m (11 ft) *	None	3.0 m (10 ft) LT lanes at Hudson 3.3 m (11 ft) LT at Marburger
Hudson Ave. to Carter St./Stanton Lane: 5-lane section	3.3m (11 ft) ** 3.0m (10 ft)	3.3m (11 ft) ** 3.0m (10 ft)	3.0m (10 ft)	3.0m (10 ft) LT lane at Carter/Stanton
Carter St./Stanton Lane to Portland Avenue: 5-lane section	3.3m (11 ft) ** 3.0m (10 ft)	3.3m (11 ft) ** 3.0m (10 ft)	3.0m (10 ft)	3.0m (10 ft) LT lane at Portland ***
Portland Avenue to North Goodman St/Kings Hwy: 5-lane section	3.3m (11 ft) ** 3.0m (10 ft)	3.3m (11 ft) ** 3.0m (10 ft)	3.0m (10 ft)	3.0m (10 ft) LT lane at North Goodman/Kings Hwy ****
North Goodman St/Kings Hwy to Culver Road: 5-lane section	3.3m (11 ft) ** 3.0m (10 ft)	3.3m (11 ft) ** 3.0m (10 ft)	3.0m (10 ft)	3.0m (10 ft) LT lane at Culver Road*****

* WB shift at Marburger Street from two lanes to one, to accommodate a left lane into the Post Office

** Curbside lane

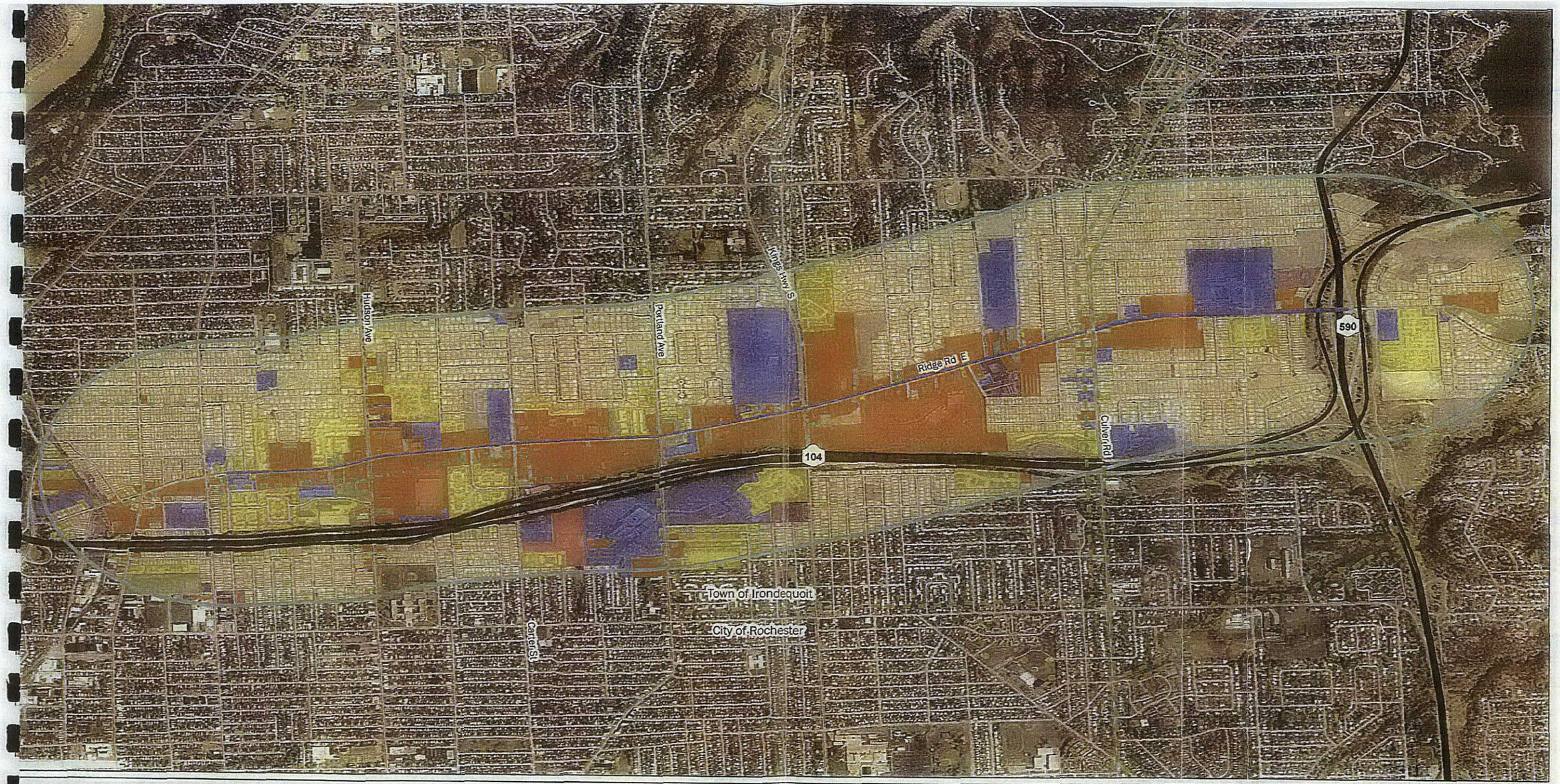
***There are exclusive left turn lanes at the signalized intersections of East Ridge Road at Georgetown Plaza and East Ridge Road at the Home Depot Driveway.

**** There is an exclusive left turn lane at the signalized intersection of East Ridge Road at the Plaza Entrance.

***** There are exclusive left turn lanes at the signalized intersections of East Ridge Road at the Mall Entrance and East Ridge Road at Brown Road.

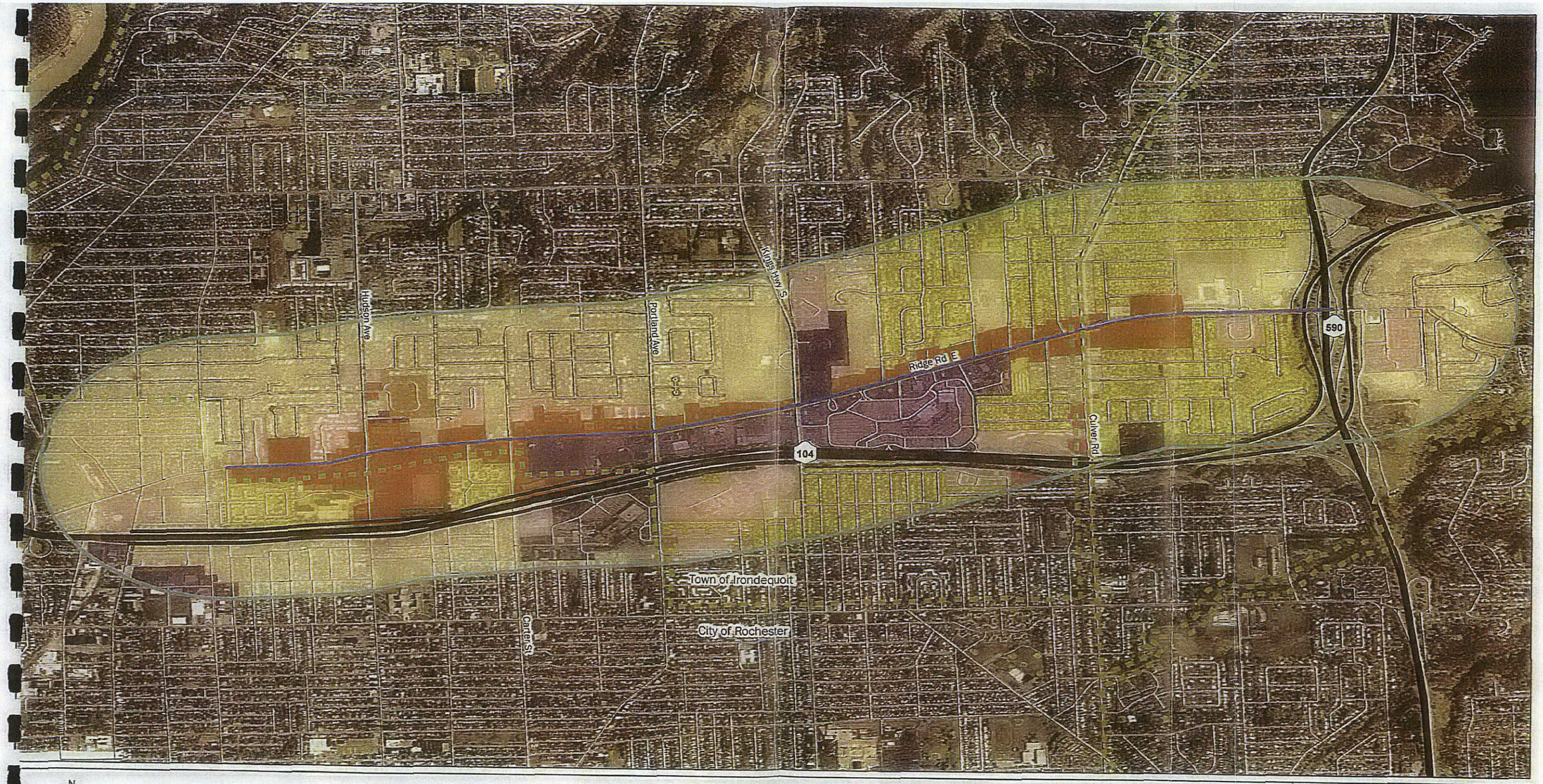
East Ridge Road
Rehabilitation

Figure II-1:
Project Location Map



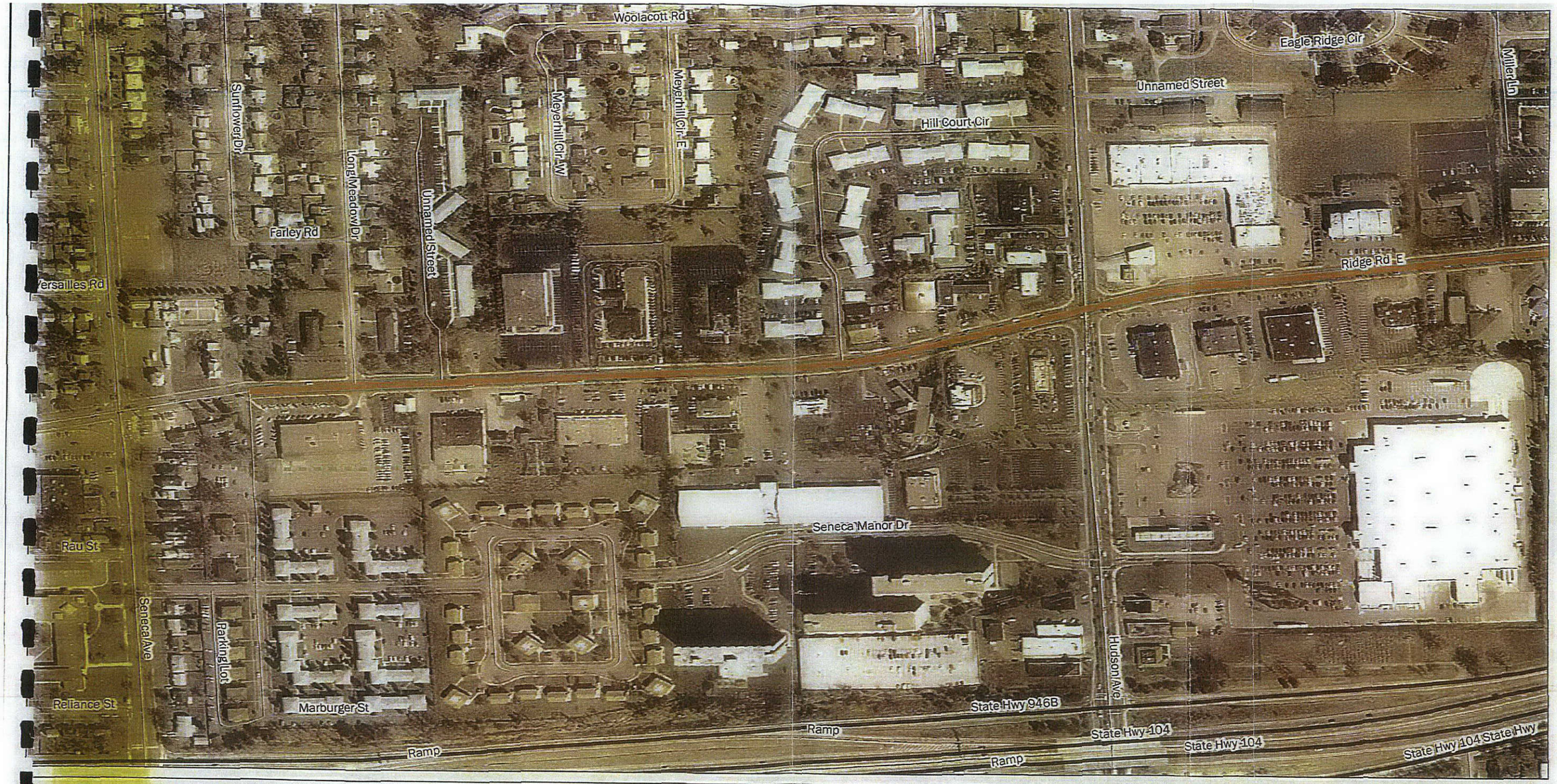
East Ridge Road Rehabilitation

Figure II-2: Existing Land Use 1/2 Mile Buffer



East Ridge Road Rehabilitation

Figure II-3: Existing Zoning 1/2 Mile Buffer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Eagle Ridge Cir
Miller Ln
Unnamed Street
Hill Court Cir
Meyerhill Cir W
Meyerhill Cir E
Sunflower Dr
Long Meadow Dr
Farley Rd
Unnamed Street
Ridge Rd E
Versailles Rd
Rau St
Seneca Manor Dr
Seneca Ave
Parking Lot
Marburger St
Reliance St
Ramp
Ramp
Ramp
State Hwy 946B
State Hwy 104
State Hwy 104
State Hwy 104 State Hwy
Hudson Ave
N
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0
255
510
1,020
Feet
Legend
Roadway Limits
Municipal Boundaries
F|R|A
A TYLIN INTERNATIONAL COMPANY
06-4005
East Ridge Road Rehabilitation
Figure II-4a: Aerials

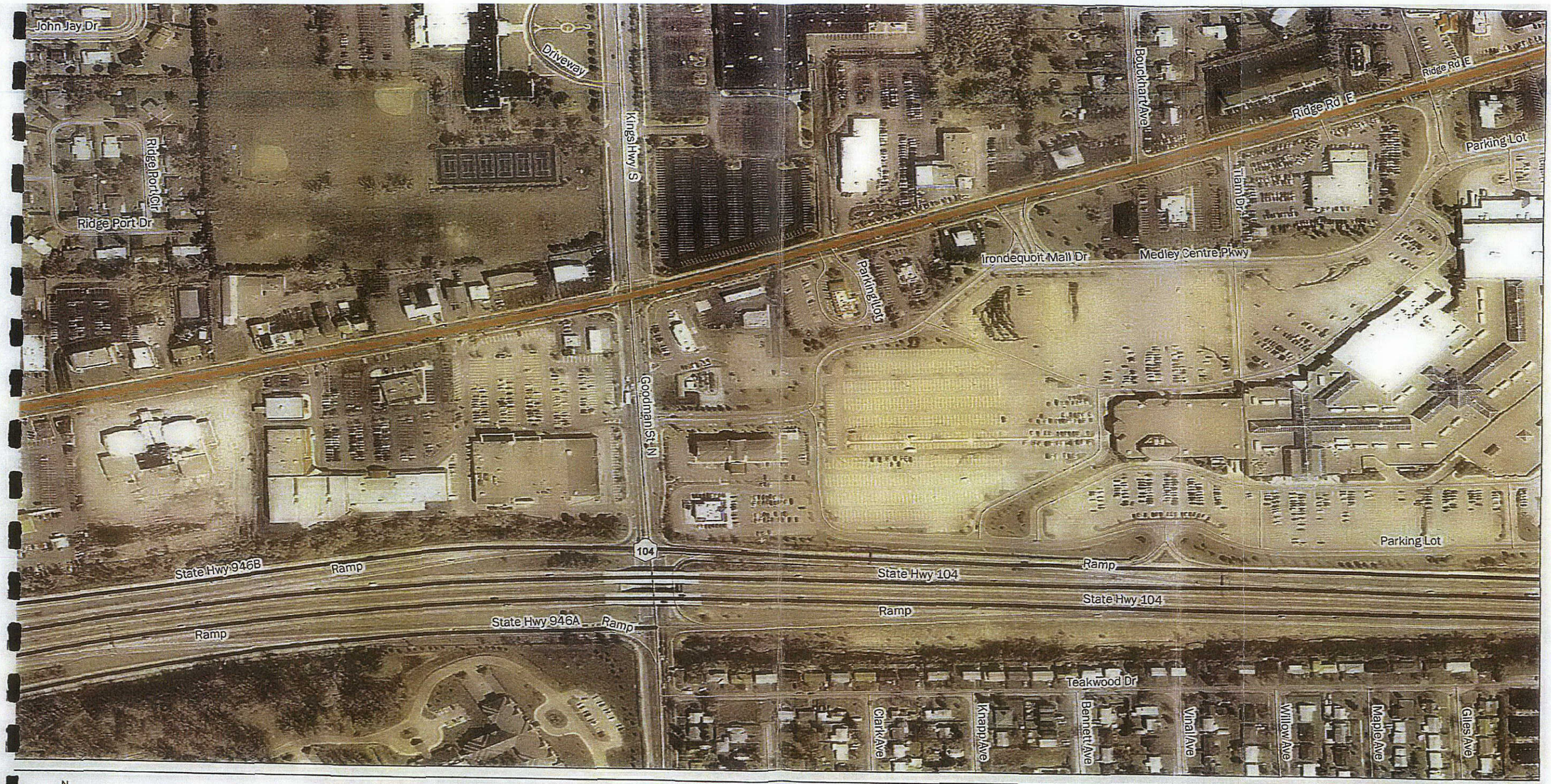
F|R|A

A TYLIN INTERNATIONAL COMPANY

06-4005

East Ridge Road Rehabilitation

Figure II-4b: Aerials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Kings Hwy S
Ridge Port Cir
Ridge Port Dr
Bouckhart Ave
Ridge Rd E
Ridge Rd E
Parking Lot
Tiam Dr
Irondequoit Mall Dr
Medley Centre Pkwy
Parking Lot
Goodman St N
104
Parking Lot
State Hwy 946B
Ramp
State Hwy 104
Ramp
Ramp
State Hwy 946A
Ramp
State Hwy 104
Ramp
Teakwood Dr
Clark Ave
Knapp Ave
Bennett Ave
Vinal Ave
Willow Ave
Maple Ave
Giles Ave
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S
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255
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Feet
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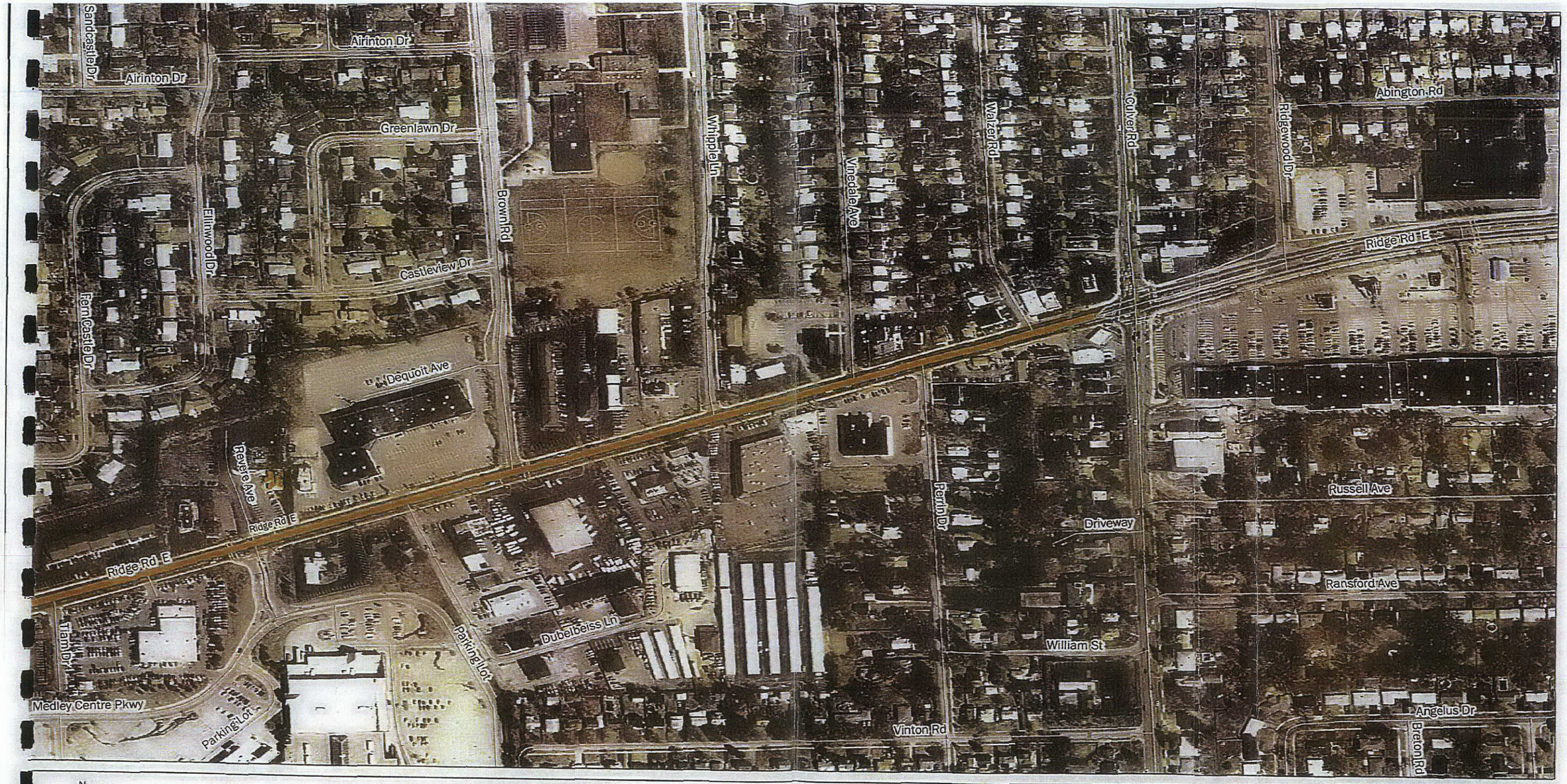
TY LIN INTERNATIONAL
Legend
Roadway Limits
Municipal Boundaries
East Ridge Road Rehabilitation
Figure II-4c: Aerials


Sandcastle Dr
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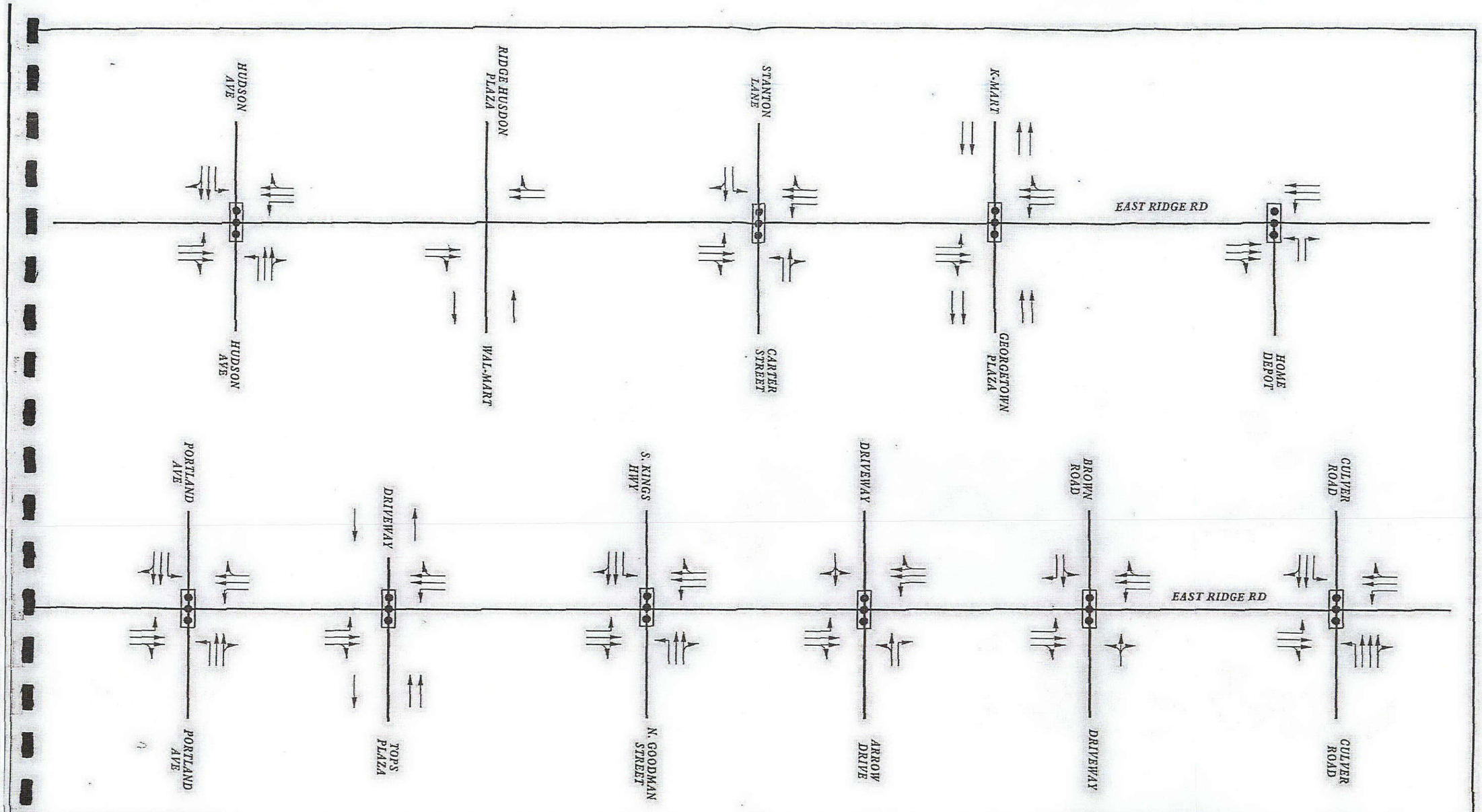
Airinton Dr
Greenlawn Dr
Ellinwood Dr
Castleview Dr
Fern Castle Dr
Brown Rd
Whipple Ln
Vinedale Ave
Walzer Rd
Culver Rd
Ridgewood Dr
Abington Rd
Ridge Rd E
Dequoit Ave
Reverse Ave
Ridge Rd E
Tiarn Dr
Medley Centre Pkwy
Parking Lot
Parking Lot
Dubelbeiss Ln
Perrin Dr
Driveway
William St
Vinton Rd
Russell Ave
Ransford Ave
Angelus Dr
Breton Rd
N
W
E
S
0
255
510
1,020
Feet
F|R|A
A TYLIN INTERNATIONAL COMPANY
06-4005
Legend
Roadway Limits
Municipal Boundaries
East Ridge Road Rehabilitation
Figure II-4d: Aerials



F|R|A
Planning | Designing | Building

FIGURE II-5

EXISTING INTERSECTION LANE CONFIGURATIONS

(3) Curb

The entire length of East Ridge Road within the project limits is curbed. The curb is primarily concrete curb with 75 to 125 mm (3" to 6") of reveal. The concrete is in fair condition throughout the project corridor. In addition to the concrete curb there also is granite curb located at the following intersections, East Ridge Road/Hudson Avenue, East Ridge Road/Portland Avenue, East Ridge Road/North Goodman Street/Kings Highway and at the East Ridge Road/Culver Road intersection. The existing granite curb is in good condition with 100 to 150 mm (4" to 6") of reveal.

