

APPENDIX D

Revised Traffic Study  
(see accompanying CD)


# JOHN COLLINS

## ENGINEERS, P.C.

TRAFFIC • TRANSPORTATION ENGINEERS

===== 11 BRADHURST AVENUE • HAWTHORNE, N.Y. • 10532 • (914) 347-7500 • FAX (914) 347-7266 =====

### MEMORANDUM

TO: Tim Miller, AKP, President, Tim Miller Associates  
FROM: Philip J. Grealy, Ph.D., P.E.   
DATE: October 23, 2009  
SUBJECT: Minisceongo Park - FEIS  
Route 202  
Haverstraw/Ramapo, New York  
PROJECT: No. 1540  
COPY TO: Dave Zigler, Ira Emanuel and Eric Bergstol

\*\*\*\*\*

The following is in response to the missing page from the F.P. Clark memorandum, dated March 17, 2009, regarding Item No. 11 entitled "Traffic Signal Warrants." The following three locations were requested to be analyzed.

- Intersection 1: Theills Mt. Ivy Road and Palisades Interstate Parkway Northbound Off Ramp
- Intersection 2: Palisades Interstate Parkway Southbound Ramps at Quaker Road
- Intersection 3: U.S. Route 202 at the Proposed Site Access

A signal warrant analysis was completed utilizing the procedures contained in the National Manual of Uniform Traffic Control Devices and included evaluations of both future No-Build and Build conditions at each location. Summarized in Tables No. 1NB, 2NB and 3NB are the traffic signal warrant analyses. As can be seen from a review of the tables, Traffic Signal Warrants 1 and 2 would be satisfied under No-Build condition at Intersections 1 and 2. Location 3 does not warrant a signal under No-Build conditions. Under the future Build conditions, as indicated in Tables 1BD, 2BD and 3BD, all three locations appear to satisfy the traffic signal warrants. The final determination on signalization will be made by the NYSDOT as part of the Highway Work Permit process.

**TABLE NO. 1 NB**

**SIGNAL WARRANTS ANALYSIS**

(Based on National Manual of Uniform Traffic Control Devices)

INTERSECTION DATA	
MAJOR STREET:	THEILLS MT. IVY ROAD
MINOR STREET:	PALISADES PARKWAY NB OFF RAMP
LOCATION:	MINISCEONGO, NEW YORK
DATE:	10/22/2009
VOLUME BASIS.....	2011 NO-BUILD TRAFFIC VOLUMES
CONDITION .....	TYPICAL WEEKDAY

CHARACTERISTICS	
Number Of Lanes For Moving Traffic By Approach	
Major Street (Excluding Auxiliary Lanes) =	1
Minor Street (Including Auxiliary Lanes) =	2
Speed	
85 % Speed >= 40 mph (Y or N)----->	Y
Median	
Raised median 4' or more in width on major street (Y or N)?----->	N
Population	
Community < 10,000 (Y or N)----->	Y

TIME	VOLUMES			WARRANT 1 CONDITION A		WARRANT 1 CONDITION B		WARRANT 2		WARRANT MET?			
	Hour Begin	Major Street	Minor Street	Major Peds	Major Street	Minor Street	Major Street	Minor Street	Major Street	Minor Street	1A	1B	2
12:00 AM		0	0	0	350	140	525	70	650	80	NO	NO	NO
01:00 AM		0	0	0	350	140	525	70	650	80	NO	NO	NO
02:00 AM		0	0	0	350	140	525	70	650	80	NO	NO	NO
03:00 AM		0	0	0	350	140	525	70	650	80	NO	NO	NO
04:00 AM		0	0	0	350	140	525	70	650	80	NO	NO	NO
05:00 AM		272	86	0	350	140	525	70	650	80	NO	NO	NO
06:00 AM		726	228	0	350	140	525	70	650	80	YES	YES	YES
07:00 AM		1071	323	0	350	140	525	70	650	80	YES	YES	YES
08:00 AM		1134	357	0	350	140	525	70	650	80	YES	YES	YES
09:00 AM		859	347	0	350	140	525	70	650	80	YES	YES	YES
10:00 AM		805	253	0	350	140	525	70	650	80	YES	YES	YES
11:00 AM		828	260	0	350	140	525	70	650	80	YES	YES	YES
12:00 PM		888	571	0	350	140	525	70	650	80	YES	YES	YES
01:00 PM		866	556	0	350	140	525	70	650	80	YES	YES	YES
02:00 PM		922	592	0	350	140	525	70	650	80	YES	YES	YES
03:00 PM		1023	657	0	350	140	525	70	650	80	YES	YES	YES
04:00 PM		1074	684	0	350	140	525	70	650	80	YES	YES	YES
05:00 PM		1124	722	0	350	140	525	70	650	80	YES	YES	YES
06:00 PM		959	753	0	350	140	525	70	650	80	YES	YES	YES
07:00 PM		742	477	0	350	140	525	70	650	80	YES	YES	YES
08:00 PM		540	347	0	350	140	525	70	650	80	YES	YES	NO
09:00 PM		0	0	0	350	140	525	70	650	80	NO	NO	NO
10:00 PM		0	0	0	350	140	525	70	650	80	NO	NO	NO