(4) Raised Medians

Within the project limits, there is one existing raised median located east of Culver Road that separates eastbound and westbound traffic along East Ridge Road. There is one section of striped median at the 4-lane to 5-lane transition located west of Hudson Avenue.

(5) Grades and curves

The profile along East Ridge Road is relatively flat with grades ranging from +0.45 percent to –0.43 percent. The horizontal alignment along East Ridge Road is curvilinear. There are five horizontal curves within the project limits, the first is located at the City/Town line which has a radius of 457 m (1500 ft), the second is located 100 m west of the Hudson Avenue with a radius of 396 m (1300 ft), the third is located 50 m east of Hudson Avenue with a radius of 305 m (1000 ft), the fourth is located 400 m east of North Goodman/Kings Highway with a radius of 1524 m (5000 ft) and the last curve is located 100 m east of Culver Road with a radius of 750 m (2460 ft).

(6) Intersection Geometry and Conditions

Existing Intersection Geometry is graphically displayed in **Figure II-6**.

The five major intersections, Hudson Avenue, Carter Street/Stanton Lane, Portland Avenue, North Goodman/Kings Highway and Culver Road, all exhibit the same geometric characteristics. Along East Ridge Road all these intersections have two eastbound travel lanes, two westbound travel lanes, and exclusive left turn lanes. Hudson Avenue at the intersection with East Ridge Road has two northbound travel lanes, two southbound travel lanes, and an exclusive left turn lane on both the northerly and southerly legs. The Carter Street/Stanton Lane intersection has one northbound travel lane, one southbound travel lane, and exclusive left turn lanes on each leg. At the Portland Avenue and the North Goodman Street/Kings Highway intersections with East Ridge Road, there are two northbound travel lanes, two southbound travel lanes, and an exclusive left turn lane on both legs. The south leg of Culver Road at the East Ridge Road intersection has two travel lanes in each direction, plus exclusive left turn and right turn lanes. The north leg has two travel lanes in each direction, plus an exclusive left turn lane.

(7) Parking Regulations and Parking Related Conditions

From the City/Town line (Marburger Street) to Culver Road, parking is prohibited with the use of "*No Stopping Anytime*" signs posted throughout the

project corridor. However, there are two areas within the project corridor where parking is allowed: the first location is between Portland Avenue and North Goodman Street/Kings Highway in front of #1392 – Adrian Jules LTD., where there is an approximately 18 m (60 ft) long recessed parking area; the second location has a recessed parking area is from Walzer Road to Culver Road on the north side where 30 minute parking is allowed from 9:00 am to 6:00 pm on weekdays.

(8) Roadside Elements:

(a) Snow Storage, Sidewalks, Utility Strips, Bikeways, Bus Stops

Snow Storage/Tree Lawn Areas

From the City Line to Hudson Avenue, the 1.5 to 1.8 m (5 to 6 ft) wide sidewalks on the north side are primarily attached to the curb, so there is no snow storage in those areas. Approximately 20% of this section - a length of 120 m in various areas - has 1.2 m (4 ft) wide tree lawn/snow storage area. Along the south side, the 1.5 to 1.8 m (5 to 6 ft) wide sidewalks are attached to the curb, so there is primarily no snow storage area (with the exception of a 67 m (220 ft) section where there is 1.2 m (4 ft) wide snow storage area).

Between Hudson Avenue and Carter Street the existing tree lawn/snow storage width along the north side varies from 0 to 5.0 m (0 to 16 ft). Along the south side there is no snow storage area because of full width sidewalks in this section.

From Carter Street to Portland Avenue the existing tree lawn/snow storage width along the north side varies from 0 to 2.8 m (0 to 9 ft). Along the south side tree lawns width varies from 0 to 1.8 m (0 to 6 ft).

From Portland Avenue to North Goodman Street the existing tree lawn/snow storage width along the north side varies from 0 to 2.1 m (0 to 7 ft). Along the south side tree lawns width varies from 0 to 3.0 m (0 to 10 ft).

Between North Goodman Street to Culver Road the existing tree lawn/snow storage width along the north side there is primarily no snow storage area because of full width sidewalks with the exception of between Tiam Drive and Whipple Lane where they range from 0 to 0.7 m (0 to 2 ft). Along the south side there is primarily no snow storage area because of full width sidewalks.

Sidewalks

From the City Line to Hudson Avenue the existing sidewalks along the north side vary from 1.5 to 1.8 m (5 to 6 ft) wide. The sidewalk is primarily full width adjacent to the curb with the exception of a few locations where it is detached from the curb and separated by a snow storage/tree lawn area.

Between Hudson Avenue and Carter Street the existing sidewalks along the

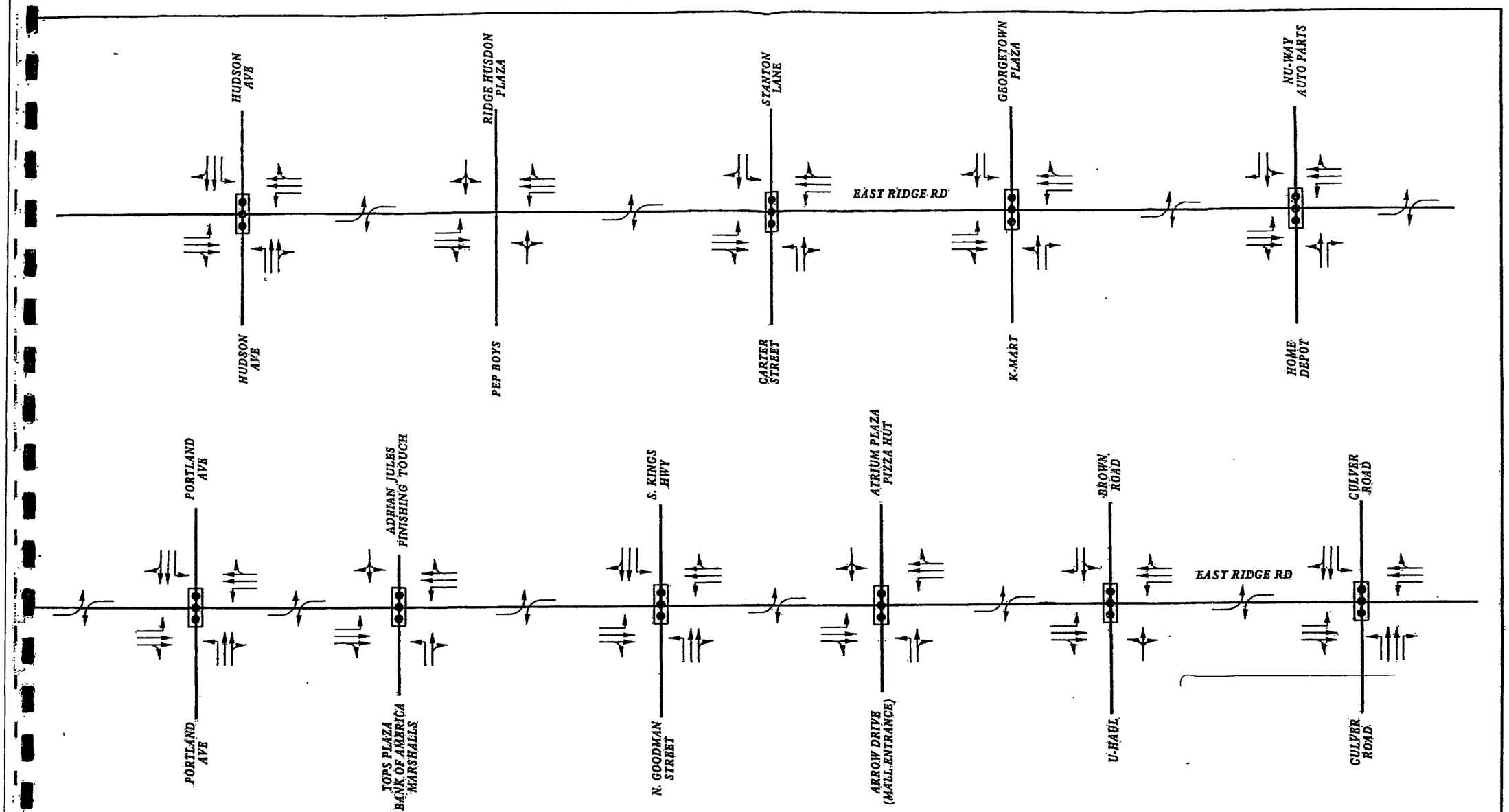


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FIGURE II-6

EXISTING INTERSECTION LANE CONFIGURATION YEAR 2007

north side vary from 1.5 to 1.8 m (5 to 6 ft) wide. The majority of the sidewalk is full width adjacent to the curb. Along the south side the sidewalks are adjacent to the curb they are 1.8 m (6 ft) wide.

From Carter Street/Stanton Lane to Portland Avenue the sidewalks along the north side vary from 1.5 to 1.8 m (5 to 6 ft) wide. Approximately half the sidewalk is full width adjacent to the curb with the other half being separated by a tree lawn/snow storage area. Similar to the north side the sidewalk along the south side varies from 1.5 to 1.9 m (5 to 6.2 ft) wide. It also has approximately half the sidewalk being full width adjacent to the curb and the other half being separated by a tree lawn/snow storage area.

From Portland Avenue to North Goodman Street/Kings Highway the existing sidewalks along the north side vary from 1.5 to 1.7 m (5 to 5.6 ft) wide. The sidewalk is primarily full width adjacent to the curb except for a section at the North Goodman Street/Kings Highway intersection where it is detached from the curb and separated by a snow storage/tree lawn area. Along the south side the sidewalks are primarily adjacent to the curb they vary in width from 1.5 to 2.3 m (5 to 7.5 ft) wide.

Between North Goodman Street/Kings Highway to Culver Road the existing sidewalks along the north side vary from 1.5 to 1.7 m (5 to 5.6 ft) wide. The sidewalk is primarily full width adjacent to the curb except for a section at the North Goodman Street/Kings Highway intersection where it is detached from the curb and separated by a snow storage/tree lawn area. Along the south side the sidewalks are primarily adjacent to the curb they vary in width from 1.5 to 2.3 m (5 to 7.5 ft) wide.

The majority of the sidewalk throughout the project corridor is in poor to fair condition with many spalled, heaved or asphalt covered areas. Existing sidewalk that is in good condition will remain if proposed improvements do not interfere with its location.

Currently there are no easements where existing sidewalk is located outside of the right of way.

(b) Bicycle Accommodations

There are no designated bike lanes or bike paths within the project limits; however, bicycle riders are not prohibited from using the travel lanes.

(c) Utility Strips

At the present time Monroe County Water Authority has several permanent easements within the project limits for the water distribution system. The easements are primarily located behind the existing right of way on the south side. The majority of all other utilities are located within the existing right of way along East Ridge Road and the intersecting side streets.

(d) Bus Service and Bus Stops

Regional Transit Service (RTS) operates bus service within the project

corridor. **Figure II-7** provides a summary of Bus Service along the East Ridge Road corridor and within the vicinity of the project study area. RTS has the following bus routes that travel along the East Ridge Corridor:

RTS Route No. 4 – Route runs between Hudson Avenue and Carter Street, it makes a few stops along East Ridge Road between Hudson Avenue and Carter Street.

RTS Route No. 14 – Route runs West Ridge Road to West Greece/East Ridge Road. It makes stops at the Medley Centre (Former Irondequoit Mall) but not directly on East Ridge Road. It stops at Rochester General and has additional stops along E. Ridge Rd. west of the project limits.

RTS Route No. 45 – Route serves the Webster Ave./Xerox Express via Medley Centre (Irondequoit Mall). It makes no stops along East Ridge Road.

RTS Route No. 10 – Route serves the Portland Avenue to Sea Breeze area, makes stops at the Medley Centre (Former Irondequoit Mall) and Culver Ridge Center but does not stop directly on East Ridge Road.

RTS Route No. 3 – Route serves the Goodman Street to Westmar area, makes stops at the Medley Centre (Former Irondequoit Mall) on East Ridge Road between Hudson Avenue and Goodman Street.

RTS Route No. 6 – Route serves the Clifford Avenue area, makes stops at the Medley Centre (Former Irondequoit Mall) but none directly on East Ridge Road.

RTS Route No. 30 – Route serves Webster to Downtown. There are no stops directly on East Ridge Road within the project limits.

RTS Route No. 5 – Route serves Downtown to St. Paul Boulevard. There are no stops directly on East Ridge Road.

RTS Route No. 7 – Route serves North Clinton Avenue to Downtown. It stops at North Clinton and East Ridge Road, west of the project limits. There are no stops directly on East Ridge Road within the project limits.

RTS Route No. 11 – Route serves Joseph Avenue to Downtown. There are no stops directly on East Ridge Road within the project limits.

(e) Driveways

There are approximately 153 curb cuts along East Ridge Road within the project limits. Many of the driveways do not conform to the most current geometric standards. All driveways will be reviewed for both compliance to the current geometric standards and will be evaluated on access management requirements.

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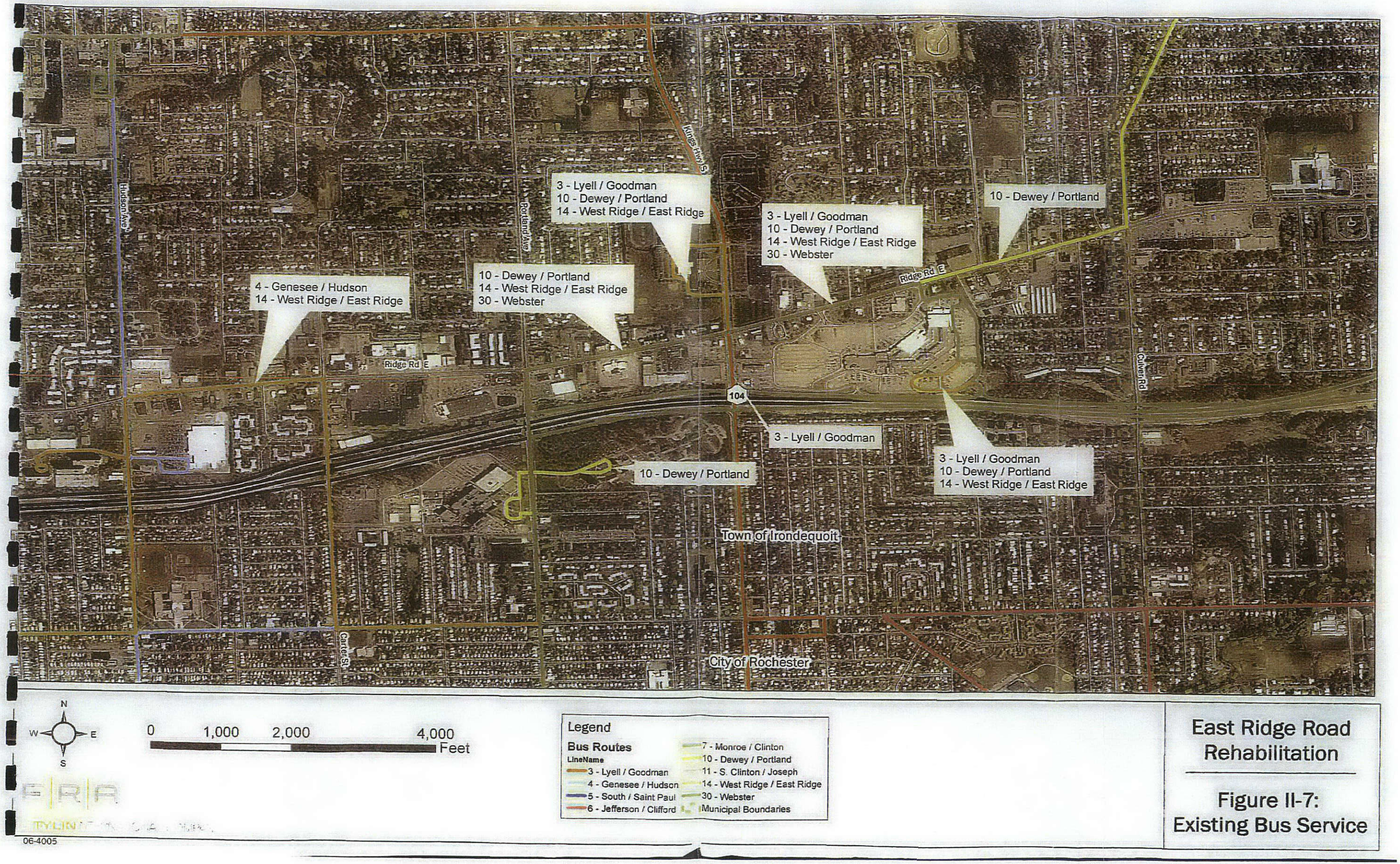


East Ridge Road Rehabilitation

Figure II-7:
Existing Bus Service

(f) *Clear Zone*

The clear zone is 0.6 m (2 ft) wide. The clear zone along East Ridge Road within the project limits is limited by the utility poles located behind the existing curb. The distance between the curb and the poles varies with the closest being approximately 0.6 m (2 ft).

f. Abutting Roadway Segments and Future Plans for Abutting Roadway Segments

The major, north-south, signalized intersections along East Ridge Road are (in order from west to east) Hudson Avenue, Carter Street/Stanton Lane, Portland Avenue, Goodman Street, and Culver Road. Hudson Avenue, Portland Avenue, Goodman Street, and Culver Road are County-owned. All are 5-lane sections except for Culver Road northbound, which is a 6-lane section. Carter Street/Stanton Lane is a town-owned collector, with a 3-lane section.

g. Speeds and Delay

(1) Existing Speed Limit - The Current posted speed limit within the project limits is 35 MPH.

(2) Travel Speed and Time Delay for Existing Conditions - The Monroe County Department of Transportation has received some citizen complaints that delays are excessive at times in some places – especially at the signalized intersections with Hudson Avenue and Culver Road. At both of these locations, the causative factors include heavy through traffic volume, high left-turning volumes, high right-turning volumes, high side-street traffic volume, and a lack of exclusive right-turn lanes on the westbound and northbound approaches at the Hudson Avenue intersection and on the eastbound and westbound approaches at the Culver Avenue intersection. In addition, congested Levels of Service (Levels of Service D and E) occur at these same two intersections on both the East Ridge Road, Culver Road and Hudson Avenue approaches in the left-turn lanes and through lanes, and contribute to delay along the East Ridge Road corridor

h. Traffic Volumes

Existing 2007 peak hour turning movement counts were collected primarily during the months April and May 2007 along the East Ridge Road corridor during the weekday morning peak period (7-9 AM), the weekday midday peak period (11AM – 1PM), the weekday evening peak period (4-6 PM), and the Saturday midday peak period (11AM – 2PM). Existing peak hour traffic volumes are displayed in **Figures II-8 and II-9**. As referenced in the Town of Irondequoit's "Town-wide Traffic and Transportation Study", dated May 2001, peak hour traffic volumes in the Town of Irondequoit are estimated to increase approximately 0.6 percent per year on average. The Genesee Transportation Council (GTC) made the estimate of future traffic volume in the Town of Irondequoit for the year 2025. The GTC utilized a computerized regional traffic simulation model to estimate future transportation system demands. This growth rate was used to determine the estimated daily traffic volumes for the Estimated Time of Completion plus 20 years (ETC+20).

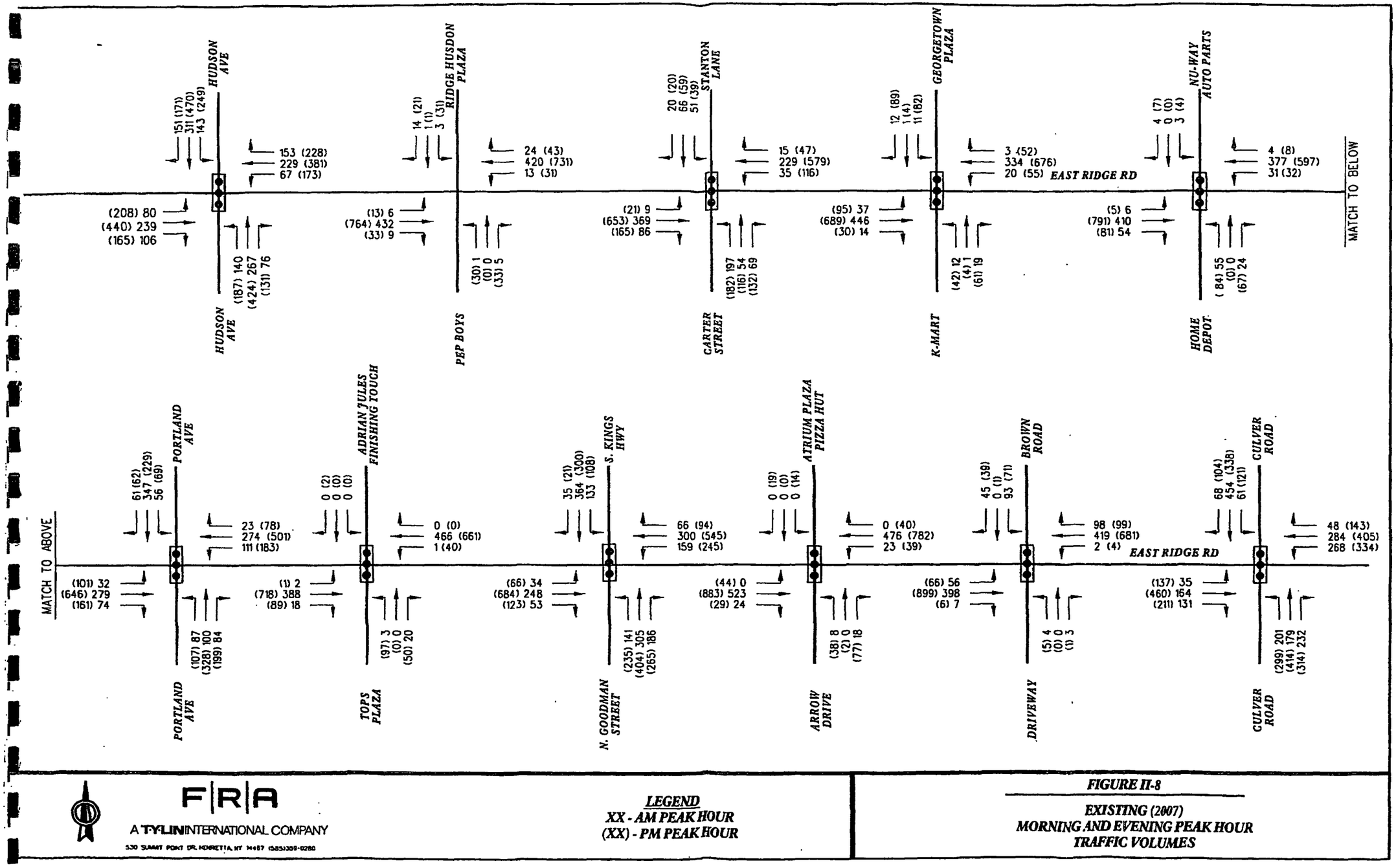
In 2004, East Ridge Road carried between approximately 15,000 to 21,000 vehicles per day, according to traffic data recorded by the Monroe County Department of Transportation. The 0.6 percent growth rate per year was used to determine the future ETC+20 traffic volumes that are estimated to range between approximately 18,000 to 25,000 vehicles per day. The existing and future daily traffic volume information is displayed on **Figure II-10.**

Table II-3 presents a summary of the two-way Design Hour Volume (DHV) and one-way Directional Design Hour Volume (DDHV) for existing and future conditions along East Ridge Road. Displayed in **Figures II-11** through **II-14** are future peak hour traffic volumes for the intersections studied.

Table II – 3
Existing and Future (2030)Peak Hour Traffic Volumes

	City Line to Hudson Avenue	Hudson Avenue to Carter Street	Carter Street to Portland Avenue	Portland Avenue to Goodman Street	Goodman Street to Arrow Drive	Arrow Drive to Culver Road
EXISTING (2004)						
DHV	1639	1817	1903	1922	2227	1936
DDHV	919	923	1017	1007	1120	1023
FUTURE (2030) – ETC + 20 YEARS						
DHV	1880	1998	2130	2184	2556	2206
DDHV	1054	1026	1130	1155	1285	1159

Note: DHV = Design Hour Volume.
DDHV = Directional Design Hour Volume.


HUDSON AVE
RIDGE HUDSON PLAZA
STANTON LANE
GEORGETOWN PLAZA
NU-WAY AUTO PARTS
EAST RIDGE RD
MATCH TO BELOW
HUDSON AVE
PEP BOYS
CARTER STREET
K-MART
HOME DEPOT
PORTLAND AVE
ADRIAN JULES FINISHING TOUCH
S. KINGS HWY
ATRIUM PLAZA PIZZA HUT
BROWN ROAD
CULVER ROAD
MATCH TO ABOVE
PORTLAND AVE
TOPS PLAZA
N. GOODMAN STREET
ARROW DRIVE
DRIVEWAY
CULVER ROAD
EAST RIDGE RD
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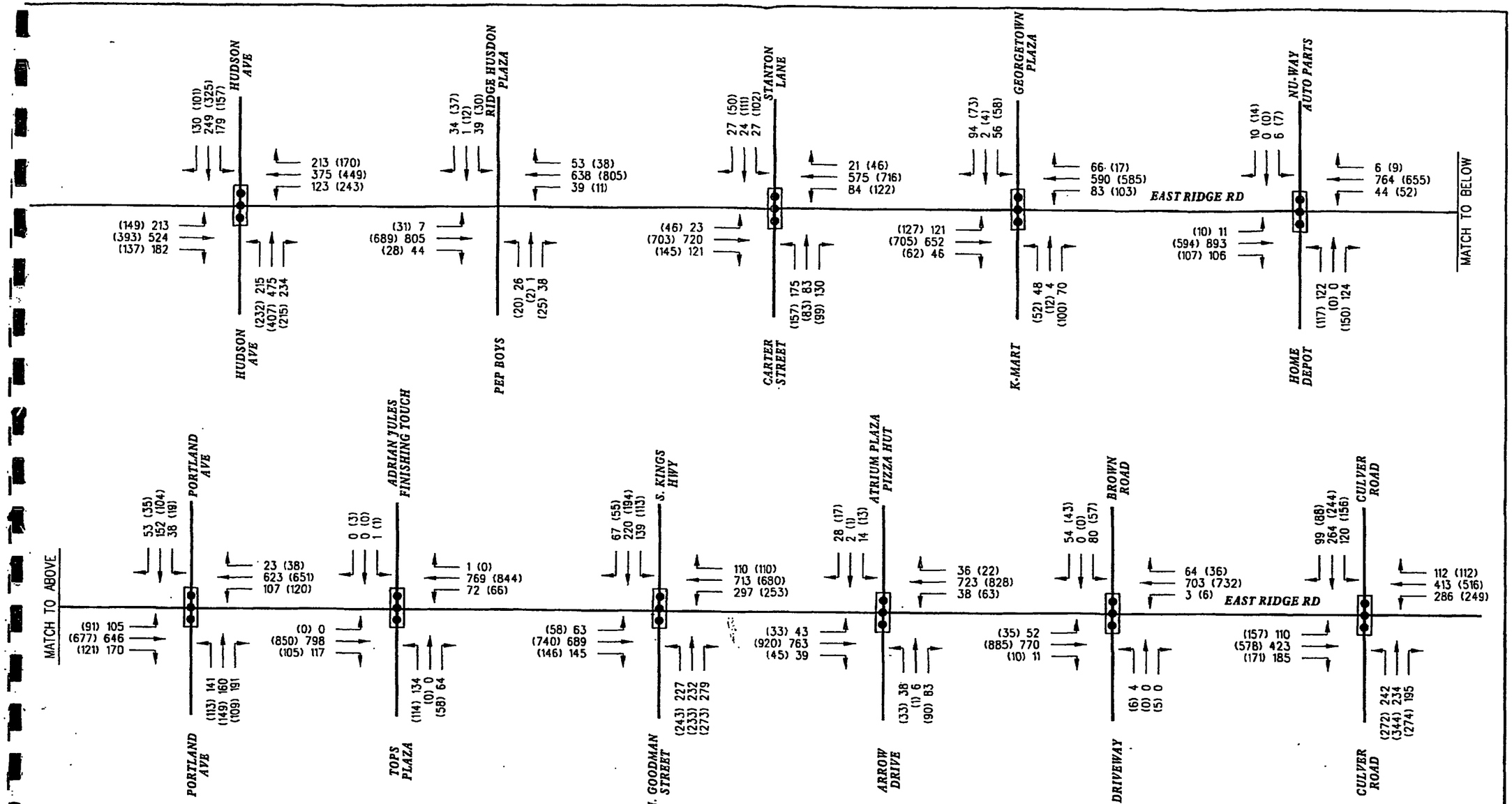
LEGEND
XX - AM PEAK HOUR
(XX) - PM PEAK HOUR
FIGURE II-8
EXISTING (2007)
MORNING AND EVENING PEAK HOUR
TRAFFIC VOLUMES



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LEGEND
XX - MIDDAY PEAK HOUR
(XX) - SATURDAY PEAK HOUR

FIGURE II-9

EXISTING (2007)
MIDDAY AND SATURDAY PEAK HOUR
TRAFFIC VOLUMES

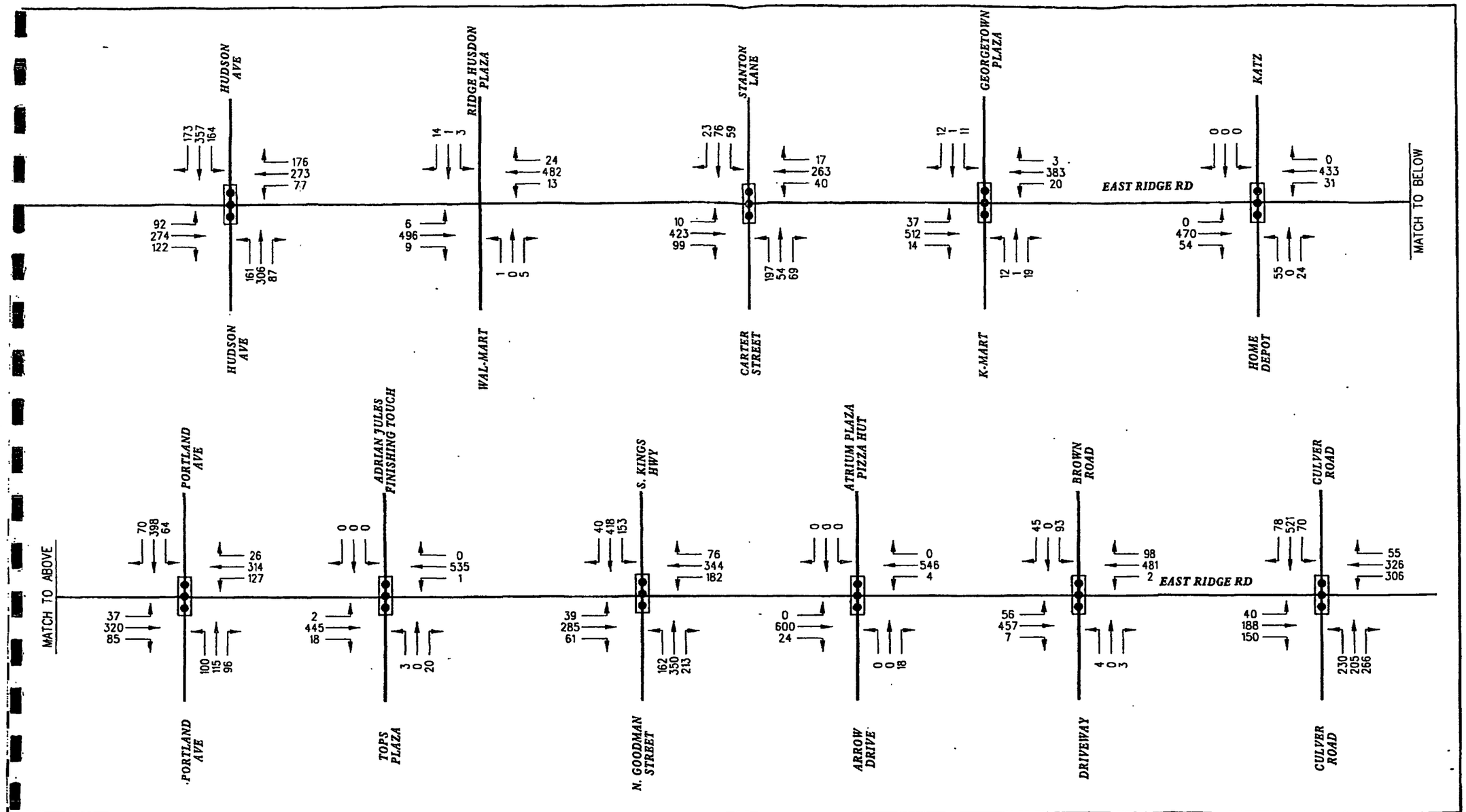

FIGURE II-11

FUTURE (2030)
MORNING PEAK HOUR
TRAFFIC VOLUMES - (ETC + 20)

F|R|A
Planning | Designing | Building

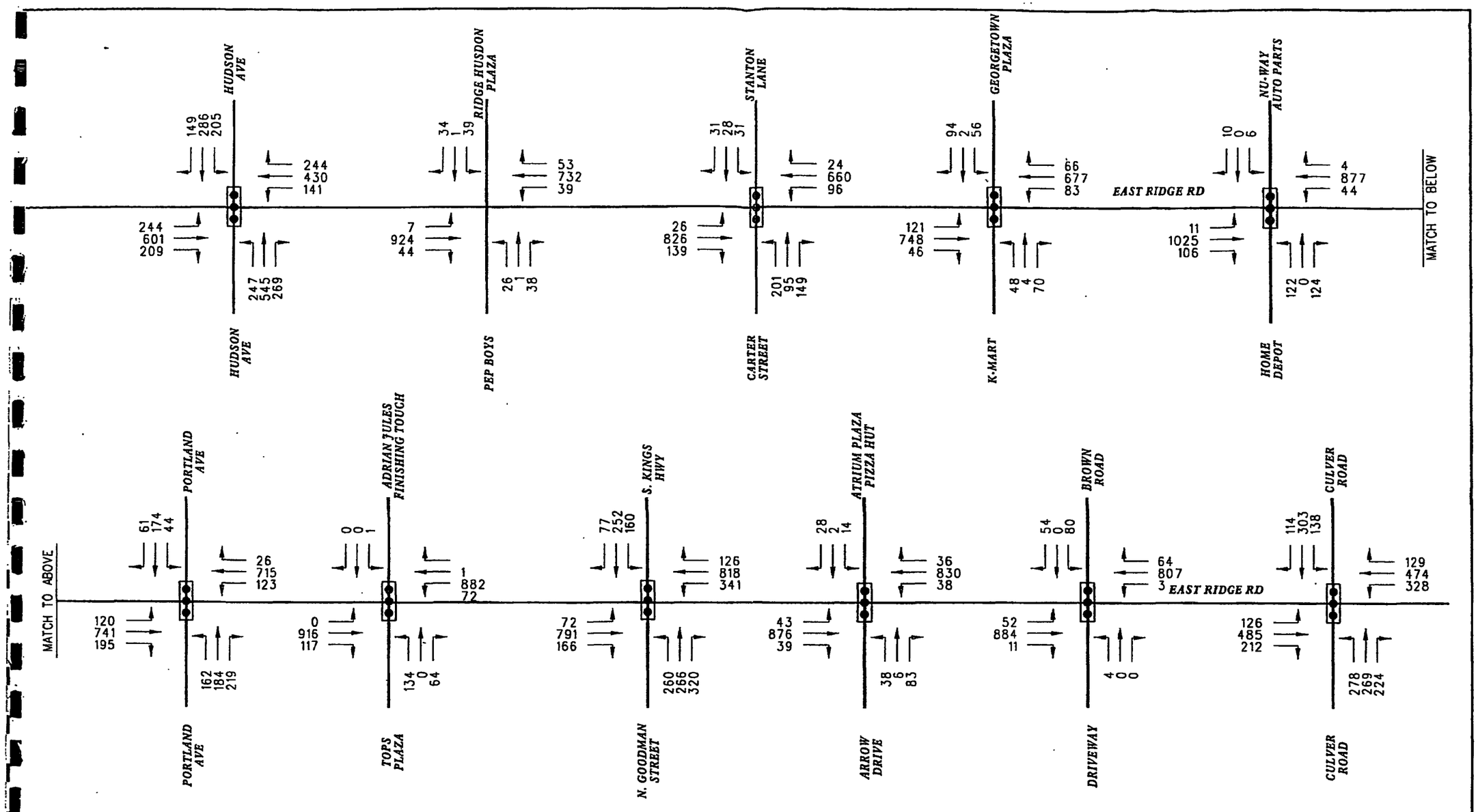

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FIGURE II-12

FUTURE (2030)
MIDDAY PEAK HOUR
TRAFFIC VOLUMES - (ETC + 20)

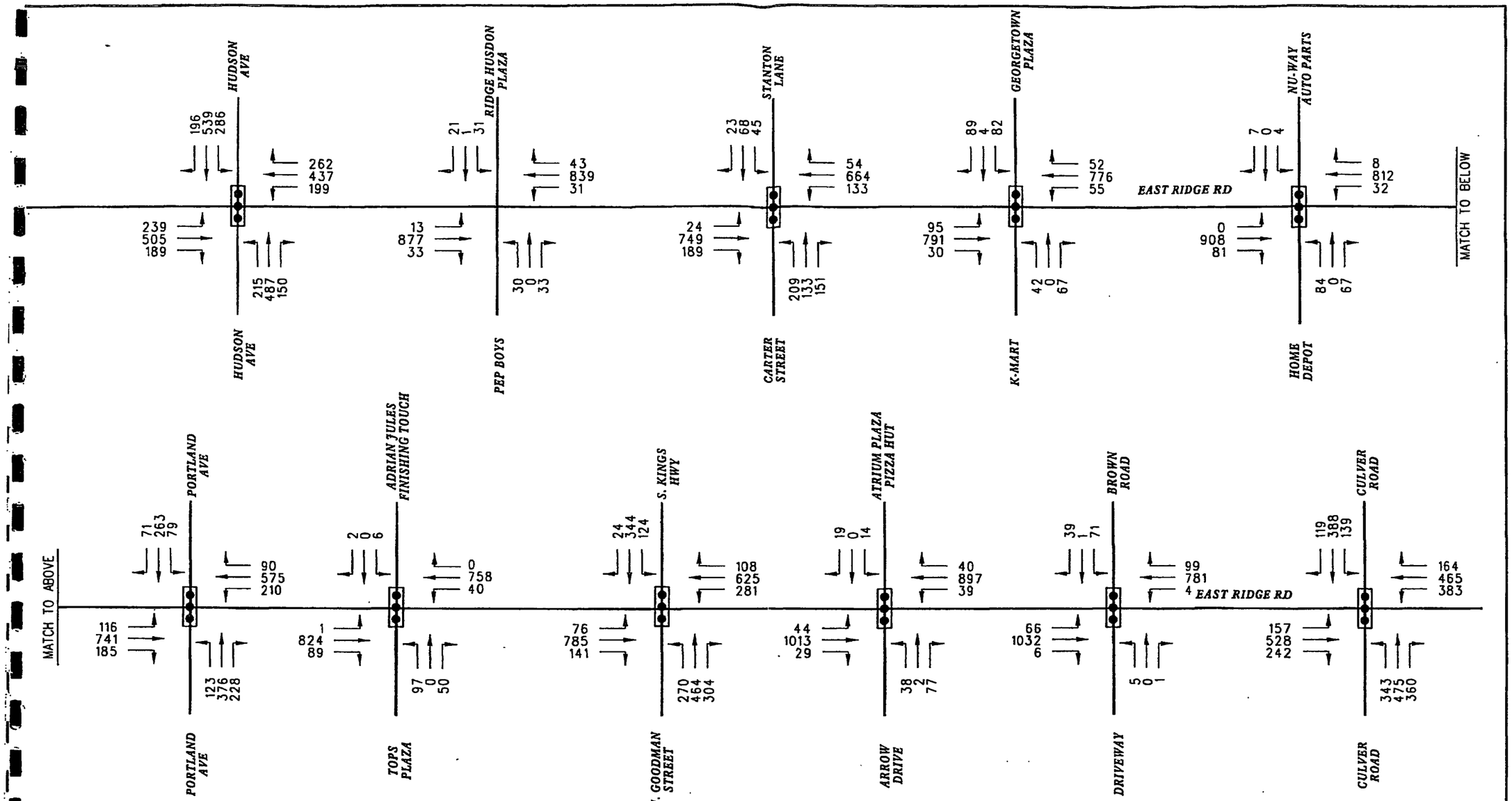

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FIGURE II-13

FUTURE (2030)
EVENING PEAK HOUR
TRAFFIC VOLUMES - (ETC + 20)

Truck volumes were collected as part the turning movement counts. Percentages of trucks along the corridor generally range between three to nine percent during the morning peak hour and between one and three percent during the evening peak hour. For traffic analysis purposes, a two percent default was assumed.

A review of historical evening peak hour traffic volumes on East Ridge Road between Goodman Street/Kings Highway and Culver Road over the past ten to fifteen years found that current traffic volumes are on the low side by about 200 to 300 vehicles per hour. Current traffic volumes in this section of East Ridge Road are consistent with traffic volumes measured on East Ridge Road in 1991. Lower-than-expected volumes are likely due to underutilized space at the Medley Center shopping mall. If the mall increases its occupation rate, traffic volumes will most likely increase.

i. Capacity Analysis

(1) Existing and future capacity analysis and Level of Service - **Table II-4** summarizes peak hour traffic operations at the ten signalized intersections and one unsignalized intersection within the study area during the weekday morning, weekday midday, weekday evening, and Saturday midday peak hours.

The Level of Service (LOS) analysis methodology for analyzing signalized and unsignalized intersections is documented in the Highway Capacity Manual (Transportation Research Board, Washington, D.C., 2000). The traffic-software Synchro 7 build 759, was used to analyze the studied intersections. Levels range from 'A' to 'F', with 'A' describing traffic operations with little or no delay, and 'F' describing traffic operations with long delays. Levels of Service for signalized and unsignalized intersections are expressed in terms of average control delay per vehicle. Full definitions of LOS for signalized and unsignalized intersections are included in **Appendix 'E'.**

Table II – 4
Existing and Future Conditions Level of Service Summary

Intersection Approach	Existing Conditions* 2007 AM	MID	PM	SAT	Future Conditions (ETC+20) 2030 AM	MID	PM	SAT
Intersection of East Ridge Road with Hudson Avenue								
EB L	B (12)	C (23)	C (21)	B (17)	B (13)	D (45)	C (33)	C (23)
EB T/TR	B (17)	C (31)	C (30)	C (27)	B (19)	D (39)	D (37)	C (34)
WB L	A (10)	B (13)	B (16)	B (17)	B (10)	C (21)	B (20)	D (42)
WB T/TR	C (21)	C (23)	C (32)	B (17)	C (21)	C (26)	D (37)	C (34)
NB L	C (29)	C (21)	D (49)	C (25)	C (31)	C (23)	E (55)	C (29)
NB T/TR	C (34)	D (36)	C (30)	C (35)	C (34)	C (41)	C (31)	C (35)
SB L	C (22)	D (26)	D (39)	C (25)	C (22)	C (29)	E (61)	C (27)
SB T/TR	C (31)	C (28)	D (43)	C (33)	C (31)	C (28)	D (46)	C (32)
Overall	**C (25)**	**C (28)**	**C (33)**	**C (26)**	**C (26)**	**C (34)**	**D (39)**	**C (33)**
Intersection of East Ridge Road with Pep Boys and Ridge-Hudson Plaza								
EB L	A (8)	A (9)	A (1)	A (1)	A (9)	A (10)	A (1)	A (2)
EB T/TR	-	-	-	-	-	-	-	-
WB L	A (9)	A (10)	A (1)	A (1)	A (9)	A (10)	A (1)	A (1)
WB T/TR	-	-	-	-	-	-	-	-
NB TL	B (13)	C (18)	E (50)	C (19)	B (13)	C (19)	F (72)	C (21)
NB R	A (10)	A (9)	A (10)	A (9)	A (10)	A (9)	A (9)	A (9)
SB TLR	B (11)	C (19)	F (53)	C (21)	B (11)	C (21)	F (90)	D (25)
Overall	**N/A UNSIGNALIZED**				**N/A UNSIGNALIZED**			
Intersection of East Ridge Road with Carter Street and Stanton Lane								
EB L	A (8)	A (8)	A (7)	B (13)	A (9)	A (10)	A (8)	A (7)
EB T/TR	B (16)	B (15)	B (14)	B (20)	B (17)	B (17)	B (14)	C (21)
WB L	A (7)	A (8)	C (20)	B (20)	A (7)	B (15)	C (33)	C (28)
WB T/TR	B (10)	A (7)	B (17)	A (9)	B (11)	A (8)	C (21)	A (3)
NB L	D (44)	C (33)	D (52)	D (42)	D (43)	C (33)	D (53)	C (33)
NB TR	D (50)	D (40)	D (55)	D (38)	D (50)	D (40)	E (58)	D (40)
SB L	C (29)	D (36)	D (47)	D (38)	C (29)	D (36)	D (48)	D (42)
SB TR	C (35)	D (35)	D (41)	D (39)	C (35)	C (33)	D (40)	C (33)
Overall	**C (25)**	**B (17)**	**C (24)**	**C (22)**	**C (24)**	**B (18)**	**C (27)**	**C (25)**
Intersection of East Ridge Road with Georgetown Plaza								
EB L	A (2)	A (3)	A (4)	A (4)	A (2)	A (3)	A (4)	A (4)
EB T/TR	A (2)	A (2)	A (3)	A (3)	A (2)	A (2)	A (3)	A (3)
WB L	A (2)	A (3)	A (5)	A (10)	A (2)	A (3)	A (6)	B (11)
WB T/TR	A (3)	A (3)	A (6)	A (4)	A (3)	A (2)	A (7)	A (4)
NB L	D (37)	D (41)	D (48)	D (37)	D (37)	D (41)	D (48)	D (37)
NB TR	D (36)	D (37)	D (45)	C (34)	D (36)	D (37)	D (45)	C (34)
SB L	D (38)	D (41)	D (51)	D (48)	D (38)	D (41)	D (51)	D (48)
SB TR	D (36)	D (37)	D (45)	C (34)	D (36)	D (37)	D (50)	C (34)
Overall	**A (6)**	**A (8)**	**B (10)**	**B (11)**	**A (6)**	**A (8)**	**B (10)**	**A (10)**

Key: Letters represent Levels of Service (LOS) (*) Indicates indeterminate seconds of delay
Numbers represent seconds of delay (*) NA or No Volume

Table II – 4 (Continued)
Existing and Future Conditions Level of Service Summary

Intersection Approach	Existing Conditions 2007				Future Conditions (ETC+20) 2030			
	AM	MID	PM	SAT	AM	MID	PM	SAT
Intersection of East Ridge Road with Home Depot								
EB L	A (2)	A (7)	A (3)	A (6)	A (2)	A (8)	A (4)	A (7)
EB T/TR	A (3)	A (9)	A (5)	A (6)	A (3)	B (11)	A (6)	A (8)
WB L	A (2)	B (11)	A (2)	A (9)	A (2)	A (9)	A (3)	A (8)
WB T/TR	A (3)	B (14)	A (2)	B (13)	A (2)	B (13)	A (2)	B (11)
NB LT	D (37)	D (39)	D (50)	D (39)	D (37)	D (39)	D (50)	D (39)
NB R	C (25)	C (23)	C (34)	C (24)	C (25)	C (23)	C (32)	C (24)
SB LT	C (33)	C (32)	D (45)	C (34)	C (33)	C (32)	D (45)	C (34)
SB R	C (33)	C (32)	D (44)	C (33)	C (33)	C (32)	D (44)	C (33)
Overall	**A (6)**	**B (15)**	**A (8)**	**B (13)**	**A (6)**	**B (15)**	**A (8)**	**B (12)**
Intersection of East Ridge Road with Portland Avenue								
EB L	A (9)	A (4)	B (11)	A (5)	A (9)	A (4)	B (13)	A (6)
EB T/TR	B (15)	B (14)	B (17)	B (16)	B (15)	B (16)	C (21)	B (19)
WB L	A (6)	A (9)	C (27)	B (11)	A (7)	B (13)	D (50)	C (23)
WB T/TR	A (9)	B (14)	B (17)	B (13)	A (9)	B (15)	B (18)	B (14)
NB L	C (29)	C (32)	C (30)	C (29)	C (24)	C (34)	C (27)	C (29)
NB T/TR	D (35)	D (36)	D (39)	C (35)	C (26)	D (35)	D (39)	C (34)
SB L	C (23)	C (31)	C (33)	C (31)	C (22)	C (30)	C (32)	C (31)
SB T/TR	C (32)	D (37)	D (41)	D (37)	C (31)	D (37)	D (40)	D (37)
Overall	**C (21)**	**C (21)**	**C (25)**	**B (19)**	**B (20)**	**C (21)**	**C (28)**	**C (21)**
Intersection of East Ridge Road with Tops Plaza								
EB T/TR	A (3)	B (19)	B (11)	B (15)	A (3)	B (19)	B (12)	C (20)
WB L	A (1)	A (5)	A (2)	A (2)	A (1)	A (5)	A (3)	A (4)
WB T/TR	A (2)	A (5)	A (2)	A (1)	A (2)	A (4)	A (3)	A (4)
NB LT	D (41)	D (48)	E (59)	D (48)	D (41)	D (48)	E (57)	D (47)
NB R	D (39)	D (33)	D (46)	D (36)	D (39)	D (33)	D (45)	C (35)
SB LTR	A (0)	D (35)	D (48)	D (37)	A (0)	D (35)	D (47)	D (37)
Overall	**A (3)**	**B (16)**	**B (11)**	**B (12)**	**A (3)**	**B (15)**	**B (11)**	**B (15)**
Intersection of East Ridge Road with Goodman Street and Kings Highway								
EB L	A (9)	B (10)	B (12)	A (7)	A (8)	B (13)	B (15)	A (9)
EB T/TR	B (16)	B (15)	C (28)	B (11)	B (17)	C (28)	D (45)	B (18)
WB L	A (9)	C (23)	D (38)	B (14)	B (11)	C (34)	E (57)	C (29)
WB T/TR	B (14)	B (15)	C (21)	B (15)	B (16)	B (18)	C (24)	B (18)
NB L	C (25)	C (31)	C (29)	C (33)	C (25)	C (32)	D (36)	D (36)
NB T/TR	C (30)	D (36)	C (21)	D (36)	C (28)	D (35)	B (20)	D (36)
SB L	C (25)	C (29)	C (34)	C (29)	C (27)	C (29)	D (37)	C (27)
SB T/TR	C (31)	D (37)	D (41)	D (37)	C (29)	C (34)	D (40)	C (35)
Overall	**C (22)**	**C (23)**	**C (27)**	**C (21)**	**C (22)**	**C (28)**	**C (34)**	**C (25)**

Key: Letters represent Levels of Service (LOS) (*) Indicates indeterminate seconds of delay
Numbers represent seconds of delay (*) NA or No Volume

Table II – 4 (Continued)
Existing and Future Conditions Level of Service Summary

Intersection Approach	Existing Conditions 2007				Future Conditions (ETC+20) 2030			
	AM	MID	PM	SAT	AM	MID	PM	SAT
Intersection of East Ridge Road with Arrow Drive								
EB L	-	A (3)	A (2)	A (3)	-	A (3)	A (2)	A (3)
EB T/TR	A (3)	A (3)	A (2)	A (3)	A (3)	A (4)	A (2)	A (4)
WB L	A (2)	A (1)	A (1)	A (3)	A (2)	A (1)	A (1)	A (3)
WB T/TR	A (3)	A (2)	A (2)	A (5)	A (3)	A (2)	A (2)	A (5)
NB L	D (39)	D (43)	D (51)	D (41)	D (39)	D (42)	D (51)	D (41)
NB TR	D (38)	D (40)	D (48)	D (39)	D (38)	D (40)	D (48)	D (39)
SB L	-	D (41)	D (49)	D (41)	-	D (41)	D (49)	D (41)
SB TR	-	D (40)	D (48)	D (39)	-	D (40)	D (48)	D (39)
Overall	**A (4)**	**A (6)**	**A (6)**	**A (7)**	**A (4)**	**A (6)**	**A (6)**	**A (7)**
Intersection of East Ridge Road with Brown Road								
EB L	A (3)	A (4)	A (6)	A (4)	A (3)	A (4)	A (6)	A (4)
EB T/TR	A (3)	A (5)	A (6)	A (4)	A (3)	A (4)	A (7)	A (5)
WB L	A (3)	A (2)	A (6)	A (4)	A (3)	A (2)	A (5)	A (4)
WB T/TR	A (4)	A (4)	A (7)	A (4)	A (5)	A (3)	A (7)	A (5)
NB LTR	C (32)	B (17)	C (22)	B (19)	C (32)	B (17)	C (22)	B (19)
SB LT	D (44)	C (21)	C (27)	C (22)	D (44)	C (21)	C (27)	C (22)
SB R	C (31)	B (17)	C (21)	B (18)	C (31)	B (17)	C (21)	B (18)
Overall	**A (9)**	**A (6)**	**A (8)**	**A (6)**	**A (9)**	**A (5)**	**A (9)**	**A (6)**
Intersection of East Ridge Road with Culver Road								
EB L	B (13)	A (10)	C (22)	B (18)	B (13)	B (12)	C (25)	C (21)
EB T/TR	B (15)	B (15)	C (31)	C (30)	B (16)	C (21)	D (40)	D (37)
WB L	B (18)	B (14)	D (43)	C (26)	C (23)	C (25)	F (89)	D (46)
WB T / TR	B (20)	B (17)	B (18)	C (26)	C (21)	B (20)	C (21)	C (29)
NB L	C (34)	D (41)	E (57)	D (42)	E (61)	E (62)	F (96)	D (52)
NB T/T	B (17)	C (15)	C (27)	D (44)	B (17)	C (34)	C (28)	D (44)
NB R	B (11)	C (21)	B (20)	D (39)	B(11)	B (18)	B (18)	C (28)
SB L	B (19)	C (27)	C (32)	D (36)	B(18)	C (26)	C (31)	D (36)
SB T/TR	C (29)	D (37)	D (45)	D (47)	C (28)	D (37)	D (45)	D (46)
Overall	**C (21)**	**C (23)**	**C (33)**	**C (34)**	**C (25)**	**C (28)**	**D (43)**	**D (38)**

Key: Letters represent Levels of Service (LOS) (*) Indicates indeterminate seconds of delay
Numbers represent seconds of delay (*) NA or No Volume

As shown in **Table II-4** on the previous pages, all the studied signalized intersections operate with an overall acceptable LOS 'C' or better during existing 2007 peak hours conditions. Projected future 2030 traffic conditions (ETC +20) are anticipated to continue to operate at overall acceptable LOS 'C' or better, with the exception of the East Ridge Road and Culver Road intersection. During future conditions, the intersection of East Ridge Road at Culver Road is anticipated to operate at overall LOS 'D' during the weekday evening and Saturday midday peak hours.

The following is a detailed summary of the turning movement Level of Service analysis results for each of the four peak hours studied:

Weekday Morning Peak Hour

Each turning movement at the intersections studied, currently and for future conditions, are anticipated to operate with an acceptable LOS 'D' or better, with

the exception of the East Ridge Road and Culver Road intersection. The northbound left-turn movement is projected to increase in delay from an existing LOS 'C' to 'E' during future conditions. No other significant delays were found as a result of our analysis.

Weekday Midday Peak Hour

Each turning movement at the intersections studied, currently and for future conditions, are anticipated to operate with an acceptable LOS 'D' or better, with the exception of the East Ridge Road and Culver Road intersection. The northbound left-turn movement is projected to increase in delay from an existing LOS 'D' to 'E' during future conditions. No other significant delays were found as a result of our analysis.

Weekday Evening Peak Hour

Each turning movement at the intersections studied, currently and for future conditions, are anticipated to operate with an acceptable LOS 'D' or better, with the exception of the following:

- *East Ridge Road at Hudson Avenue* - The northbound and southbound left-turn movements are expected to increase in delay from an existing LOS 'D' to 'E' during future conditions.
- *East Ridge Road at Pep Boys Driveway and Ridge-Hudson Plaza* - The northbound left-turn movement is expected to increase in delay from an existing LOS 'E' to 'F during future conditions. The southbound left-turn movement currently operates at a LOS 'F' and is projected to continue to operate at LOS 'F'. Delays are primarily related to high volumes on East Ridge Road, which is typical of unsignalized intersection control.
- *East Ridge Road at Carter Street and Stanton Lane* - The northbound through movement is expected to increase in delay from an existing LOS 'D' to 'E' during future conditions.
- *East Ridge Road at Tops Plaza* - The northbound left-turn/through movement is expected to remain at a LOS 'E' during future conditions.
- *East Ridge Road at Goodman Street and Kings Highway* - The westbound left-turn movement is expected to increase in delay from an existing LOS 'D' to 'E' during future conditions.
- *East Ridge Road at Culver Road* - The westbound left-turn movement is expected to increase in delay from an existing LOS 'D' to 'F' during future conditions. Similarly, the northbound left-turn movement is expected to increase in delay from an existing LOS 'E' to 'F' during future conditions. .

Saturday Midday Peak Hour

Each turning movement at the intersections studied, currently and for future conditions, are anticipated to operate with an acceptable LOS 'D' or better.

j. Non-Standard Features and Other Non-Conforming Features

(1) Non Standard Features – The following non-standard features within the project limits have been identified.

Feature	Standard Criteria	Existing Conditions
Lane widths	3.3m (11 ft.) minimum	3.0m (10 ft.) turn lanes

(2) Other Non-Conforming Features - There are no existing non-conforming features within the project limits.

k. Accident History and Analysis

Accident reports for the most recent three available years (2004 – 2006) were provided by the Town of Irondequoit Police Department. Within the East Ridge Road corridor, a total of 695 accidents were documented over the three-year period. Non-reportable accidents (accidents defined as property damage only accidents involving damage of $1,000 or less) were not identified by the Town of Irondequoit Police Department. As shown in **Table II-5**, over the three-year analysis period, no fatalities were recorded.

Table II – 5
Accident Severity by Year and Roadway Type

Accident Severity	Midblock Segments					Intersections				
	2004	2005	2006	Total	%	2004	2005	2006	Total	%
Fatalities	0	0	0	0	0%	0	0	0	0	0%
Injuries	31	27	22	80	23%	23	33	21	77	22%
Property Damage Only (>$1,000)	100	80	82	262	77%	98	103	75	276	78%
Total	**131**	**107**	**104**	**342**	**100%**	**121**	**136**	**96**	**353**	**100%**

Table II-6 provides a summary of accident types by year within the East Ridge Road corridor. Of the three-year analysis period studied, rear-end accidents accounted for the highest percentage of accident types for both midblock segments (25% of total) and intersections (33% of total). A total of 695 midblock and intersection accidents were researched on East Ridge Road within the study area.

Table II - 6
Accident Type by Year and Roadway Type

	Midblock Segments					Intersections				
Accident Type	2004	2005	2006	Total	%	2004	2005	2006	Total	%
Rear End	30	27	27	84	25%	36	52	30	118	33%
Overtaking	21	15	8	44	13%	10	13	12	35	10%
Right Angle	32	28	16	76	22%	28	25	13	66	19%
Left Turn	21	18	23	62	18%	30	26	22	78	22%
Right Turn	13	6	6	25	7%	8	7	8	23	7%
Fixed Object	2	3	4	9	3%	0	1	1	2	1%
Head On	1	0	1	2	1%	1	0	0	1	0%
Sideswipe	2	3	10	15	4%	0	1	0	1	0%
Pedestrian	5	2	4	11	3%	2	4	3	9	3%
Bicycle	4	3	3	10	3%	2	1	1	4	1%
Parked Vehicle	0	0	0	0	0%	0	0	0	0	0%
Backing	0	1	1	2	1%	3	3	4	10	3%
Run Off The Road	0	1	1	2	1%	0	1	1	2	1%
Animal	0	0	0	0	0%	0	0	1	1	0%
Other	0	0	0	0	0%	1	2	0	3	1%
TOTAL	131	107	104	342	100%	121	136	96	353	100%

Table II-7 provides a summary of intersection accidents along East Ridge Road. A total of 353 intersection accidents were researched on East Ridge Road within the study area of the three-year analysis period studied.

The majority of the intersections within the study area have an accident rate higher than the MCDOT average reportable accident rates for similar facilities. The intersection of East Ridge Road and Hudson Avenue has the highest intersection accident rate of 2.27 accidents per million entering vehicles (MEV), which is 2.4 times higher than the 0.94 MCDOT average accident rate. The intersection of East Ridge Road and Culver Road has the second highest intersection accident rate of 1.78 accidents per MEV. The intersection of East Ridge Road and Kings Highway/North Goodman Street has the third highest intersection accident rate of 1.1 accidents per MEV.

- East Ridge Road/Hudson Avenue Intersection

The intersection of East Ridge Road with Hudson Avenue experienced the highest accident rate of the intersections studied with a total of 93 accidents over the three year analysis period and an accident rate of 2.27 accidents per million entering vehicles. Rear end accidents (36 total) account for the highest percentage of accident types at this intersection (39 percent of total accidents). There were also 21 left-turn accidents, 16 right angle accidents, 9 overtaking accidents, 5 right-turn accidents, 4 backing accidents and 2 pedestrian accidents that occurred at this intersection. Many of the accidents were found to occur during the off-peak hours (10AM – 4PM), and this, plus the high incidence of rear-end accidents, is evidence of a congested intersection location.

- East Ridge Road/Culver Road Intersection

  The intersection of East Ridge Road with Culver Road experienced a total of 88 accidents over the three-year analysis period with an accident rate of 1.78 accidents per million entering vehicles. The most common accident type at this intersection was rear end accidents with 38 accidents (43 percent of total accidents), which suggests that this intersection may experience traffic congestion. There were also 24 left-turn accidents, 6 right-turn accidents, 6 overtaking accidents, 4 right angle accidents, 5 pedestrian/bicycle accidents, and 2 backing accidents, There is a high incidence of rear end accidents on both the eastbound (13 accidents) and westbound (12 accidents) East Ridge Road approaches.

- East Ridge Road/Kings Highway/North Goodman Street Intersection

  The intersection of East Ridge Road with Kings Highway and North Goodman Street experienced a total of 47 accidents over the three-year analysis period with an accident rate of 1.1 accidents per million entering vehicles. The most common accident types at this intersection were rear ends with 17 accidents (36 percent of total accidents). There were also 11 left-turn accidents, 7 right angle accidents, 5 overtaking accidents, 3 right-turn accidents, and 2 pedestrian accidents. 38% of the accidents occurred in the westbound direction, 32% in the northbound direction, 17% in the southbound direction, and 13% in the eastbound direction. The North Goodman Street and Kings Highway approaches to East Ridge Road had the majority of the rear end accidents (12 of the 17 total accidents). Six of the 11 left-turn accidents occurred between westbound left-turning vehicles and eastbound through vehicles.

- East Ridge Road/Carter Street/Stanton Lane Intersection

  The intersection of East Ridge Road with Carter Street and Stanton Lane experienced a total of 48 accidents over the three-year analysis period with an accident rate of 1.08 accidents per million entering vehicles. The most common accident type at this intersection was right-angle accidents with 21 accidents (44 percent of total accidents), with most of these accidents occurring primarily between eastbound and northbound vehicles. There were also 9 left-turn accidents, 7 rear end accidents, and 7 overtaking accidents. 39% of the accidents occurred in the northbound direction, 31% occurred in the westbound direction, 18% occurred in the eastbound direction and 12% occurred in the southbound direction. A total of eight accidents (three left-turn accidents and five right angle accidents) occurred at the Hess driveway on Carter Street. During the field investigations to assess this intersection, it was noted this driveway has a "no left-turn" sign posted at the driveway exit.

- East Ridge Road/Portland Avenue Intersection

  The intersection of East Ridge Road with Portland Avenue experienced a total of 38 accidents over the three-year analysis period with an accident rate of 1.0 accident per million entering vehicles. The most common accident type at this intersection

was 10 rear end accidents (26 percent of total accidents). There were also 9 left turn accidents, 6 overtaking accidents, 4 right angle accidents, 4 right-turn accidents, and 3 backing accidents. 45% of the accidents occurred in the eastbound direction, 20% occurred in the westbound direction, 20% occurred in the southbound direction, and 15% occurred in the northbound direction.

Refer to Appendix C for the complete accident analysis, including collision diagrams and accident summary tables.

Table II - 7
Intersection Accident Summary (2004 – 2006)

Intersection	Number of Accidents			Total	East Ridge AADT*	Cross Street AADT**	Accident Rate per MEV***	MCDOT Average Reportable Accident Rate
	2004	2005	2006					
East Ridge Road & Longmeadow Drive	2	1	0	3	15,618	500	0.17	0.33
East Ridge Road & Hill Court	1	2	0	3	15,618	300	0.17	0.33
East Ridge Road & Hudson Ave	30	35	28	93	20,307	17,119	2.27	0.94
East Ridge Road & Stanton Ln/Carter St	16	16	16	48	20,307	20,307	1.08	0.61
East Ridge Road & Portland Ave	9	17	12	38	19,310	15,519	1.0	0.94
East Ridge Road & Bellamy Drive	1	0	0	1	19,612	250	0.05	0.33
East Ridge Road & Kings Hwy/N. Goodman	14	18	15	47	20,954	17,943	1.1	0.94
East Ridge Road & Bouckhart Ave	4	4	2	10	20,954	500	0.43	0.33
East Ridge Road & Brown Road	1	4	2	7	20,954	1,170	0.29	0.33
East Ridge Road & Whipple Lane	4	1	0	5	19,737	500	0.23	0.33
East Ridge Road & Vinedale Ave	2	1	5	8	19,737	500	0.36	0.33
East Ridge Road & Walzer Road	1	0	0	1	19,737	500	0.05	0.33
East Ridge Road & Culver Road	35	37	16	88	20,322	24,896	1.78	0.94
East Ridge Road & Ridgewood Drive	1	0	0	1	20,322	500	0.04	0.33
TOTAL	121	136	96	353				

* East Ridge AADT = Annual Average Daily Traffic obtained from the Monroe County Dept. of Transportation

** Cross Street AADT estimated based on best source available

*** MEV = Million Entering Vehicles

Table II-8 provides a summary of midblock accidents along East Ridge Road. Over the three-year analysis period, a total of 342 midblock accidents were recorded on East Ridge Road within the study area. All of the midblock segments between Seneca Ave and Ridgewood Drive have an accident rate higher than the MCDOT average reportable accident rate of 1.08 accidents per MVMT. The segment from Hill Court to Hudson Ave has the highest midblock accident rate within the corridor with an accident rate of 29.24 accidents per million vehicle miles traveled (MVMT), which is significantly higher than the MCDOT average accident rate. Other segments experiencing accident rates above MCDOT average rate include: Walzer Road to Culver Road (12.49 accidents per MVMT); Kings Highway/North Goodman Street to Bouckhart Ave (7.84 accidents per MVMT); and Vinedale Ave to Walzer Road (6.48 accidents per MVMT).

For the midblock segment between Hudson Avenue and Hill Court, a detailed review was conducted, as this segment experienced an accident rate far in excess of the other roadway segments on East Ridge Road. Of the 50 accidents occurring over the three-year analysis period, 12 of these accidents occurred at the Delta Sonic

driveways, six accidents occurred at the McDonalds right-in/right-out driveway, and four accidents occurred at the Burger King driveway. One of the problems in this block, particularly at Delta Sonic, is that the roadway is transitioning from a five-lane to a four-lane roadway cross section, with a median area that does not have sufficient width to provide vehicle storage.

For the midblock segment between Walzer Road and Culver Road, a detailed review was also conducted. This midblock segment is to some degree impacted by backups from the East Ridge Road/ Culver Road intersection. In this segment, 15 of the 27 total accidents occurring over the three-year analysis period were associated with

vehicles trying to turn in or out of the Sunoco gas station located at 2075 East Ridge Road on the southwest quadrant of the East Ridge Road/Culver Road intersection. Eleven of those accidents were caused by vehicles heading northbound attempting to turn left out of the Sunoco gas station heading westbound on East Ridge Road. Two right turning accidents occurred in which the vehicle exiting eastbound from the Sunoco gas station struck a vehicle traveling in the eastbound direction. Two accidents occurred because a vehicle was attempting to turn left into the gas station; one accident was a rear-end accident and the other was a left turn accident. It appears that most of these accidents are related to eastbound traffic queuing beyond the driveway.

Table II - 8
Midblock Accident Summary (2004 – 2006)

Segment	Distance (miles)	Number of Accidents			Total	AADT*	Accident Rate per MVMT**	MCDOT Average Reportable Accident Rate
		2004	2005	2006				
Seneca Ave to Longmeadow Dr	0.1	4	0	1	5	15,618	2.92	1.82
Longmeadow Dr to Hill Court	0.2	10	3	3	16	15,618	4.68	1.82
Hill Court to Hudson Ave	0.1	18	18	14	50	15,618	29.24	1.82
Hudson Ave to Stanton Lane/Carter St	0.4	19	13	12	44	20,307	4.95	1.82
Stanton Lane/Carter St to Portland Ave	0.4	20	17	18	55	19,310	6.5	1.82
Portland Ave to Bellamy Dr	0.1	5	7	3	15	19,612	6.98	1.82
Bellamy Dr to Kings Hwy/N Goodman	0.3	9	11	8	28	19,612	4.35	1.82
Kings Hwy/N Goodman to Bouckhart Ave	0.2	12	11	13	36	20,954	7.84	1.82
Bouckhart Ave to Brown Rd	0.3	10	12	7	29	20,954	4.21	1.82
Brown Rd to Whipple Lane	0.1	3	2	6	11	19,737	5.09	1.82
Whipple Lane to Vinedale Ave	0.1	2	2	1	5	19,737	2.31	1.82
Vinedale Ave to Walzer Rd	0.1	6	3	5	14	19,737	6.48	1.82
Walzer Rd to Culver Rd	0.1	11	6	10	27	19,737	12.49	1.82
Culver Rd to Ridgewood Dr	0.1	2	2	3	7	20,322	3.15	1.82
TOTAL	2.6	131	107	104	342			

* AADT = Annual Average Daily Traffic obtained from the Monroe County Dept. of Transportation

** MVMT = Million Vehicle Miles Traveled.

I. **Pavement and Shoulder Conditions** - A visual Pavement Condition Survey was completed in August 2007. The results summarized in **Table II-9**, indicate the types and locations of pavement distresses that were identified.

Table II-9
East Ridge Road - Pavement Condition Survey (Visual)

East Ridge Road

Pavement Distress & Failure	From Station	To Station	Side	Area (SM)
Rutting	4+216	4+243	RT.	200
Rutting	4+280	4+305	LT.	200
Rutting	4+865	4+885	RT.	160
Rutting	5+490	5+510	RT.	180
Rutting	6+145	6+160	RT.	140
Rutting	6+195	6+210	LT.	150
Rutting	7+400	7+430	RT.	120
Rutting	7+455	7+485	RT.	300
Transverse Cracking @ Conc. Joints	3+600	7+670		
Joints are every +/- 20 m @ 16 m long 4,070 m/20m = +/- 204 Joints 3,264 m of Transverse Cracking/Joints				
Observed pavement distresses around utility castings (manholes, catch basins, water/gas valves) approximately 65% of the total castings throughout the project limit on East Ridge Road *have about a 0.3 m ring around the castings that have pavement distresses.*				

Carter Street

Pavement Distress & Failure	From Station	To Station	Side	Area (SM)
Rutting	C 0+430	C 0+445	RT.	105

Stanton Lane

Pavement Distress & Failure	From Station	To Station	Side	Area (SM)
Rutting/Settlement	S 0+472	C 0+487	LT.	75

Portland Avenue

Pavement Distress & Failure	From Station	To Station	Side	Area (SM)
Transverse/Longitudinal/Alligator Cracking - Major	P 1+020	P 1+150	RT./LT.	2210
Transverse/Longitudinal/Alligator Cracking - Minor	P 1+150	P 1+165	RT./LT.	400
Transverse/Longitudinal/Alligator Cracking - Major	P 1+178	P 1+188	RT./LT.	300
Transverse/Longitudinal/Alligator Cracking - Minor	P 1+188	P 1+300	RT./LT.	1900

North Goodman

Pavement Distress & Failure	From Station	To Station	Side	Area (SM)
Rutting	NG 1+050	NG 1+065	LT.	150
Transverse/Longitudinal/Alligator Cracking - Minor	NG 1+065	NG 1+120	RT./LT.	300
Rutting	NG 1+120	NG 1+143	RT.	230

Culver Road

Pavement Distress & Failure	From Station	To Station	Side	Area (SM)
Rutting	CS 1+135	CS 1+150	RT.	195
Rutting	CN 1+018	CN 1+035	LT.	170

The subsurface explorations performed at the project site for this investigation consisted of 75 pavement cores and test borings. Borings were advanced to depths of 5 to 10 feet. In the center of the road, the pavement core sections consisted primarily of asphalt binder and top courses over a nominal 8-inch concrete course, with total sections depths typically ranging between 12 to 14 inches - some had thicknesses as high as 18 or more inches. The outer edges of the roadway – outside of the original concrete section – consisted primarily of asphalt base, binder and top courses, with total section depths of typically 12 to 13 inches. Almost all of the core conditions were rated 'good'; a few were rated 'fair'.

The subbase course is generally sand and gravel below the pavement section. Due to similarities in the gradation characteristics of the subbase and subgrade, the subbase thickness is difficult to determine. Based on the information obtained, the geotechnical engineers estimate the subbase thickness at approximately 12 inches, with some areas being slightly greater.

The complete subsurface report is included as Appendix F.

Based on the results of the subsurface investigations and our observations and experience, the majority of the pavement structure is in sound condition.

The existing pavement along East Ridge Road is in fair condition throughout the project corridor. The pavement exhibits severe transverse cracking along the entire length within the project limits. This type of cracking indicates that the original concrete pavement transverse joints may be failing. The typical transverse cracking located throughout the project corridor is depicted in the photo to the right.

The existing pavement also exhibits some fair to moderate rutting primarily at the major intersections. These areas of distress are primarily associated with pavement base failures resulting from the constant acceleration and braking maneuvers from vehicles, especially heavy trucks. Along the curb lines the pavement shows severe cracking as well as areas of raveling and delamination.

The pavement distress along the curb lines is a good indication of poor subsurface drainage beneath the existing pavement section. This existing photo depicts the typical pavement condition along the curb lines.
Finally there are numerous pavement patches and repairs from various utility work that has taken place along the entire corridor.

From the overall visual assessment of various pavement distresses found along the entire length of East Ridge Road it is anticipated that approximately 10 to 15 percent of the existing pavement will require full depth reconstruction.

Table II - 10
East Ridge Road Pavement Analysis Data (November 2007, by MC DOT)

From	To	Length	Width	RCI	SDI	SAI	PQI
MARBURGER ST	KINGS HWY SOUTH	8364	55	6.3	3.0	6.5	2.9
KINGS HWY SOUTH	CULVER ROAD	4380	55	5.7	3.1	7.9	3.2

Where RCI (Ride Comfort Index) = measure of pavement roughness
SDI (Surface Distress Index) = measure of physical pavement distresses (cracking, deformations, surface defects, etc.)
SAI (Structural Adequacy) = measure of ability of a pavement to support expected traffic loading conditions
PQI (Pavement Quality Index) = used to provide a single overall assessment of pavement quality

The SDI is considered the most meaningful index, since it is the index that most reflects the condition of the roadway surface, and what is most visible to motorists as well. An SDI can range between 0.0 and 10.0, where a value of 10.0 indicates no surface defects. Normally, an SDI of 7.0 to 7.5 is viewed as the critical ranges, where significant distresses exist. The table above shows scores primarily in the range of 5.7 to 6.4, indicating significant distress.

The SAI is equally important, since the adequacy of the pavement structure will define the need for rehabilitation to protect the integrity of the pavement versus the need for the more costly reconstruction alternative. The SAI varies from a range of 2.5 (a realistic minimum) to a maximum of 10.0. An SAI of 5.0 indicates that the pavement is exactly adequate to carry the expected load over the upcoming year.

As compared to the field observations described above, the SDI appears to be on the low side, where the SAI of 6.5 to 8.0 supports the results of the subsurface investigations and our experience - that the majority of the pavement structure is in sound condition.

m. **Guide Railing, Median Barriers and Impact Attenuators** – There is a section of guide railing on the north side that extends 140m along East Ridge Road that wraps around the northeast corner of Kings Highway. It is located behind the sidewalk, at the top of a grass slope adjacent to a private parking lot.

n. **Traffic Control Devices** – There are 10 signalized intersections within the project limits. They are located at the following intersections:

Hudson Avenue	Tops Plaza Entrance
Carter Street/Stanton Lane	North Goodman Street/Kings Highway
Georgetown Plaza	Arrow Drive
Home Depot/Nu-Way Auto Parts	Brown Road
Portland Avenue	Culver Road

All traffic signals along East Ridge Road within the project limits are actuated or semi-actuated signals, operating in coordination throughout most of the day. During the weekday morning peak hour the coordinated cycle length is 90 seconds long, during the weekday evening peak hour the cycle length is 120 seconds long, and during the weekday Midday peak hour and the Saturday Midday peak hour, the cycle length is 100 seconds long. Some traffic signals run in uncoordinated operation at night. Marked crosswalks and pedestrian signals are also provided at each of these intersections.

o. **Structures** - There are no bridges or culverts within the project limits.

p. **Drainage Systems**

(1) Type

Along the entire length of the project there is an existing closed drainage system consisting of various types of drainage structures connected together with various types of pipes, as detailed below. The existing storm drainage was primarily installed in 1977 as part of a capital improvement project completed along this section of East Ridge Road. The existing roadway storm sewer along East Ridge Road is owned and maintained by Monroe County.

Storm Sewer Mains

Road	Main Size	Location
East Ridge Road		
250 m (800') west of Hill Court Circle to Hudson Avenue	300/375 mm (12/15") RCP	North side
250 m (800') west of Hill Court Circle to Hudson Avenue	300/375 mm (12/15") CSP & RCP	South side
Hudson Avenue to 380 m (1250') east of Hudson Avenue	300/375 mm (12/15") CSP & RCP	South side
60 m (200') west of Carter Street to Carter Street	300 mm (12") RCP	South side
120 m (400') east of Hudson	300 mm (12")	North side

Avenue to Brambury Drive	CSP/RCP	
60 m (200') west of Carter Street to Carter Street	300 mm (12") RCP	North & South side
235 m (800') west of Portland Avenue to Portland Avenue	300 mm (12") RCP	North & South side
Portland Avenue to 90 m (300') east of Portland Avenue	300 mm (12") RCP	North side
235 m (800') east of Portland Avenue to 220 m (700') west of North Goodman Street	300 mm (12") RCP	North & South side
220 m (700') west of North Goodman Street to North Goodman	375/450 mm (15/18") RCP	South side
210 m (700') east of North Goodman Street to Dubelbeiss Lane	300/375 mm (12/15") RCP	North side
Whipple Lane to Walzer Road	300 mm (12") RCP	North Side
North Goodman Street to Dubelbeiss Lane	300/450 mm (12/18") RCP (size varies)	South Side
Whipple Lane to Culver Road	300/375 mm (12/15") RCP	South side
Hudson Avenue – south leg	450 mm (18") RCP	Center, within pavement
Carter Street – south leg	450 mm (18") RCP	Center, within pavement
North Goodman Street – south leg – system #1	450 mm (18") CSP	East side, along edge of pavement
North Goodman Street – south leg – system #2	450 mm (18") RCP	West side, behind R.O.W. within a 3.0 m (10') wide easement
Tiam Drive	300 mm (12") PVC	West side, outside pavement
Culver Road – *south leg*	300 mm (12") CP	Center, within pavement

In addition to the existing storm sewer system that runs parallel to East Ridge Road there are also several road crossings that connect the storm sewer on the north side with the sewer on the south side. Refer to Drawing Nos. RP-1 thru RP-36 for location of the storm sewer roadway crossings within the project corridor.

(2) Condition/Deterioration – There are no known or reported drainage system condition or deterioration problems. However, further condition investigations will be completed during the design phase, including televising of sewer sections between structures.

(3) Deficiencies/Needs - There are no known or reported deficiencies or needs to the drainage systems in the study area.

q. **Geotechnical Conditions** – Pavement borings and a geotechnical report were completed by Tierney Geotechnical Engineering.

The subsurface explorations performed at the project site for this investigation consisted on 75 pavement cores and test borings. Borings were advanced to depths of 5 to 10 feet.

The subbase course under the pavement is generally sand and gravel below the pavement section. Due to similarities in the gradation characteristics of the subbase and subgrade, the subbase thickness is difficult to determine. Based on the information obtained, the geotechnical engineers estimate the subbase thickness at approximately 12 inches, with some areas being slightly greater.

r. Utilities

Water

The existing water system is owned and maintained by the Monroe County Water Authority. The MCWA has several easements along East Ridge Road where their main is located behind the existing right of way. Refer to Drawing Nos. RP-1 thru RP-36 for location of the existing permanent easements. Monroe County Water Authority has been contacted; they have no plans to improve or upgrade their existing facilities at this time. In locations where the proposed roadway improvements conflict with the existing water main, those facilities will be replaced or relocated. At this time it is not anticipated that any existing water main facilities will be impacted.

There are 34 hydrants and approximately 92 water services within the project corridor. In coordination with the Monroe County Water Authority all hydrant and water service facilities will be reviewed and improvements will be made if deemed necessary.

Water mains within the project limits are indicated in the following table.

Water systems

Road	Main Size	Location
East Ridge Road		
City/Town Line to Hudson Ave	150 mm (6")	North side within the pavement
Hudson Ave to Culver Road	200 mm (8")	North side within the pavement
Longmeadow Dr (40 m (130') west) to 100 m (330') west of Portland Ave	300 mm (12")	South side, primarily behind the existing ROW
Portland Ave to Perrin Dr (525' west of Culver Rd)	300 mm (12")	South side, primarily behind the existing ROW
Perrin Drive to Walzer Road	500 mm (20")	South side, in the pavement
Longmeadow Drive	unknown	East side, outside the pavement
Hill Court Circle	unknown	West side, outside the pavement
Hudson Avenue - north leg	unknown	East side, in the pavement
Stanton Lane	unknown	East side, outside pavement area
Portland Avenue – north leg	300 mm (12")	West curb line
Portland Avenue – south leg	300 mm (12")	East side, behind sidewalk; abandoned 50 mm (2") along east curb
North Goodman St – north leg	200 mm (8")	West curb, under sidewalk
	750 mm (30") (transitions to the 200 mm)	West side in pavement
North Goodman St – south leg	750 mm (30")	West side in pavement
	200 mm (8")	East side, under sidewalk
Bouchart Avenue	unknown	West side beneath concrete gutter

Tiam Drive	150 mm (6") reduces to 50 mm (2")	Western edge of pavement
Dubelbeiss Lane	unknown	East side, outside the pavement
Brown Road	unknown	West side in pavement
Whipple Lane	150 mm (6")	East side, under sidewalk
Vindale Avenue	unknown	East side, outside pavement area
Perrin Ave	500 mm (20")	Western edge of pavement
Walzer Road	500 mm (20")	Center of pavement
Culver Road	200 mm (8")	East side in pavement

Gas

The existing gas system is owned and maintained by the Rochester Gas and Electric. During the preliminary design phase RG&E will evaluate their existing facilities and determine if any improvements will be needed. In locations where the proposed roadway improvements conflict with the existing gas main, those facilities will be replaced or relocated. At this time it is not anticipated that any major relocations of existing gas mains will be required.

Gas mains within the project limits are indicated in the following table.

Gas Mains

Road	Main Size	Location
East Ridge Road		
City/Town Line to Portland Ave	200 mm (8")	South side within the sidewalk
Portland Ave to 60 m (200') west of Wipple Lane	300 mm (12")	South side within the sidewalk
60 m (200') west of Wipple Lane to Culver Road	300 mm (12")	South side along curb line
City/Town Line to Portland Ave	300 mm (12")	North side within sidewalk
Portland Ave to Kings Highway	200 mm (8")	North side within sidewalk
Hill Court Circle	75 mm (3")	West side, outside the pavement
Hudson Avenue - north leg	300 mm (12")	West side, outside the pavement
Brambury Drive	100 mm (4")	West side, in tree lawn area
Carter Street	150 mm (6")	East side within sidewalk
Stanton Lane	50 mm(2")	East side, along curb line
Portland Avenue – north leg	200 mm (8")	East side, within pavement
Portland Avenue – south leg	200 mm (8")	West side behind sidewalk
Kings Highway	200 mm (8")	West side, within pavement
North Goodman Street	400 mm (16")	East side, behind sidewalk
Bouchart Avenue	100 mm (4")	East side, outside the pavement
Tiam Drive	50 mm(2")	West side, outside the pavement
Dubelbeiss Lane	50 mm (2")	West side, along concrete gutter
Brown Road	100 mm (4")	East side, behind curb
Whipple Lane	50 mm (2")	East side, outside the pavement
Vindale Avenue	50 mm (2")	East side, outside the pavement
Perrin Avenue	75 mm (3")	East side, within the sidewalk
Walzer Road	150 mm (6")	East side, along curb line
Culver Road – north leg	200 mm (8")	West side, along curb line
Culver Road – south leg	150 mm (6")	West side, along curb line

In addition to the existing gas mains running parallel with East Ridge Road and the connecting side streets there also are several roadway crossings that run

perpendicular to East Ridge Road. Refer to Drawing Nos. RP-1 thru RP-36 for location of the roadway gas crossings within the project corridor.

Telephone

The existing telephone system is owned and maintained by the Frontier Telephone Corporation. Frontier has both underground facilities as well as overhead facilities with the project corridor. The overhead facilities are mounted on the Rochester Gas and Electric utility poles. During the preliminary design phase Frontier will evaluate their existing facilities and determine if any improvements will be needed. In locations where the proposed roadway improvements conflict with the existing telephone conduit, those facilities will be replaced or relocated. At this time it is not anticipated that any major relocations of existing telephone facilities will be required.

Telephone Facilities

Road	Above/Underground	Location
East Ridge Road		
City/Town Line to Hill Court Circle	Underground	South side within tree lawn/sidewalk area
Hill Court Circle to Hudson Avenue	Underground	South side within existing pavement
Dubelbeiss Lane to Brown Road	Underground	South side behind sidewalk
City Line to 40 m (130') east of Longmeadow Drive	Underground	North side within sidewalk
Hudson Avenue to Bouchart Avenue	Underground	North side within pavement
Bouchart Avenue to Perrin Avenue	Underground	North side within sidewalk
Perrin Avenue to Culver Road	Underground	North side within pavement
Hudson Avenue - north leg	Underground	West side, within pavement
Hudson Avenue - south leg	Underground	West side, behind curb
Carter Street	Underground	West side, within sidewalk
Portland Avenue	Underground	East side within pavement
Bouchart Avenue	Underground	West side, outside the pavement
Culver Road	Underground	East of centerline, within pavement

Cable

At this time no underground cable facilities have been identified on the plans. The overhead cable facilities, if any, are located overhead on the RG&E utility pole line. During the preliminary design phase Time Warner will evaluate their existing facilities and determine if any improvements will be needed. In locations where the proposed roadway improvements conflict with the existing cable facilities, those facilities will be replaced or relocated. At this time it is not anticipated that any major relocations of existing cable facilities will be required.

Electric

The existing electric system is owned and maintained by the Rochester Gas and Electric. The overhead electric facilities are mounted on wood pole lines that run parallel with East Ridge Road along both the north and south sides as well as down the connecting side streets within the project corridor. In addition to overhead facilities there also is an underground conduit system. The locations of the underground system are listed below. During the preliminary design phase RG&E will evaluate their existing facilities and determine if any improvements will be needed. In locations where the proposed roadway improvements conflict with the existing electric system, those facilities will be replaced or relocated. At this time it is not anticipated that any major relocations of existing electric facilities will be required.

Electric Facilities

Road	Above/Underground	Location
East Ridge Road		
City/Town Line to Hudson Avenue	Underground	North side, along curb line
Hudson Avenue to Portland Avenue	Underground	South side, along curb line
Portland Avenue to Whipple Avenue - system #1	Underground	North side, within sidewalk
Portland Avenue to Whipple Avenue – system #2	Underground	South side, along curb line
Whipple Avenue to Perrin Avenue – system #1	Underground	North side within pavement
Whipple Avenue to Perrin Avenue – system #2	Underground	North side, within sidewalk
Perrin Avenue to Culver Road	Underground	North side within pavement
Hudson Avenue - north leg	Underground	East side, within pavement
Hudson Avenue - south leg	Underground	East side, within sidewalk
Portland Avenue - north leg	Underground	Center, within pavement
Portland Avenue – south leg	Underground	East side, within pavement
North Goodman Street – system #1	Underground	West side, within sidewalk
North Goodman Street – system #2	Underground	East side, within sidewalk
Culver Road - north leg	Underground	East side, within pavement
Culver Road – south leg	Underground	Center, within pavement

Traffic Signal Interconnect System

Some sections of the traffic signal interconnect system are in dedicated County ducts, but portions of the interconnect system are in leased RG&E underground conduits.

Street Lighting

The existing street lighting systems consists of davit arms with cobra head fixtures mounted on the existing utility wood pole line, and is owned and maintained by Rochester Gas & Electric. There are streets lights on both sides of East Ridge Road as well as on the connecting major side streets. During the preliminary design phase RG&E will evaluate their existing facilities and determine if any improvements will be needed. In addition existing lighting levels will be reviewed to assure adequate lighting for safety through the project corridor. Necessary lighting improvements will

be identified. In locations where the proposed roadway improvements conflict with the existing street lighting facilities, those facilities will be replaced or relocated. At this time it is not anticipated that any major relocations of existing street lighting facilities will be required.

Sanitary Sewer

The Town of Irondequoit, who owns and maintains the sewer system, has a limited sanitary sewer system on East Ridge Road. The sections that exist have had no problems, according to the Town DPW personnel/ records, except as follows: there is one area of concern on the north side of East Ridge Road in front of # 1700 (corner of Bouchart Ave). The sanitary sewer is deep, crossing from south to north, near Tiam Dr. The sewer then turns westerly for a length of one section to Bouchart, then turns north down Bouchart Avenue (per town sanitary plate # 115). The concern is settlement of the Town sidewalk, curbing, and the westbound curb lane over the sewer trench. This issue has been reported over the last 10 years or longer. The Town has cleaned and televised and inspected the sanitary sewer and found no problems.

The information for the existing sewer system is limited. The Town is currently investigating whether they have record plans for the sewer system along East Ridge Road. From the information gathered to date, sanitary sewers have been identified at the following locations.

Sanitary Sewer Mains

Road	Main Size	Location
East Ridge Road		
90 m (300') east of Longmeadow to 125 m (400') west of Hill Court Circle	300 mm (12") CSP	North side, behind R.O.W., unknown if within easement
60 m (200') east of Hudson Avenue to 130 m (425') east	200 mm (8") CSP	South side, behind R.O.W., section of which is located within the Monroe County Water Authority easement
Brambury Drive to Carter Street	200 mm (8")	South side, within sidewalk
Bouchart Avenue to Tiam Drive	250 mm (10")	Location unknown
Brown Road to 46 m (150') west of Culver Road	200 mm (8") ACSP	North side, within pavement
Brown Road to 90 m (300') to the east	200 mm (8") ACSP	South side, within sidewalk, sewer crosses East Ridge and connects into the sewer to the north
30 m (100') east of Whipple Lane to Perrin Avenue	Unknown	South side, along curb line
Walzer Road to Culver Road	200 mm (8") ACSP	South side, along curb line
Bouchart Avenue	250 mm (10")	Location unknown
Tiam Drive	250 mm (10")	Location unknown
Stanton Lane	250 mm (10") CSP	West side, within pavement

s. **Railroads** - There are no railroads within a kilometer of the project limits.

t. **Visual Resources** – East Ridge Road is primarily a heavy commercial area with few visual resources. There are some grass tree lawn areas in a few places where space permits, and some landscaped areas and 'gateway' features that were constructed as part of commercial developments at the major intersections (Hudson, Portland, mall).

u. **Provisions for Pedestrians and Bicyclists** - Pedestrians are accommodated on the existing sidewalks. There are crosswalks at the major intersections. There are no designated bike lanes; however, bicyclists are not prohibited from using the travel lanes.

v. **Planned Development for Area** - The Master Plan for Irondequoit was completed in December of 1985. Since then, there have been additional studies completed for specific regions of the town. However, the 1985 Master Plan is the most current comprehensive plan completed for the town.

The Master Plan acknowledges Irondequoit as a town of "stable and attractive neighborhoods, where significant growth and change are unlikely" (p. 1), and therefore the plan focuses on areas where there will be opportunity for change, such as the East Ridge Road Corridor (Priority 3). The East Ridge Road Corridor is listed as an area of assets (such as accessibility from expressways, several nodes of retail activity, and existing multi-family residential development) and economic importance. The issues and opportunities that plague the East Ridge Corridor were listed as: Consolidating Retail Uses, upgrading existing development, office/employment focus, and traffic issues.

The Master Plan work included meetings with the community, after which the following alternative planning strategies were devised:

1. Focus on long-term land use policies that capitalize on the area's assets
2. Improve land-use organization through re-zoning by encouraging the consolidation of retail uses
3. Capitalize on major development potential
4. Focus on the control and development of fast-food restaurants along the corridor

Eleven years after the Master Plan was published, the Ridge Road Corridor Study was produced in August of 1996. Since the Master Plan was published, major changes in the corridor included the development of Irondequoit Mall (now Medley Center), an additional 500,000 square feet of retail space, and vacant land parcels and retail spaces.

w. **System Elements and Conditions**

During reconstruction of East Ridge Road, establishment of work zones and lane reductions will result in congestion and delays which affect mobility in the area. It is anticipated that lane reduction during peak hours will be avoided, as much as possible, to minimize construction impacts. Construction impacts are temporary.

Necessary coordination with the Town School District, Police, Fire Department, Transit Service and Ambulance Services will be required throughout the design and construction phases.

The following projects are planned in the area, which need to be coordinated for potential traffic impacts, if construction time frames overlap:

- Portland Avenue – Titus Avenue to City Line
- NY 590 – Norton Street to Sea Breeze

Transportation Systems Management (TSM) Measures that will be analyzed and incorporated into the project include:

- Signal System Optimization, including detour routes, if applicable,
- Turning movement restrictions,
- Transit System route evaluation,
- On-street parking evaluation,
- Access management improvements, and
- Cross-access agreements between property owners.

x. Environmental Integration

The study area is a completely developed urban commercial corridor, so all lands adjacent to East Ridge Road have been previously disturbed. There are no wooded, open or habitat areas within the corridor.

The completed project will continue to serve the urban, commercial environment as intended, with safety measures, upgraded pavement and sidewalks, traffic signals and drainage improvements in place.

2. Needs

a. Project Level Needs

(1) Pavement Needs

Based on the results of the pavement corings and a visual evaluation study completed in late August 2007, the overall pavement is rated as fair. Approximately 15% of the pavement displayed signs of distress, including transverse reflective cracking (above concrete slabs), rutting at the major intersections, severe cracking along the curb lines, and areas of raveling and de-lamination.

Pavement rehabilitation is planned and is intended to preserve the base and pavement structure that remains in sound condition. Distressed areas will be reconstructed or repaired to avoid further deterioration of the pavement, and to eliminate entry of water into the base/subbase.

(2) Safety Needs

Safety improvements and accident reduction are the primary goals of the project. As detailed in the Accident History and Analysis section of this report, 342 mid block and 353 intersection accidents were reported in the 2004 and 2006 3-year period. The majority of the intersections within the study area have accident rates higher than the MCDOT average for similar facilities. The East Ridge intersections with the highest rates are:

	RATE	MCDOT AVG.
Hudson Avenue	2.27	0.94
Culver Road	1.78	0.94
Kings Highway / N. Goodman Street	1.10	0.94
Carter Street / Stanton Lane	1.08	0.61

Along with signal system operations, geometric and lane configurations will be analyzed as they relate to correctable accidents. The feasibility of medians will also be evaluated. Some recommended improvements aimed at reducing accidents are described below.

Hudson Avenue – Based on the high incidence of rear end accidents on both the westbound and northbound approaches, and the high right-turn volumes experienced on these same approaches during the weekday and weekend peak hours, consideration will be given to the construction of exclusive right-turn lanes on these two approaches. While the projected right-turning volumes are not in excess of volume warrants typically used by MCDOT to justify the installation of an exclusive right-turn lane (300 vehicles per hour), it may be a contributing factor to the higher accident on the northbound and westbound approaches in particular.

Culver Road – There is a high incidence of rear end accidents on both the eastbound and westbound East Ridge Road approaches. While there

may not be adequate right-of-way to provide capacity expansion, the addition of an exclusive right-turn lane might help to reduce existing conflicts.

Carter Street - A total of eight accidents occurred within the intersection area at a Hess driveway on Carter Street. During field investigations to assess this intersection, it was noted that this driveway currently has a no left-turn sign posted on it. More restrictive measures will be considered including modification of the driveway into an entrance only, and a potential driveway shared access connection onto an adjacent property.

As part of a separate project, MCDOT plans to install traffic observation cameras within the project limits at the Hudson Avenue and Goodman Street/King's Highway intersections. This project provides the opportunity for installation of additional cameras at other intersections.

(3) Capacity Needs

Based on the results of the capacity analysis, which included proposed projects along East Ridge Road, capacity improvements are needed at the intersection of East Ridge Road with Culver Road to accommodate future 2030 traffic projections. As identified in the accident need section previously, the addition of an exclusive right-turn lane on the eastbound and westbound East Ridge Road approaches will significantly increase the operational capacity of this intersection. Of these two turning movements, the eastbound right-turn movement is more critical to the overall operations of the intersection..

In the east-west directions, the other intersections operate at acceptable levels and future growth rates are not anticipated to cause significant changes.

In the north-south directions, the following signalized intersections are approaching capacity during the heaviest peak hours (PM weekday and Saturday mid-day):

- Carter Street / Stanton Lane
- Arrow Drive
- Culver Road
- Georgetown Plaza
- Tops Plaza

Also, the southbound leg of the unsignalized intersection of East Ridge with Pep Boys and Ridge-Hudson Plaza shows failing delays during the weekday PM peak hour. Observations of this approach confirmed that this driveway experiences long delays for exiting traffic

(4) Geometric Needs

The minimum lane widths for Qualifying and Access Highways is 3.3 meters (11'). Due to limited right-of-way, substantial widening could cause loss of private property and on-site improvements at thriving businesses at many locations throughout the corridor, so roadway widening to meet minimum lane widths may not be a viable solution.

The addition of bike lanes or shared use lanes will be considered.

(5) Signal System Needs

The existing signal system utilizes some dedicates sections of conduit and some leased conduit from RG&E for its traffic signal interconnections via coaxial cable. This project provides an opportunity to install a dedicated conduit system and an upgrade to the communications system to fiber optic cable. This will also improve communications with traffic cameras that are being installed.

(6) Environmental Needs

The corridor has been entirely developed as a suburban commercial area – the primary commercial center for the Town of Irondequoit. As such, the preliminary environmental screenings do not indicate any problem areas relative to wildlife habitat, ecology, water resources or other impacts to the environment.

The project design will, however, address the following potential environmental impacts:

- Stormwater Management – reduction of stormwater runoff pollutants will be addressed. Sediment and erosion control measures will be implemented during construction.
- Contaminated and Asbestos Containing Materials – Suspect materials, if identified and uncovered during construction, will be tested and handled in accordance with appropriate local, state and federal regulations.

(7) Drainage

By virtue of its name, E. Ridge Road is indeed a ridge that lies at a higher elevation than the lands to the north and south of it. Therefore, drainage flows away from it, so there are no over-riding issues.

The project will, however, address drainage system conditions (pipes and structures), problem spots related to poor surface drainage or deteriorated pavement conditions, areas that allow surface water to infiltrate into the pavement structure, and underdrainage of the pavement structure.

The naturally sandy soils are also favorable to the drainage characteristics of the study area.

(8) Pedestrians

Pedestrian access at intersections and throughout the corridor will be upgraded to maximize accessibility, ADA compliance and safety where possible. Installation of high visibility crosswalks is anticipated. Though it would be desirable to push the sidewalks back away from the curb line, limited right-of-way will be prohibitive in some areas.

b. Area or Corridor Level Needs

(1) Modal Interrelationship

The proposed improvements will, at a minimum, maintain existing levels of commercial goods movements and avoid adverse affects on any transit/services transportation. Travel lane additions are not feasible or warranted, so none are proposed. Therefore, analysis comparing the cost of increased capacity to the cost of improving other transportation modes does not apply.

Improvements to pedestrian facilities and crossings are part of this project. However, the addition of bike lanes is unrealistic due to limited right-of-way throughout the corridor. Shared-use lanes with appropriate signage will be the more probable solution for accommodation of bicyclists.

(2) System Needs

East Ridge Road is an urban arterial that connects to NY 590 at the east end, and intersects with eight north-south urban arterials/collectors that serve the Town of Irondequoit and the City of Rochester. There are no system deficiencies related to capacity. However, improvements in intersection geometry and traffic operation will improve safety, aimed at accident reductions.

(3) Mobility Needs

Local and regional residents and commuters use East Ridge Road to travel to the commercial establishments along its corridor, and to access NY 590 and NY 104. Mobility is hampered by safety deficiencies, which are evidenced by high accident rates.

(4) Social Demands and Economic Development

East Ridge Road is the primary commercial corridor in the Town, and also serves the City. It is a primary goal of the Town and the County to infill blighted store fronts and vacant parcels, and to enhance the viability of the existing and thriving businesses.

(5) Transportation Plans

This project is listed in the GTC TIP, No. H03-01

c. Transportation Plans

The Town of Irondequoit conducted a Town-wide Traffic and Transportation study in 2001. In that study, the need for access management and other improvements on the East Ridge Road corridor were recommended. Potential options identified include selective replacement of the continuous left-turn lane with a raised 14-foot restrictive median.

D. Project Objectives

1. Using cost effective pavement treatments having low life cycle costs, correct existing pavement deficiencies, and restore the structural integrity of the pavement to provide a useful service life of 50 years.

2. Correct existing and emerging operational and capacity problems and safety related deficiencies.

3. Correct existing sidewalk deficiencies, provide pedestrian access where currently missing, and make pedestrian facilities ADA compliant.

4. Correct existing surface and subsurface drainage deficiencies.

CHAPTER III - ALTERNATIVES

A. Design Criteria

The Design Criteria for East Ridge Road is outlined in **Table III-1**, which is based on Chapter 2 of the New York State Highway Design manual (HDM), the 2004 edition of the AASHTO manual, "A Policy on Geometric Design of Highway and Streets" and Monroe County Design Standards.

Table III-1 DESIGN CRITERIA

Main Line Design Criteria vs. Existing and Proposed Conditions			
PIN:	4753.59	NHS (Y/N):	No
Route No. & Name:	East Ridge Road (C.R. 241)	Functional Class:	Urban Minor Arterial
Project Type:	Rehabilitation	Design Classification (AASHTO Class)	Urban Arterial
% Trucks:	3-9% AM; 1-3% PM	Terrain:	Level
ADT	22,000	Truck Access Rte.:	Qualifying Highway

	Element	Standard Criteria	Reference	Existing Conditions	Proposed Conditions
1	Design Speed (See Note 1)	60 km/h	HDM 2.7.2.2 A	XX km/h 85th%	
2	Lane Widths (See Notes 2 & 3) Travel Lanes / Turn Lanes / Center Two Way Turn Lanes	3.6 m (12') Desired 3.3 m (11') Minimum	MCDOT	Varies 3.0 m to 3.3 m *	
3	Shoulder Width	2.4 m (8') Desired	MCDOT	NA NA	NA NA
4	Bridge Roadway Width (total)	NA	NA	NA	NA
5	Grade	7%	HDM 2.7.2.2 E	+0.45% to -0.43%	
6	Horizontal Curvature	135 m @ e=4.0%	HDM 2.7.2.2 F	305 m @ e=2.0%	
7	Superelevation Rate	4.0 % maximum	HDM 2.7.2.2 G	2.0% maximum	
8	Stopping Sight Distance (Horizontal & Vertical)	85 m (280') minimum	HDM 2.7.2.2 H		
9	Horizontal Clearance Without barrier With Barrier	0.5 m; 1.0 m @ intersections 0 m	HDM 2.7.2.2 I	0.6 m	
10	Vertical Clearance	4.3 m (14') Min.	HDM 2.7.2.2 J	NA	NA
11	Pavement Cross Slope	2% min 3% des.	MCDOT	2.0% & Varies	
12	Rollover - between lanes	4.0 % max	MCDOT	4.0 % max	
13	Structural Capacity - Replace Rehabilitation	MS 23 MS 20	HDM 2.7.2.2 M	MS 20	MS 20
14	Level of Service (minimum)	B for rural area	HDM 2.7.2.2 N	C	D
15	Control of Access	NA	HDM 2.7.2.2 O	NA	NA
16	Pedestrian Accommodations Sidewalk Full Width (Adjacent to Curb) Tree Lawn	1.525 m (5') 2.1 m (7') 0.6 m (2') Minimum	AASHTO	1.525 m (5') to 2.3 m (7.5') 0.0 m to 3.0 m (10')	
17	Median Width	NA	NA	NA	

* Nonstandard Feature
1. The MC DOT and the Department of Transportation will review design speed.
2. Minimum Desired Curb Lane Width is 4.2 m (14')
3. Minimum width is 3.3 m for Access Highways

Table III – 2 Other Controlling Parameters

Other Controlling Parameters				
	Element	Reference to Standard	Criteria	Proposed Condition
a	Design Vehicle	HDM Section 5.8.1	WB - 67	WB-67
b	Level of Service (non-Interstate)	HDM Section 5.2		
c	Design Storm: Culverts =	HDM Chapter 8	50 years	years
	Storm Drainage Systems =	HDM Chapter 8	5 years	years
	Ditches =	HDM Chapter 8	10 years	years

B. Alternatives Considered

Project alternatives were developed to meet the project objectives. The alternatives were developed using the engineering design criteria in Section III. A of this report. All reasonable alternatives were considered.

The range of alternative solutions considered include:

Alternative 1 - The No Build Alternative – Existing Conditions
Under the No Build Alternative, the County would continue to provide maintenance of the existing pavement and signal system facilities, with an increasing amount of maintenance time and money required to keep the facility from more rapid deterioration. The No Build Alternative would not meet the objectives and goals of the project, which are primarily related to safety and accident reduction. Therefore, this alternative is not considered as a valid solution.

Alternatives 2, 3, 4 and 5
Each of these alternatives will be considered as part of the overall project design, but they are not to be considered as stand-alone alternatives. Most likely, a combination of the various alternatives will be combined to form the recommended alternative during the subsequent Alternative Solution Evaluation phase.

For each of the Alternatives, pavement rehabilitation consisting of milling and resurfacing and repair of concrete joints is recommended, along with reconstruction of the failed pavement areas. As stated in the Section II–C. I. Pavement and Shoulder Conditions, the majority of the pavement is in sound structural condition, with approximately 10 – 15% of the pavement area in need of reconstruction due to various forms of distress or deterioration.

Alternative 2 – Introduction of Raised Medians
The addition of raised medians, where feasible, would limit the locations for left-turning vehicles, thus reducing conflicts and crash points. There were approximately 138 mid-block left turning (or right-angle) accidents, so from a traffic control and safety standpoint, the introduction of raised medians would be very desirable. However, the addition of raised medians generates the need to accommodate U-turns at intersections. There is limited available right-of-way throughout much of the corridor, so adequate

viability. The feasibility of adding medians at strategic locations will be directly linked to the access needs of existing business and property owners, allowable space at intersections to accommodate U-turns, the ability to eliminate driveways via access management opportunities and cross access agreements between property owners.

Alternative 3 – Lane widening

Existing turning lanes and curb lanes are at non-standard widths. This alternative would increase lane widths to meet the design criteria, which would provide adequate width for turning lanes and minimum desired width for shared-use curb lanes. Right-of-way width is limited, however, and the ability to acquire property to widen the right-of-way and the roadway may not be feasible without significant impacts to businesses and private property.

Alternative 4 – Addition of right-turn lanes at major intersections

The accident studies revealed a high incidence of rear-end accidents at Hudson Avenue and Culver Road. At Hudson Avenue, addition of right turn lanes in the westbound and northbound directions would help to correct the problem. At Culver Road, there is a high incidence of accidents in both the eastbound and westbound directions. Addition of right turn lanes would help to improve through movements, which would in turn help to reduce conflicts, and thus reduce rear-end and left turn accidents. There limited right-of-way at Culver Road, however, so right-of-way acquisition for roadway widening and installation of the additional lane(s) could significantly affect businesses.

Alternative 5 – Extension of 2-way left-turn lanes

Extension of the 2-way left-turn lane just west of Hudson Avenue will improve safety by providing greater separation between through and turning vehicle, and will provide greater refuge space for turning vehicles. One of the problems in this block, particularly at Delta Sonic, is that the roadway is transitioning from a five-lane to a four-lane roadway cross section, with a striped median area that does not have sufficient width to provide vehicle storage. The accident studies completed for this mid-block section revealed an accident rate far in excess of the other roadway segments on East Ridge Road.

CHAPTER IV - SOCIAL, ECONOMIC AND ENVIRONMENTAL CONSIDERATIONS

A. Introduction

This section discusses the anticipated environmental considerations of the proposed East Ridge Road Rehabilitation project (PIN 4753.59) in the Town of Irondequoit, Monroe County, New York. Currently, Design Alternatives are being developed, and a preferred alternative recommended for the rehabilitation of East Ridge Road that will satisfy the project objectives.

1. SEQR Classification

This project is classified as a Type II project in accordance with 6NYCRR Part 617, State Environmental Quality Review (SEQR) Act. In accordance with 6NYCRR Part 617.5(c)(2), this project is identified as one that will not have a significant effect on the environment, and as such, further environmental review under SEQR is not required.

2. NEPA Classification

The project is classified as a Class II action under United States Department of Transportation (USDOT) National Environmental Policy Act (NEPA) Regulations, 23 CFR 771.117(d). A NEPA checklist was prepared for the project and the checklist is attached this text. The project complies with the requirements of a Categorical Exclusion with Documentation.

B. Social, Economical and Environmental Considerations

The relative social, economic and environmental issues related to this project area are discussed in this section.

1. Social, Economical and Environmental Considerations

a. General Ecology and Wildlife

The lands in the immediate vicinity of, and adjacent to the project site, generally consist of suburban residential properties, commercial properties, and light industrial properties.

The New York State Department of Environmental Conservation (NYSDEC) Division of Fish, Wildlife & Marine Resources Natural Heritage Program and the NYSDEC Region 8 Environmental Permits office were contacted regarding the presence of significant habitat areas and endangered and threatened species. The NYSDEC Division of Fish, Wildlife & Marine Resources Natural Heritage Program responded that there are no records of known occurrences of rare or state-listed animals or plants, significant natural communities, or other significant habitats, on or in the immediate project vicinity. To date, no response had been received from the NYSDEC Region 8 Environmental Permits office.

The United States Department of Commerce National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service and the United States

Department of the Interior Fish and Wildlife Service (USFWS) were contacted regarding the possible presence of threatened and endangered species and habitat areas. NOAA responded that there are no endangered or threatened species under the jurisdiction of NOAA Fisheries Services in the project area. The USFWS responded that they are unable to reply to Threatened & Endangered Species list requests due to increasing workload and reduction of staff and referred inquires to their website. Upon review of the USFWS website, it was revealed that one (1) Endangered Species was listed within Monroe County. However, due to the response of the NYSDEC Division of Fish, Wildlife & Marine Resources Natural Heritage Program, and the lack of a suitable habitat within the project area, no Biological Assessment or further consultation under the Endangered Species Act is required with the USFWS.

b. Groundwater

The proposed project area is not situated over an Environmental Protection Agency (EPA) Sole Source Aquifer, however it is situated over a NYS Department of Environmental Conservation (NYSDEC) Primary or Principal aquifer, as designated by the mapping prepared by Kantrowtz and Snavely (1982). Based on the scope of work, the use of closed drainage systems, and the anticipated disturbance, it does not appear that the surface water will be impacted within the project corridor. Therefore, supplemental groundwater investigations and Toler analysis will not be required.

Water supply for the project corridor is provided by the Monroe County Water Authority. The area businesses, residences and public buildings are serviced by public water. There are no private water supply wells located in or adjacent to the project corridor. Erosion, sedimentation and water pollution controls will be employed during construction throughout the duration of the project to minimize water quality impacts in ground water recharge area.

c. Surface Water

There are no surface water bodies situated in the project vicinity.

It is anticipated that the East Ridge Road alternatives will maintain existing overall surface water drainage patterns and the project will not significantly increase pavement surface areas utilized for vehicle and pedestrian use. Thus, significant increases in the surface water runoff rates and volumes are not anticipated as a result of the proposed roadway rehabilitation/improvements and construction.

Since the project is primarily a mill and repave project with turning lanes added at Hudson Avenue, it is not anticipated that the Preferred Alternative will result in a total area of disturbance that will exceed the designated disturbance threshold of 0.4 hectare (1-acre). Therefore, a NYSDEC State Pollutant Discharge Elimination System (SPDES) construction permit will not be required, nor will a Stormwater Pollution Prevention Plan (SWPPP) and a NYSDEC SPDES Notice of Intent (NOI).

During construction, storm water runoff from exposed soil surfaces may flow into

the existing surface water conveyance system and subsequently into surface water streams. These flows will be controlled by the use of sediment and erosion control techniques. These techniques will be part of a sediment and erosion control plan to be implemented during construction and will conform with the requirements of the NYS Department of Transportation Standard Specification for Temporary Soil Erosion and Water Pollution Control and the NYS Guidelines for Urban Erosion and Sediment Control, provided as part of the final contract documents.

d. State Wetlands

The NYSDEC wetland maps for the project area were reviewed. There are no NYSDEC designated wetlands identified in or immediately adjacent to the project site. Therefore, construction activities in conjunction with the project are not anticipated to impact NYSDEC regulated wetlands.

e. Federal Wetlands

A copy of the *National Wetland Inventory* (NWI) Map by the U.S. Department of Interior, Fish and Wildlife Service was also reviewed. There are no wetlands identified in the project area.

f. Floodplains

The FEMA FIRM map for the project site was reviewed. Based on the map information, the project is located within FEMA designated Zone C. Zone C is defined as 'Areas of minimal flooding.' The proposed project will have no impact to the 100-year floodplain and compliance with NYSDEC 6NYCRR Part 502 will not be required.

g. Coastal Zone Management

The project is not located within a New York State Department of State (NYSDOS) Coastal Zone Management Area. However, the project is located within a NYSDOS Local Waterfront Revitalization Plan (LWRP) area in the Town of Irondequoit. Therefore, a NYSDOS consistency review will be required.

h. Navigable Waterways

There are no navigable waterways within or adjacent to the project area. Therefore, the rehabilitation project will not require permits from the USACE or U.S. Coast Guard.

i. Historical/Cultural Resources

The available record information from the NYS Historic Preservation Office (SHPO) GIS-Public Access website was reviewed to determine if there are historic buildings/structures or those considered eligible currently identified on the National Historic Registry and/or on the New York State Registry, or archeological sensitive areas located in the area surrounding the project site.

While no buildings or structures are listed on the National or State Registry, 2025 East Ridge Road that may be eligible. The property is the site of the first cobblestone building (a blacksmith shop) in the Town of Irondequoit. At the present time the property is immediately adjacent to the project site. However, there is a unaffiliated proposal between the property owner and the Town of Irondequoit to move the structure to the Town Hall campus. Therefore, it is anticipated that no impact due to the reconstruction of East Ridge Road will occur to the structure.

The New York State Office of Parks, Recreation, and Historic Preservation (NYSOPRHP) website revealed that a large portion of the project site is situated within an archeologically sensitive area. A Phase IA/1B Cultural Resource Survey is currently being conducted for the project corridor.

The Phase IA/IB will be prepared and then forwarded to the NYSOPRHP for review regarding the National Register eligibility of potential historic significance of the project area. Due to the development and characteristics of the project area, it is anticipated the OPRHP will issue a letter of "No Effect".

j. Parks

The project will not require acquisition of additional right-of-way (ROW) that is currently used as a public park, recreation area, wildlife or waterfowl refuge. Therefore, Section 4(f) evaluations are not required.

The reconstruction project will not require acquisition of nor does it impact any recreational parks federally funded by the United States Department of the Interior. Therefore, Section 6(f) evaluations are not required.

k. Contaminated Materials Assessment

A Hazardous Waste/Contaminated Materials (HW/CM) Assessment was completed for the project corridor. The primary objective of this assessment was to render an opinion as to whether surficial or historical evidence indicates the presence of recognized environmental conditions that could result in the presence of hazardous materials in the environment. The assessment was completed in general accordance with the February 2001 Environmental Procedures Manual (EPM) guidelines prepared by the New York State Department of Transportation - Environmental Analysis Bureau.

Public information was obtained from various federal, state, and local agencies that maintain environmental regulatory databases. These databases provide information about the regulatory status of a property and incidents involving use, storage, spilling, or transportation of oil or hazardous materials. The search distances for the federal, state and local databases were modified from the ASTM E 1527-05 Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, based on the extent and previous land use of the project corridor. **Table 1** and **Table 2** list, but are not limited to, the specific databases containing information for the project corridor. For reference, a Project Vicinity Map (Figure 1) and Project Location Map (Figure 2), are included in Appendix A.

Table No. 1 - Federal Database Summary	
Database	Radius Searched
National Priorities List (NPL Database)	0.2-km (1/8-mile) Corridor
Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS Database)	0.2-km (1/8-mile) Corridor
Resource Conservation and Recovery Act (RCRA) Corrective Action Sites (CORRACTS) TSD Facilities (CORRACTS Database)	0.2-km (1/8-mile) Corridor
RCRA Non-CORRACTS - TSD Facilities (RCRIS TSD Database)	0.2-km (1/8-mile) Corridor
RCRA Generators (RCRIS-LQG and SQG Database)	Site and adjoining properties
Emergency Response Notification System (ERNS)	Site and adjoining properties

Table No. 2 - State Database Summary	
Database	Radius Searched
SHWS Inactive Hazardous Waste Disposal Sites	0.2-km (1/8-mile) Corridor
SWF/LF Facility Register	0.2-km (1/8-mile) Corridor
Leaking Tanks (LTANKS) Database	0.2-km (1/8-mile) Corridor
UST Petroleum Bulk Storage	Site and adjoining properties
CBS UST Chemical Bulk Storage Database	0.2-km (1/8-mile) Corridor
MOSF UST Major Oil Storage Facilities Database	0.2-km (1/8-mile) Corridor
NY Spills	0.2-km (1/8-mile) Corridor

Based upon a review of available historic documentation, historic aerial photographs and topographic maps, the project site does not appear to have been used for the storage, treatment or disposal of hazardous waste or substances. The National Priorities List (NPL); Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS); RCRA Generators (RCRIS-LQG and SQG); Resource Conservation and Recovery Act (RCRA) - TSD (CORRACTS); Resource Conservation and Recovery Information System – Treatment, Storage and Disposal Facility (RCRIS-TSD); Emergency Response Notification System (ERNS); Inactive Hazardous Waste Disposal Sites (SHWS) and Solid Waste Facilities/Landfills (SWF/LF); CBS UST Chemical Bulk Storage; and Major Oil Storage Facilities (MOSF UST) databases indicate that there are no sites within the ASTM search distances.

The databases identified one-hundred eighty-seven (187) sites within the search radius. The NYS Inactive Hazardous Waste Disposal Site Registry identified two (2) sites; CERCLIS Superfund NFRAP database identified two (2) sites; BCP database identified one (1) site; NYS Solid Waste Facilities/Landfills database identified one (1) site; NYS Toxic Spills including Leaking Underground Storage Tanks database identified one-hundred one (101) sites; UST Petroleum Bulk Storage database identified thirty-two (32) sites; RCRA Generators (RCRIS-LQG and SQG) identified forty-two (42) sites; CBS UST Chemical Bulk Storage database identified two (2) sites; Hazardous Substance Waste Disposal Sites database identified two (2) sites; and Air Discharges database identified two (2) sites, within the search radius.

The NYS Inactive Hazardous Waste Disposal Site Registry identified two (2) sites within the search radius. They include the Carter Street Dump located at 56 Brambury Drive, and the Goodman Street-Ridge Road Landfill, located on the south side of Ridge Road between Culver Road and Goodman Street.

The CERCLIS Superfund NFRAP database identified two (2) sites within the search radius. They include the Carter Street Dump, located at 56 Brambury Drive, and the Goodman Street-Ridge Road Landfill located on the south side of Ridge Road between Culver Road and Goodman Street.

The BCP database identified one (1) site within the search radius at 1233 East Ridge Road.

The NYS Solid Waste Facilities/Landfills database identified one (1) site within the search radius. The Goodman Street-Ridge Road Landfill, located on the south side of Ridge Road between Culver Road and Goodman Street.

The NYS Toxic Spills including Leaking Underground Storage Tanks database identified one-hundred one (101) sites within the search radius. They include one (1) Active Spill-Miscellaneous Causes; four (4) Closed Tank Failures; four (4) Closed Tank Test Failures; thirty-two (32) Closed Spills-Unknown/Other Causes; fifty-two (52) Closed Spills-Miscellaneous Causes; one (1) Active Tank Test Failure; and seven (7) Active Spills-Unknown/Other Causes.

The Petroleum Bulk Storage database identified thirty-two (32) sites within the search radius, and the RCRA Generators (RCRIS-LQG and SQG) database identified forty-two (42) sites within the search radius.

The CBS UST Chemical Bulk Storage database identified two (2) sites within the search radius. They include Clover Pool Supply Co. located at 1612 East Ridge Road, and Upstate Milk Cooperatives, Inc.

The Hazardous Substance Waste Disposal Sites database identified two (2) sites within the search radius. They include the Carter Street Dump located at 56 Brambury Drive, and the Goodman Street-Ridge Road Landfill located on the south side of Ridge Road between Culver Road and Goodman Street.

The Air Discharges database identified two (2) sites within the search radius. They include Lilac Laundry & Cleaners (also listed under the RCRA Generators database) located at 2002 East Ridge Road, and Delta Sonic Car Wash located at 615 East Ridge Road.

As open regulatory agency files exist, and previous site uses of potential environmental concern were identified, supplemental environmental investigations appear to be warranted. The nature and extent of such supplemental investigations will be identified as the design alternatives are more fully developed. However, Chapter 5.1 of the EPM states that "any NYSDOT project that involves excavation adjacent to an open spill must be assessed for petroleum contamination in the right-of-way". Therefore, additional environmental investigations are warranted at, and in the vicinity of the NYS Toxic Spills sites.

A general site reconnaissance was conducted on October 26, 2007 to make observations of surficial conditions and to observe possible evidence of recognized environmental conditions, which could result in the presence of hazardous materials in the environment. In addition to the sites identified through database research, visual observations made during the site reconnaissance revealed electrical transformers, automotive garages, dry cleaners, and fueling stations within and adjacent to the project corridor. No identifying marks or labels about the presence of PCBs were observed on the transformers. Although the transformers appear to be relatively new, historically this type of equipment has contained PCB liquids. Therefore, it is possible that the transformers contain PCB liquids, and proper caution should be taken should they be disturbed.

It should be noted that when an assessment is completed without subsurface explorations and chemical screening of soil and groundwater beneath the site, no data can be generated regarding latent subsurface conditions, which may be the result of on-site or off-site sources.

It is also noted that should suspect materials be uncovered during construction, appropriate precautions should be taken, including subsurface explorations and analytical laboratory testing within the corridor to identify the potential presence and composition of onsite materials.

l. Asbestos Assessment

An asbestos assessment was conducted for the project corridor on October 26, 2007. The primary objective of the assessment was to determine the potential, based on visual observations, for encountering Asbestos Containing Materials (ACMs) in areas that may be affected by the proposed construction. The Asbestos Assessment was completed in general accordance with the February 2001 New York State Department of Transportation Environmental Analysis Bureau Environmental Procedures Manual (EPM), Volume II, Chapter 1.3 and the project scope.

Based on visual observations during the site reconnaissance, there were no apparent asbestos-containing materials observed within the project corridor. Should suspect ACMs be encountered during construction, the materials should be sampled by a qualified sampling technician to determine asbestos content and disposal options.

m. Noise Screening

The project will be advanced in accordance with New York State Department of Transportation (NYS DOT), Federal Highway Administration (FHWA) and American Association of Transportation Officials (AASSTO) standards and guidelines, including noise standards. It is anticipated that a noise analysis will not be required, since this will most likely be a Type II project. It does not exceed Type I project classifications that include project with " . . . physical alteration of an existing highway which significantly changes . . . or increases the number of through lanes."

n. Air Quality Screening

Monroe County is currently an air quality attainment area in accordance with the National ambient Air Quality Standards (NAAQS). Therefore, an air quality analysis is not necessary since this project will not increase traffic volumes, reduce source-receptor distances or change other existing conditions to a degree that will impact the National Ambient Air Quality Standard. Therefore, no air quality studies are required for this project.

o. Energy Screening

It is anticipated that the project will not change travel patterns or alter vehicle-operating speeds in the project corridor and area. As such, energy consumption will not change as a result of the project. Therefore, an energy evaluation will not be required during design activities.

p. Farmland Screening

The project corridor is not situated in a Monroe County Agriculture District. Therefore, the project will be consistent with the NYS Agriculture and Markets Law.

The project area does contain New York State listed Prime or Unique soils.

However, due to previous construction disturbance and current land use that is dominantly commercial/residential, and based on the fact that there are currently no active agricultural properties within the project limits, preparation of a NOI and Natural Resources Conservation Service (NRCS) Form AD-1006 will not be required.

q. Visual Impact Screening

The project area is located within a well-established commercial setting. There is little vegetation in the areas immediately adjacent to the project corridor. The outlying areas beyond the commercial corridor consist mainly of residential – both single family and high density.

Visual impacts are anticipated to be minimal, including limited changes to the areas located immediately adjacent to and within the project vicinity. Therefore, a view shed analysis is not anticipated.

2. Anticipated Permits and Approvals

Specific and/or general permits and approvals may be required for the project. Potential permits and approvals are summarized below:

Based on the current scope, no permits are anticipated.

The specific permitting and coordination activities are a function of the final highway configuration and design. It is noted that although specific permits may not be required, coordination with several agencies (SHPO, NYSDEC) may be required for various project activities. The anticipated permits identified above include activities/permits that may not be required, depending on the final design.

APPENDIX 12

APPENDIX 12: Passero Associates Design Engineer Resumes

Client Service Team

John is Vice President of Passero Associates. He has more than 24 years of civil engineering design and study experience. His experience includes municipal, residential, industrial, and commercial developments. John manages the firm's survey and site development departments.

Education

- BS, Physics, State University of New York, Cortland
- BS, Civil Engineering, State University of New York, Buffalo

Certifications/ Registrations

- Licensed Professional Engineer in the States of New York, Ohio, and Florida
- Project Management Professional (PMP)

Professional Affiliations

- Institute of Transportation Engineers (ITE)
- Project Management Institute (PMI)
- Professional Service Management Association (PSMA)

John F. Caruso, PE, PMP — Vice President/Project Manager

Representative Project Experience

Street & Traffic Design:

McLean Street Improvements; Rochester, New York — Engineer for this project which involved the reconstruction and narrowing of the pavement section, new curbs, sidewalks, street lighting, and new treescape area. An extensive traffic impact study was done to analyze impact on change of function to a one-way street.

Culver Road Corridor Analysis, Town of Irondequoit; Irondequoit, New York — Engineer for the preparation of construction plans for recommended alternatives for road reconstruction, signal light improvements, maintenance of traffic plans, and pavement striping plans. His responsibilities included coordination of traffic analysis with the Monroe County Planning and Traffic Engineering Department, NYSDOT, and the Town of Irondequoit.

South Union Street Rehabilitation; Rochester, New York — Engineer for this project which involved the rehabilitation of a major arterial highway including the widening of pavement section, new curbs, sidewalks, street lighting, water main, traffic signals, and a new streetscape area. A traffic analysis was conducted to determine proper intersection alignment to eliminate unsafe traffic merge.

Cooper Road Improvements, Town of Irondequoit; Irondequoit, New York — Engineer responsible for coordinating and conducting corridor traffic analysis for the proposed road and geometric improvements to Cooper Road.

Greater Rochester International Airport; Rochester, New York — Traffic Engineer for the new access way to the airport for over one mile of one, two, and three lane roadway with and a 165 foot span curved girder bridge were designed to improve traffic movements around terminal area to maximize decision making time for one of three options that are available.

Other Street Design Projects

- Avenue D Reconstruction
- Bayshore Boulevard Reconstruction
- Cooper Road Reconstruction
- Culver Road Phase II
- Cunningham Street Design; Rochester, NY
- Hollenbeck Street Reconstruction
- NYS Rt. 33A Signal & Highway for Movie Theater
- NYS Rt. 33A Signal & Highway Improvement for PUD
- Turk Hill Road Reconstruction
- Chili Ave. NYS Rt. 33 – Highway Improvements
- Wilson Boulevard, University of Rochester
- Intercampus Drive, University of Rochester

Institutional Engineering Projects

Baker Park Conceptual Design Plan, Chili, New York — Principal-in-Charge of a concept plan and summary report for Baker Park. This project involved regular scheduled meetings with the Parks and Recereation advisory committee and the Parks and Recreation director to identify the needs and opportunities Baker Park property offers. Work involved various levels of programiming followed by the preparation of conceptual planning.

Land Use Analysis, Chili, New York — Principal-in-Charge of a commercial land use and construction cost evaluation for the Town of Chili. The analysis evaluated land use alternatives, building/department programs and the estimated construction cost of the commercial development alternatives and their benefits to the community.

Town of Chili Parks and Recreation Master Plan, Chili, New York — Principal-in-Charge for update of the Town's 2001 Parks and Recreation Master Plan to meet the current and future recreational needs of the Town's residents, including identification of present and anticipated parks and recreational needs and capabilities; guidance of provision of land and facilities; establishment of directions for implementing, developing, financing, operation of and maintenance of facilities and programs; guidance of cost effective acquisition and development of recreational facilities; provision of necessary documentation of recreational needs for state, federal and other potential sources of assistance; providing data for short and long range capital planning and budgets and informing Town residents and officials of recreational needs, efforts and capabilities.

Roberts Wesleyan College Golisano Library, Rochester, NY — Principal-in-Charge as the civil and site engineering subconsultant to the design architect and Roberts Wesleyan College for the $10 million Library project. The design of the new Library on an existing parking lot required relocation of the displaced vehicles to an appropriate location with pedestrian access to the campus. The new Library site was selected to become the focal point for the campus with views from multiple locations. Responsible for Survey and Mapping, Site Design, Utility Design, Drainage Design (Phase II SPEDES), Vehicular and Pedestrian Access, Permitting, Cost Estimating, and Construction Administration

Miller Performing Arts Center, University of Alfred, Alfred, NY — Principal-in-Charge as the civil and site engineering subconsultant to the design architect and the University of Alfred for a $7 million Performing Arts Center. The Miller Performing Arts Center site was placed on the side of a 30° embankment. It required particular attention to utilities for constructability and erosion control/stabilization during construction. Responsible for Survey and Mapping, Site Design, Utility Design, Drainage Design, Vehicular and Pedestrian Access, Cost Estimating, Construction Administration **Strong Memorial Emergency Dept. Expansion, City of Rochester; Rochester, New York** – Project Manager in charge of design for emergency vehicle access, site design, and approvals.

NCAA Collegiate Running Track & Athletic Field, University of Rochester; Rochester, New York — Project Manager/Coordinator to design a NCAA Collegiate running track and athletic field. Services included sewer, water & drainage design, town approvals, permits and community presentations.

Geneva General Hospital; Geneva, New York — Project Manager/Engineer responsible for conducting a traffic impact analysis to determine the required improvements to provide safe pedestrian access, minimize delays to access Main Street, and coordinate signal lights. The Geneva General Hospital campus proposed significant traffic improvements to service existing and three proposed medical office buildings.

Parking Expansion and Athletic Fields Relocation at Medical Center Campus, University of Rochester; Rochester, New York — Engineer for a parking alternative analysis, design of parking lot expansion, conversion of existing lot into dual use for staff and visitor parking with parking control equipment, shuttle bus service, lighting and drainage. The project also included design of a new signalized intersection for lot access, replacement of soccer field, softball fields and truck throwing area.

Intercampus Drive, Phase I, University of Rochester; Rochester, New York — Project Engineer for a comprehensive planning and traffic study on the River Campus master plan to implement the first phase of road improvement projects that led to the closure of Wilson Boulevard and the opening of riverfront from public recreation and access.

Wilson Boulevard Closure, University of Rochester; Rochester, New York — Engineer

responsible for coordinating and conducting traffic impact analysis simulating the closing of Wilson Boulevard.

- Geneva General Hospital, Campus-Wide Study; Geneva, NY
- Strong Memorial Hospital Lots 1, 2 and 3 Expansion
- Strong Memorial Hospital Medical Center Parking Study
- Roberts Wesleyan College Golisano Library, Rochester, NY
- Roberts Wesleyan College Entrance Signs, Rochester, NY
- Roberts Wesleyan College Track & Field/Stadium & Athletic Fields, Rochester, NY
- 911 Emergency Center; Rochester, NY

Light Industrial / Commercial Office Buildings / Office Parks

Barilla Semolina Storage Building; Avon, New York – Principal-in-Charge for engineering services for this seven-story grain storage building at the new Barilla Pasta Plant, Distribution Center in Avon, New York. The 300,000 SF facility, with a total cost of $7M, sits on a 49-acre lot and will produce 100,000 tons of pasta a year.

Nu-Look Collision; Henrietta, New York – Principal-in-Charge of full site engineering and survey services for $1.2M flagship auto body repair center and corporate headquarters in Henrietta. Over 16,000 sq ft of state-of-the art design and construction completed on time and under budget. Building construction consists of a steel structure with masonry and metal-framed exterior walls. The facility includes a gas fired rooftop unit for the offices and gas fired radiant tub heaters for the repair center.

Calkins Corporate Park; Henrietta, New York – Principal-in-Charge for full site engineering and survey services for office park improvements. This project required special use permits for the use of commercial property in an Industrial zone along with a use variance zone after resubdivision of the parcels.

Canal View Office Park; Rochester, New York — Traffic Engineer responsible for a traffic analysis that identified the traffic impact as a result of several phases of construction. Projected traffic was generated as a function of gross square foot per phase of construction. The results of several intersection capacity analyses revealed the improvements required during each phase of this office park's development. Improvements consisted of left and right-turn lane construction, signal timing plans, signal light construction plans, and preparation of all geometric improvement plans.

Elmgrove Industrial Park; Gates, New York — Project Engineer responsible for the design of public utilities, roads, and lot grading, preparation of construction drawings and obtained local, county and state approvals, inspection of road construction and storm sewer installation; and preparation a traffic impact analysis.

Gates Industrial Park; Gates, New York — Project Engineer responsible for the design of public utilities, roads, and lot grading; obtained the NYSDEC permit for wetland mitigation; preparation of the construction documents and obtained local, county, and state approvals; conducted a traffic impact analysis; and preparation of individual site plans for each development lot pursuant to purchasers building layout and business needs.

Frank Metal Corporation, City of Rochester; Rochester, New York — Project Engineer responsible for the design of site access and maneuverability for several truck (hauling) sizes, at-grade and subgrade loading docks; utility connections for water sanitary, and storm water; site buffers and landscaping for aesthetics; obtained approvals through the City of Rochester; and preparation of construction documents.

Promold Inspection Corporation, Town of Ogden; Ogden, New York — Project Engineer responsible for the design of building layout on-site for tractor trailer access; design of septic system and water service connections; grading parking areas and remainder

of lot; obtained approvals through the Town of Ogden; and preparation of the construction documents.

Sealand Construction Office Building; Rush, New York — Project Engineer responsible for the design of septic system, backflow preventor, and storm sewer connections; layout of building on-site, parking lot, loading dock access for tractor trailers; and obtained all necessary approvals for construction.

Newbury Street Warehouse Building, City of Rochester; Rochester, New York — Project Engineer responsible for the design of a 43,000 square foot building on parcel for maximum building square footage. Design included access roads and loading/unloading areas for tractor trail use; parking lot layout and drainage; storm, sanitary, and watermain to site; water meter pit and backflow preventor. He obtained approval through the City of Rochester and prepared construction documents.

RTR Gun Wholesaler's Warehouse, City of Rochester; Rochester, New York — Project Engineer responsible for the design of building layout on-site and tractor trailer access to building; all storm, sanitary, and water connections to building; grading the lot and parking lot for positive drainage; and obtained site plan approval through the City of Rochester.

MDTCastle Inc.; Henrietta, New York — Project Engineer for the design of 25,000 square foot building addition for service lot grading, loading dock access, fire main and site drainage. He obtained approval through the Town of Henrietta and prepared construction documents.

Winmark Light Industrial Subdivision; Rush, New York — Project Engineer responsible for the design of public utilities, roads, and grading for earth balance; prepared construction documents; obtained local, county, and state approvals; prepared individual site plans of each lot based upon purchasers building layout and access needs; design of individual disposal systems for each lot; and conducted a traffic impact analysis.

Utility Design and Studies:

- American Planning Association's Panel Discussion Workshop Informing Local Municipalities on Cell Towers and Land Use
- Cell Tower Land Use Ordinance and Legislation Advisory; Village of Churchville, NY
- Chili Avenue Watermain- Extension
- Drainage Studies, Irondequoit; Gates & Chili, NY
- Interdepartmental Public Works Facility at the Gates-Chili Ogden Sewage Treatment Plant; Rochester, NY
- Jackson Road Watermain- Distribution, MCWA; Webster, NY
- Lafayette Road Sanitary Sewer Diversion Project
- Multiple Municipal Sanitary Sewer Design, Studies & Pump Station projects; Irondequoit, NY
- Multiple Site Development Plans and Assessment Plans
- Mt. Airy/Kendall Wood Sewer Diversion Project

Private Engineering Projects

Retail

Wegmans Food Markets; Brockport, New York — Traffic Engineer for the 220,000 square foot retail plaza adjacent to the existing Brockport plaza. The traffic engineering report consisted of origination and destination analysis for the Brockport area, redistribution of existing traffic patterns through the Rte. 19 and Rte. 31 arterials, and intersection capacity analyses of existing and proposed signalized intersections. The scope of engineering further required the design of traffic control signal lights, lane geometric improvements, and construction plans of recommended improvements.

Wegmans Food Markets; Geneva, New York — Traffic Engineer responsible for the 85,000 square foot facility which required a traffic impact analysis to determine signal and lane improvement requirements. Signal plans and lane geometric plans were prepared for construction from the traffic report.

Commerce Center Plaza of Coconut Creek; Coconut Creek, Florida — Traffic Engineer responsible for the traffic analysis which required computations of traffic progressions along State Road No. 836 for proposed signalized intersections and their impact on the existing signalized intersections which are located less than 1,000 feet apart.

Wal-Mart; Geneseo, New York — Traffic Engineer responsible for the preparation of the signal light plans and the highway improvement plans for this project. The project consisted of several lane geometric improvement designs (left-turn lanes through lanes, site driveways), preparation of the signal plans (includes phasing design), expediting plan review, and approvals with NYSDOT.

ElmRidge Plaza; Rochester, New York — Traffic Engineer responsible for the preparation of the signal light plans and the highway improvement plans for this project. The project consisted of several lane geometric improvement designs (left-turn lanes through lanes, site driveways), preparation of the signal plans (includes phasing design), expediting plan review, and approvals with NYSDOT.

Lyell-Spencerport Plaza; Rochester, New York — Traffic Engineer responsible for the completion of a traffic analysis for a.m., p.m., and weekend peak hours for the development of this project. The traffic analysis recommended to close one of four existing entrances to improve traffic flow patterns and to signalize one existing entrance. A progression analysis was conducted to show the impact of a new signal light on the NYSDOT's highway between two existing lights. Signal Timing Optimization was conducted to achieve the most efficient timing to both main line and side street. A design report was prepared and submitted to the NYSDOT for a highway work permit.

Genesee Valley Shopping Plaza, City of Rochester; Rochester, New York — Traffic Engineer responsible for the preparation of signal plans and highway improvement plans to provide safe access to the site. This project consisted of constructing a Wal-Mart store and Wegmans Food Market in the same plaza.

Maplewood Plaza, City of Rochester; Rochester, New York — Traffic Engineer responsible for conducting a traffic impact analysis and recommend geometric improvements for a mixed-use, retail-fast food restaurant. The traffic study required generation of mixed trucks, cars, and tractor trailer vehicles. The analysis included lane geometric improvements to provide safe access to the State highways and provide tractor trailer accessibility.

Pepper Tree Plaza; Coconut Creek, Florida — Traffic Engineer responsible for conducting a traffic analysis which required computations of traffic progressions for proposed signalized intersections and their impact on the existing signalized intersections which are located less than 1,000 feet apart.

CVS Pharmacy, Monroe Avenue; Rochester, New York — Project Engineer responsible for the design and approvals for a CVS pharmacy.

- Baytowne Plaza; Penfield, NY
- CVS Pharmacies; Rochester & Upstate NY
- Elm Ridge Shopping Plaza; Greece, NY
- Henrietta Plaza; Henrietta, NY
- Hollywood Video Stores
- Lyell-Spencerport Plaza; Gates, NY
- Maplewood Plaza; City of Rochester, NY
- Over 15 CVS Pharmacy Sites

- Parts America - Lyell Avenue; Rochester, NY
- Pep Boys; City of Rochester, NY
- Ridge Goodman Plaza; Rochester, NY
- Several Wegmans Shopping Plazas in NY State
- Tinseltown USA; Gates and Hamburg, NY
- Wal-Mart Shopping Center; Geneseo, NY
- Wegmans Food Markets; Various Communities Upstate, NY
- Winton Place; Towns of Brighton and Henrietta, NY

Restaurants / Fast Foods

- Atlanta Bread Company Restaurant
- Boston Markets Restaurants
- Burger King
- Mario Via Abruzzi
- Pelegrino's Café & Deli
- Taco Bell
- Tim Horton's
- Wendy's Restaurants

Residential Projects:

Apartments

- Autumn Woods, Senior Housing (92 Apartments); Henrietta, NY
- Blueberry Hill Apartments (180); Chili, NY
- Daniels Creek Apartments at Baytown Plaza; Penfield, NY
- Elizabeth Way Senior Housing (28 Homes) & (32 Townhomes); Farmington, NY
- Jordache Park Apartments; Ogden, NY
- Marketview Apartments; City of Rochester, NY
- Marketview Apartments Phase II; City of Rochester, NY
- Parklands of Chili; Chili, NY
- Salvation Army Men's Shelter (40 beds); City of Rochester, NY
- Stone Hedge Apartments; Farmington, NY
- Summit Knolls; Penfield, NY
- West Square Manor; City of Rochester, NY
- Westview Commons Apartments; Gates, NY

Town Homes

- Alloway Senior Housing (28 Homes) & (32 Townhomes); Farmington, NY
- Anthony Square (48 Town Homes); Rochester, NY
- Aprile Meadows (32); Geneseo, NY
- Canal Place Town Homes (32 Homes); Greece, NY
- Linhome Place (24 Homes); Henrietta, NY
- Riverview Townhomes (196 Town Homes); Chili, NY
- Valley Creek Condominiums

Senior Living Facilities (# of units)

- Ada Ridge Senior Housing (48); Greece, NY
- Brentland Woods Senior Housing (90 Apartments); Henrietta, NY
- Briarwood Town Homes (32 Homes); Scottsville, NY
- Elmgrove Place (48 Apartments); Gates, NY
- Gateway Senior Housing (90 Homes); Gates, NY
- Hickory Hollow Patio Homes (100) and Senior Living Apartments (50);

Ogden, NY
- Hobie Creek Apartments, (64 Apartments); Irondequoit, NY
- Ogden Senior Housing, (24 Apartments); Ogden, NY
- Parklands of Chili Landscape Senior Housing (80 Apartments); Chili, NY

Single Family Homes
- Cherokee Bluff Subdivision
- Country Village Estates
- Edison Place
- Hickory Hollow Patio Homes
- Red Bud Subdivision
- Spring Brook Subdivision
- Stone Hill Estates
- Westchester Village Subdivision
- Westview Commons
- Whispering Winds Subdivision

Hotels
- Fairfield Inn; Henrietta, NY
- Best Western; Henrietta, NY
- Hampton Inn; Brighton, NY
- Marriott Hotels
- Holiday Inn Airport; Gates, NY
- Best Western; Gates, NY
- Fairfield Inn at the Greater Rochester International Airport

Not-For-Profits
- Alloway Senior Housing (28 Homes) & (32 Townhomes); Farmington, NY
- Anthony Square (48 Town Homes); Rochester, NY
- Aprile Meadows (32); Geneseo, NY
- Autumn Woods, Senior Housing (92 Apartments); Henrietta, NY
- Briarwood Town Homes (32 Homes); Scottsville, NY
- Canal Place Town Homes (32 Homes); Greece, NY
- Elmgrove Place (48); Gates, NY
- Linhome Place (24 Homes); Henrietta, NY
- Salvation Army Men's Shelter (40 beds)
- Seldon Square II (96 Apartments); Clarkson, NY

Glacier Ridge Subdivision; Watertown, New York — Traffic Engineer responsible for the traffic analysis which recommended additional exiting lanes, included site distance calculations, and provided intersection capacity analysis of Rte. 11 and Rte. 342.

Riverview Townhomes, Town of Chili; Chili, New York — Traffic Engineer responsible for the traffic engineering report which included traffic generation, distribution, and a capacity analysis of the proposed entrance. Recommendations included road widening, lane improvements, and preparation of construction plans for road widening and lane improvements.

Regional Draft Environmental Traffic Impact Analysis; Penfield, New York — Traffic Engineer responsible for coordinating and conducting a traffic impact analyses for 1,000 residential homes within two square mile area.

Squiredale Subdivision, Town of Greece; Greece, New York — Traffic Engineer responsible for the inspection of public utilities and road construction in Sections 5, 6, and 7, and the design of Section 8.

Hertfordshire Subdivision, Town of Victor; Victor, New York — Traffic Engineer responsible for the design of a triplex booster pump station to service the domestic and flow needs of a 57 lot subdivision and the design of individual disposal system for

lot subdivision. Design was based on increasing the pressures in a controlled manner to meet I.S.O. and N.Y.S.H.D. requirements.

Child Care / Children's Facilities

Little Learners Day Care Center; Syracuse, New York — Traffic Engineer responsible for conducting a traffic report showing impact from a large traffic generator during the peak hours of a State highway. The engineering report recommended geometric improvements and entrance alignment in order to provide safe vehicular movement while minimizing conflicts.

- Kids Creation Arts & Crafts Activity Center; Penfield, NY
- Child Time Children's Centers; Gates, NY
- Gates Day Care Center; Gates, NY
- United Methodist Church; Rochester, NY
- Pepperhill Child Care Center; Rochester, NY

Other examples of Industrial / Light Industrial design experience:

- Calkins Corporate Park (Professional Office)
- Canal View Office Park, Brighton, NY
- Cornell Business Park
- Elmgrove Industrial Park
- Gates Business Park (Professional Office)
- Pixley Industrial Park
- Sky Acres Professional Office Buildings
- Wegmans Food Markets – Geneva, Brockport (Food Markets)
- Westview Commons – Planned Unit Development (Professional Offices, Residential Homes, Multi-Family Apartments, Retail & Business Park)

Not-for-Profit Organizations

- Friendship Baptist Church
- Open Door Baptist Church
- Rochester Christian Church
- Salvation Army
- St. Pius X Federal Credit Union
- Holy Spirit Church
- Open Door Missions
- Most Precious Blood Church
- St. Theodore's

Forensic Engineering Projects

New York State Department of Law — Engineer responsible for reconstructing and reviewing traffic accidents on State highways in which liability lawsuits have developed. His experience on projects includes accident report research, EBT review, geometric alignment review (per AASHTO and NYSDOT Design Manuals), sight distance calculations, pavement markings and road signage during normal operation and during construction periods, review of traffic volumes, maintenance records, and Manual of Uniform traffic Control Devices for preparation of accident study. His work experience includes preparation of exhibits and expert witness testimony during trial proceedings.

Route 63; Oakfield, New York — Traffic Engineer for the Syracuse Office Accident case for the New York State Department of Law which occurred on Route 63 in Oakfield, New York, Genesee County.

Client Service Team

Jess is a project engineer at Passero Associates with over five years of experience. Jess is part of the civil/site engineering group. He works on commercial, residential, and institutional projects.

Education

- BS, Civil Engineering Tech, Rochester Institute of Technology
- Engineer in Training Certification
- Autodesk and AutoCAD Civil Training

Professional Certifications

- Certified Professional in Erosion and Sediment Control (CPESC)
- PMI Project Management Training

Jess Sudol — Project Engineer

Representative Project Experience

Jess has served as traffic engineer for traffic studies during the course of the following projects:

Fairfield Place; Parma, NY — 500 unit planned residential development on a 140 acre site. The development offers a mixture of apartments, townhomes, patio homes, senior housing and single family homes. Passero Associates worked with the Town and the community to rezone the property to permit the housing mix proposed. A generic Environmental Impact Statement was prepared that addressed all potential impacts including traffic, population growth, drainage, sewer, environmental features and construction related impacts.

Links at Black Creek; Chili, NY — 193 unit mixed use residential subdivision and golf course. Duties included traffic study, NYSDEC Phase II stormwater design, and contractor and client coordination.

Archer Meadows; Chili, NY — Designed and managed 90 lot single family home subdivision through approvals. Duties included traffic study, utility design, municipal approvals, NYSDEC Phase II stormwater design, and contractor and client coordination.

Saratoga Crossing; Farmington, NY — Designed and managed approvals for a 296 unit apartment and townhome complex including rezoning, traffic study, and NYSDEC Phase II design.

Ridgewood Office Park; Webster, NY — Designed and facilitated approvals and construction for 55,000 s.f. of office space. Duties included drainage design, utility design, traffic study, Phase II stormwater compliance and municipal approvals.

Riverton Parcel "F"; Henrietta, NY — Designed and managed 104 lot single family home subdivision through construction. Duties included traffic study, ACOE Wetlands Permit, NYSDEC Phase II stormwater design, and contractor and client coordination.

Xceed Federal Credit Union; Irondequoit, NY — Designed and facilitated for 25,000 s.f. central headquarters for Xceed Federal credit Union. Duties included drainage design, utility design, traffic study, Phase II stormwater compliance and municipal approvals.

Woodlands at Northside; Geneva, NY — Designed and managed approvals for a 96 unit apartment and townhome complex including traffic study, utility design, approvals and NYSDEC Phase II design.

Colonial Plaza; Gates, NY — Drainage design for two retention ponds releasing into an existing storm tunnel. Assisted with phased traffic study of Spencerport and Long Pond Road.

Eastside YMCA; Penfield, NY — New 69,000 square foot YMCA family recreation facility, which is garnering national attention due to its unique design aesthetic, state-of-the-art equipment and fitness programs. Passero Associates provided Project Management, Architectural, Engineering, Surveying, Planning, Approvals Management and Construction Administration Services. The design and site placement brings light and an open feeling into nearly every corner of the building. The facility is sited on over fifty acres, allowing for a future outdoor aquatic center and a possible day camp.

Client Service Team

Craig is an Engineer in the Site Engineering Department. He has over three years of experience, and works on commercial, residential, and institutional projects.

Education

- BS, Civil Engineering Technology, Rochester Institute of Technology
- AAS, Construction Technology, Monroe Community College
- Illuminating Engineering Society, Fundamental Lighting Course

Professional Affiliations

- American Society of Civil Engineers (ASCE)
- Transportation and Development Institute (T&DI)

Craig Eckert — Engineer

Representative Project Experience

Craig has served as Traffic Engineer for traffic studies during the course of the following projects:

Churchville Volunteer Fire Department; Churchville, NY – Design team member whose duties included design of parking, drainage, sanitary sewer, backflow prevention and water main for a 20,000 sf Fire Hall.

Ridgewood Office Park; Webster, NY — Design team member for approvals and construction for 55,000 s.f. of office space. Duties included drainage design, utility design, traffic study, Phase II stormwater compliance and municipal approvals.

Saratoga Crossing; Farmington, NY — Design team member for approvals for a 296 unit apartment and townhome complex including rezoning, traffic study, and NYSDEC Phase II design.

Xceed Federal Credit Union; Irondequoit, NY — Design team member for 25,000 s.f. central headquarters for Xceed Federal credit Union. Duties included drainage design, utility design, traffic study, Phase II stormwater compliance and municipal approvals.

Woodlands at Northside; Geneva, NY — Design team member for approvals for a 96 unit apartment and townhome complex including traffic study, utility design, approvals and NYSDEC Phase II design.

S&R Tool; Livonia, NY – Design team member whose duties included design of the site layout, drainage, sanitary sewer and water main for a 10,000 sf Industrial building.

Riverton Parcel F; Henrietta, NY – Design team member whose duties included design of site layout, drainage, sanitary sewer and water main for a 140 unit 38 acre residential subdivision.

Red Roof Inn; City of Rochester, NY – Design team member whose duties included design of the site layout, drainage, sanitary sewer, backflow prevention and water main for a 83 room hotel.

Valley Chapel; Warsaw NY – Design team member whose duties included design of and facilitating approvals for drainage and septic system for a 14,000 sf church expansion.

Homewood Suites; Town of Greece, NY – Design team member whose duties included design of drainage, sanitary sewer, backflow prevention and water main for a 100 room hotel.

Calder Subdivision; Walworth, NY – Design team member whose duties included design of and facilitating approvals for drainage and septic system for a 2,500 sf residence.

ESL Branch; Pittsford, NY – Design team member whose duties included conducting a traffic study for a commercial bank location.

Wal-Mart; Newark, NY – Design team member whose duties included design of drainage and sanitary sewer for a 50,000 sf commercial retail location.

Aldi's; Amherst, NY and Greece, NY – Design team member whose duties included design of the drainage and sanitary sewer for two commercial retail location.

APPENDIX 13

APPENDIX 13: ITE Multi-Use Projects Excerpts

VI. MULTI-USE PROJECTS

Introduction

For a number of years there has been a great deal of concern about the trip generation characteristics of multi-use projects. Specifically, questions have been raised about whether the trip generation characteristics of these multi-use projects are the same as for the individual components of the project (single-use projects). It appears reasonable to assume that multi-use projects would potentially generate less external vehicular trips, because of the internal matching of trip ends within the project. In addition, one trip to a multi-use project could satisfy a number of trip purposes at the same time.

For purposes of trip generation analyses, a multi-use project would contain two or more land uses or building types that each attract people from outside the project, would share parking facilities and driveways, and would include uninterrupted pedestrian connections. This definition is somewhat different than the commonly accepted definition of a mixed-use development, as stated previously, because the practitioner would be interested in defining the interrelationships between the two or more uses sharing the same driveways and thereby adjusting the driveway volumes accordingly.

Central business districts (downtowns) are, in fact, examples of extensive multi-use developments and can provide a model for smaller multi-use project trip generation characteristics. For example, downtown areas typically have a mixture of very diverse employment, retail, residential, and commercial recreation/hotel uses. The high intensity and close proximity of these uses are unique. Extensive pedestrian interaction occurs between these different uses because of the scale of the downtown area, the ease of access, and the proximity of the uses. Some downtown areas have excellent transit service, which often results in a higher percentage of all person trips arriving by transit. In addition, auto occupancy, particularly during the peak commute hours, is usually higher in a central business district than it is in an outlying area. For these reasons, trip generation characteristics in a downtown environment are different than those outside of a central business district. Trip generation rates indicated herein are from outside the downtown. Vehicular trip generation rates in the central business district are normally lower than those in suburban areas.

Shopping centers are also multi-use projects that are treated as individual projects. For trip generation purposes, a shopping center should be treated as an individual project when all of its uses are retail in nature, such as convenience and comparison retail goods stores, restaurants, theatres, and banking institutions. The reason for this distinction is because this is the historic makeup of shopping centers and the trip generation rate data reflect these uses. However, the addition of substantial office space, or a hotel or motel (with or without convention facilities) to a shopping center would then constitute a multi-use project.

Office buildings with support retail or restaurant facilities and services contained inside the building should not be treated as a multi-use project because the data for general office buildings (Land Use Code 710) also contain these uses. However, a development with an office building, a free-standing restaurant, and/or free-standing retail facilities should be treated as a multi-use project.

If a building or project contains uses that do not attract people from outside but are entirely supportive of the people within the project, then those uses would not be considered within the definition of a multi-use project.

Available Data

There have been two reports that begin to address multi-use trip generation characteristics: *Trip Generation for Mixed-Use Developments,*[7] by the Colorado-Wyoming Section of ITE, and *Shared Parking,*[8] by the Urban Land Institute.

The Colorado-Wyoming Section report included traffic counts at nine multi-use sites and personal interviews at eight multi-use sites. The makeup of the eight sites where interviews were conducted is as follows:

1. Office, retail, restaurant, bank, government office, and sports club.
2. Retail, office, hotel, and restaurants.
3. Retail, office, motel, restaurants, theatres.
4. Retail, restaurants, hardware stores, supermarket.
5. Regional mall, retail, restaurants, banks, offices, theatres.
6. Theatres, restaurants, banks, retail.
7. Savings and loan, retail, supermarkets, restaurants, medical.
8. Hardware, supermarkets, restaurants, post office, retail.

[7] Colorado/Wyoming Section Technical Committee. "Trip Generation for Mixed Use Developments." *ITE Journal*, Vol. 57, No. 2, February 1987, pp. 27–32.
[8] *Shared Parking*. The Urban Land Institute. Washington, D.C., 1983.

Some of those sites would be considered a shopping center for trip generation purposes. Nevertheless, Tables VI-1 and VI-2 illustrate the results of 1,132 interviews at those eight sites.

It was concluded from interviews at those sites that multi-use developments could reduce trip generation of individual uses within the development by 25%.

The Colorado-Wyoming Section of ITE also found that at nine sites the measured driveway volumes were less than those calculated from the rates contained in the 1982 edition of *Trip Generation*. A summary of the driveway volume measurements is contained on Table VI-3.

The Permanent Trip Generation Committee is cautious about the use of driveway volumes of multi-use developments when compared with the trip rates for the individual uses until there is a large sample size of multi-use sites. Currently, it is believed that personal interviews at multi-use sites should be made

Table VI-1
Number and Percentage of Persons Entering Multi-Use Sites by Number of Purposes and Primary Destination

	Number of Purposes Stated by Interviewee			
Destination	1	2	3+	Total
Bank/Savings & Loan	27 (90.0)	2 (6.6)	1 (3.4)	30 (100.0)
Hardware Store	20 (66.7)	9 (30.0)	1 (3.3)	30 (100.0)
Supermarket	189 (79.1)	40 (16.7)	10 (4.2)	239 (100.0)
Theatre	27 (93.1)	2 (6.9)	0 (0.0)	29 (100.0)
Office/Work Location	48 (67.6)	22 (31.0)	1 (1.4)	71 (100.0)
Small Retail Shops, etc.	120 (72.7)	21 (12.7)	24 (14.6)	165 (100.0)
Restaurant	105 (80.8)	18 (13.8)	7 (5.4)	130 (100.0)
Health Clubs	7 (100.0)	0 (0.0)	0 (0.0)	7 (100.0)
Post Office	19 (51.4)	12 (32.4)	6 (16.2)	37 (100.0)
Other	4 (100.0)	0 (0.0)	0 (0.0)	4 (100.0)
Total (Average)	566 (76.3)	126 (17.0)	50 (6.7)	742 (100.0)

SOURCE: Colorado-Wyoming Section, ITE.
NOTE: Percentage shown in parentheses.

Table VI-2
Number and Percentage of Persons Exiting Multi-Use Sites by Number of Purposes and Primary Destinations

	Number of Purposes Stated by Interviewee			
Primary Destination	1	2	3+	Total
Bank/Savings & Loan	17 (73.9)	2 (8.7)	4 (17.4)	23 (100.0)
Hardware Store	22 (88.0)	3 (12.0)	0 (0.0)	25 (100.0)
Supermarket	39 (67.3)	10 (17.2)	9 (15.5)	58 (100.0)
Hotel	4 (100.0)	0 (0.0)	0 (0.0)	4 (100.0)
Office/Work Location	15 (71.4)	6 (28.6)	0 (0.0)	21 (100.0)
Small Retail Shops, etc.	82 (73.2)	18 (16.1)	12 (10.7)	112 (100.0)
Restaurant	100 (89.2)	11 (9.8)	1 (1.0)	112 (100.0)
Health Clubs	3 (42.8)	4 (57.2)	0 (0.0)	7 (100.0)
Post Office	20 (80.0)	3 (12.0)	2 (8.0)	25 (100.0)
Other	2 (100.0)	0 (0.0)	0 (0.0)	2 (100.0)
Total (Average)	304 (78.2)	57 (14.6)	28 (7.2)	389 (100.0)

SOURCE: Colorado-Wyoming Section, ITE.
NOTE: Percentage shown in parentheses.

Table VI-3
Comparison of ITE Trip Generation with Driveway Counts

Site	ITE Daily Trips (VPD)	Counted Daily Trips (VPD)	ITE a.m. Peak Hour Generator (VPD)	Counted a.m. Peak Hour Gener. (VPH)	ITE a.m. Peak Hour Street (VPH)	Counted a.m. Peak Hour Street (VPH)	ITE p.m. Peak Hour Generator (VPH)	Counted p.m. Peak Hour Generator (VPH)	ITE p.m. Peak Hour Street (VPH)	Counted p.m. Peak Hour Street (VPH)
1	7,015	7,910	712	4% 682 (11–12)	374 (7–9)	2% 365 (7–9)	920	24% 700 (12–1)	866 (4–6)	700 (4–6)
2	10,578	6,830	952	40% 565	248	1% 247	1,368	57% 586	1,076	513
3	13,681	11,706	1,734	42% 1,012 (11–12)	1,391 (7–9)	39% 855 (7–9)	1,806	43% 1,038 (12–1)	1,701 (4–6)	821 (4–6)
4	14,815	13,718	1,339	1% 1,334 (11–12)	1,138	44% 640 (7–9)	1,984	21% 1,576 (12–1)	1,460	1,138 (4–6)
5	5,388	5,179	445	13% 389 (11–12)	164 (7–9)	(-) 184 (7–9)	682	26% 503 (12–1)	824 (4–6)	504 (4–6)
6	12,182	13,695	1,219	14% 1,043 (11–12)	549	(-) 625 (7–9)	1,455	14% 1,254 (4–5)	1,185	1,254 (4–5)
7	27,004[1]	24,462	3,603[1]	32% 2,448 (7–8)	3,639[1]	33% 2,448 (7–8)	3,827[1]	24% 2,891 (4–5)	3,765[1]	2,891 (4–5)
8	14,481	18,303	1,575	26% 1,160 (11–12)	343	(-) 551 (7–9)	1,810	14% 1,556 (4–5)	1,334	1,556 (4–5)
9	11,873	7,372	1,182	55% 527 (11–12)	676	63% 247 (7–9)	1,479	53% 697 (4–5)	1,200	697 (4–5)
Total	116,997	109,175	12,741	9,180	8,520	6,162	15,331	10,801	13,211	10,074

Source: Colorado-Wyoming Section, ITE.
[1]These numbers reflect a 25% office vacancy rate estimated by Grubb & Ellis, March 31st, 1985, for the Denver office market.

28% 28% 30%

Table VI-4
Effects of Captive Market
Percentage of Employees Who Are Also Patrons in Same or Nearby Development

	CBD Site		Non-CBD Site	
Type of Development	Average	Range	Average	Range
Single-Use Site	29	0–76	19	0–78
Mixed-Use Site	61	22–85	28	0–83
All Sites	43	0–85	24	0–83

concurrent with driveway volume measurements to build a data base.

The Urban Land Institute report contains data on the effect of the captive market. Table VI-4 summarizes Exhibit 23 from that report, indicating the percentage of employees who were measured to also be patrons in the same nearby developments.[9]

The ULI report also indicates a strong linkage between hotel guests and nearby restaurants or retail uses. In one survey of eight hotels, 73% to 100% of the guests indicated that they were also patrons at nearby retail establishments and/or restaurants. Another survey of six hotels indicated a range of 80% to 90%. It further stated that these results appears to be consistent for both downtown and suburban hotels.

Data Collection

To conduct a trip generation study of a multi-use site requires careful selection, gathering of driveway volumes for the site, interviews of the users and residents of the site, and the comparison to anticipated trip generation were that site a series of discrete, individual, isolated uses.

In selecting a site for a multi-use study, the following criteria should be adhered to:

1. The site should be fully developed. Sites new and only partially developed may not have reached a mature state and would not neces-

[9]The Urban Land Institute. *Shared Parking*. Washington, D.C., 1983, p. 39.

sarily generate at the full rate that a fully developed site would.
2. The driveway serving the site must not serve any other adjacent property. If driveways are shared with another site, it is not possible to separate that traffic destined for the multi-use site.
3. Multi-use developments must meet the criteria described earlier.

A great deal of data must be collected to conduct a multi-use trip generation study. A list of these data is attached, adapted from the Colorado-Wyoming Section report.

Driveway volumes should be gathered for as long a period as possible. Some previous studies have gathered only 24–48 hours of data. If these are all that can be obtained, the time period should be during mid-week (Tuesday through Thursday) to avoid daily variations that may occur on Fridays and Mondays. Ideally, seven consecutive days of data should be gathered, from which daily variations can be computed, and a weekday average and weekend average can also be calculated.

Seasonal variations should be carefully considered. Retail uses, for example, peak during the month of December. In addition, recreation and hotel/motel uses normally peak during the summer months. Finally, employment uses may have a low period during the months of August and December, due to vacations. To avoid these seasonal variations, the month and the week of the study should be chosen in consideration of the types of uses in the multi-use development.

Concurrent with gathering driveway volumes, interviews of users and residents of the site should be conducted. (A sample interview form follows.) From these interviews the purpose of the trip can be determined, as can the number of destinations for the trip and the trip mode; the amount of internal trip making on site can be calculated.

Finally, it is appropriate to compare the trip generation that would be expected using discrete site rates with the actual driveway volumes. In this comparison, the following factors must be considered:

1. The difference should be quantified both on an absolute and a percentage basis.
2. Statistical tests should be conducted to determine whether the difference is statistically significant. Is the difference greater than that which occurs in the normal sample of trip generation studies? Is the difference greater than the daily and seasonal variation of the land uses included? Careful statistical analysis is necessary before drawing conclusions that the difference is, in fact, a significant difference.

Data Needs

1. *Land Use Information*
   a. Obtain the total gross square footage of the buildings in the mixed use development.
   b. Obtain a square footage breakdown by type of use:

      Office—If the offices are split up into several buildings, obtain the square footage of each building. If any of them are government buildings, specify how many square feet. The size should be in gross square feet as well as net rentable area.

      Commercial—Obtain the gross leasable area of retail shops, etc., in the development.

      Restaurants—Specify whether it is a fast food restaurant, a quality sit-down restaurant, or a high turnover sit-down restaurant and if drive-up windows are provided. Indicate if the restaurant is a free-standing building. The size should be in gross square feet, gross leasable square feet, and the number of seats.

      Hotel—Specify the number of rooms, as well as the number of occupied rooms in the hotel, and indicate whether it has restaurants and convention facilities. If there are restaurants and/or convention facilities, indicate the square footage they occupy.

      Bank—Obtain the size in gross square feet and the number of drive-up windows.

      Sports Center—Provide the total gross square footage of the sports center and list its facilities.

      Other—Provide as detailed a description as possible of any other land use including gross square footage that occurs within the development, number of dwellings, etc.
   c. Provide the total acreage for the multi-use site.

2. *Site Information*
   a. Describe whether this facility is located on an arterial (number of lanes), or collector; if the facility is at an intersection, describe the classification of the two streets adjacent to the development.
   b. Obtain the total daily volumes for each street adjacent to the development.

3. *Driveway Volumes*
   a. For each driveway accessing the site, measure hourly driveway volume by direction for at least two or three days and preferably one week. The driveway must not be serving any other site except the multi-use site.

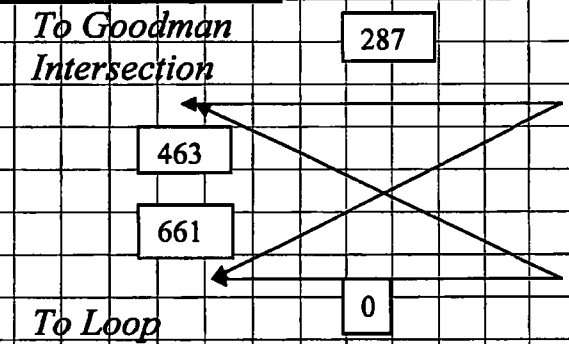
APPENDIX 14

APPENDIX 14: Weave Analysis

Weave Analysis

Objective: Calculate the Level of Service for the weave between vehicles exiting Medley Centre traveling eastbound via the existing loop at Goodman and Vehicles exiting Route 104 to the Goodman Street intersection.

Weaving Diagram:



Vw1 = 661 VR = 1124/1411 = 0.80

Vw2=463 R=463/1124 = 0.41

Vw = 661 + 463 = 1124 L = 820'

V = 661+463+287 = 1411 N= 3 Lanes

$$Sw = 15 + \frac{50}{1+\frac{(1+VR)*(V/N)}{L}}.$$

$$Sw = 15 + \frac{50}{1+\frac{(1+0.80)*(1411/3)}{820}}.$$ **Sw = 40 = LOS D**

The weave for vehicles entering onto Route 104 from Culver against vehicles traveling to Medley Centre from 104 through Culver is not applicable because the vehicles will move through the intersection during different signal phases.