NOTE : major peds = highest volume on major street crosswalk

TOTAL HOURS MEETING WARRANTS	15	15	14
TOTAL HOURS NEEDED TO SATISFY	8	8	4

MINIMUM VEHICULAR VOLUME	WARRANT 1A: SATISFIED -- CRITERIA MET FOR SIGNALIZATION
INTERRUPTION OF CONTINUOUS TRAFFIC	WARRANT 1B: SATISFIED -- CRITERIA MET FOR SIGNALIZATION
FOUR HOUR WARRANT	WARRANT 2: SATISFIED -- CRITERIA MET FOR SIGNALIZATION

**TABLE NO. 1 BD**

**SIGNAL WARRANTS ANALYSIS**

(Based on National Manual of Uniform Traffic Control Devices)

**INTERSECTION DATA**  
 MAJOR STREET: THEILLS MT. IVY ROAD  
 MINOR STREET: PALISADES PARKWAY NB OFF RAMP  
 LOCATION: MINISCEONGO, NEW YORK  
 DATE: 10/22/2009  
 VOLUME BASIS..... 2011 BUILD TRAFFIC VOLUMES  
 CONDITION ..... TYPICAL WEEKDAY

**CHARACTERISTICS**

<b>Number Of Lanes For Moving Traffic By Approach</b>	
Major Street (Excluding Auxiliary Lanes) =	1
Minor Street (Including Auxiliary Lanes) =	2
<b>Speed</b>	
85 % Speed >= 40 mph (Y or N)----->	Y
<b>Median</b>	
Raised median 4' or more in width on major street (Y or N)?----->	N
<b>Population</b>	
Community < 10,000 (Y or N)----->	Y

TIME Hour Begin	VOLUMES			WARRANT 1 CONDITION A		WARRANT 1 CONDITION B		WARRANT 2		WARRANT MET?		
	Major Street	Minor Street	Major Peds	Major Street	Minor Street	Major Street	Minor Street	Major Street	Minor Street	1A	1B	2
12:00 AM		0	0	350	140	525	70	650	80	NO	NO	NO
01:00 AM		0	0	350	140	525	70	650	80	NO	NO	NO
02:00 AM		0	0	350	140	525	70	650	80	NO	NO	NO
03:00 AM		0	0	350	140	525	70	650	80	NO	NO	NO
04:00 AM		0	0	350	140	525	70	650	80	NO	NO	NO
05:00 AM	278	104	0	350	140	525	70	650	80	NO	NO	NO
06:00 AM	735	256	0	350	140	525	70	650	80	YES	YES	YES
07:00 AM	1087	370	0	350	140	525	70	650	80	YES	YES	YES
08:00 AM	1153	448	0	350	140	525	70	650	80	YES	YES	YES
09:00 AM	873	412	0	350	140	525	70	650	80	YES	YES	YES
10:00 AM	816	300	0	350	140	525	70	650	80	YES	YES	YES
11:00 AM	839	309	0	350	140	525	70	650	80	YES	YES	YES
12:00 PM	919	635	0	350	140	525	70	650	80	YES	YES	YES
01:00 PM	896	621	0	350	140	525	70	650	80	YES	YES	YES
02:00 PM	955	675	0	350	140	525	70	650	80	YES	YES	YES
03:00 PM	1063	782	0	350	140	525	70	650	80	YES	YES	YES
04:00 PM	1127	865	0	350	140	525	70	650	80	YES	YES	YES
05:00 PM	1168	869	0	350	140	525	70	650	80	YES	YES	YES
06:00 PM	999	878	0	350	140	525	70	650	80	YES	YES	YES
07:00 PM	770	557	0	350	140	525	70	650	80	YES	YES	YES
08:00 PM	559	396	0	350	140	525	70	650	80	YES	YES	NO
09:00 PM		0	0	350	140	525	70	650	80	NO	NO	NO
10:00 PM		0	0	350	140	525	70	650	80	NO	NO	NO

NOTE : major peds = highest volume on major street crosswalk

TOTAL HOURS MEETING WARRANTS	15	15	14
TOTAL HOURS NEEDED TO SATISFY	8	8	4

MINIMUM VEHICULAR VOLUME	WARRANT 1A: SATISFIED -- CRITERIA MET FOR SIGNALIZATION
INTERRUPTION OF CONTINUOUS TRAFFIC	WARRANT 1B: SATISFIED -- CRITERIA MET FOR SIGNALIZATION
FOUR HOUR WARRANT	WARRANT 2: SATISFIED -- CRITERIA MET FOR SIGNALIZATION

**TABLE NO. 2 NB**

**SIGNAL WARRANTS ANALYSIS**  
(Based on National Manual of Uniform Traffic Control Devices)

**INTERSECTION DATA**  
 MAJOR STREET: PALISADES PARKWAY SB ON/OFF RAMP  
 MINOR STREET: QUAKER ROAD  
 LOCATION: MINISCEONGO, NEW YORK  
 DATE: 10/22/2009  
 VOLUME BASIS..... 2011 NO-BUILD TRAFFIC VOLUMES  
 CONDITION..... TYPICAL WEEKDAY

**CHARACTERISTICS**

<b>Number Of Lanes For Moving Traffic By Approach</b>	
Major Street (Excluding Auxiliary Lanes) =	1
Minor Street (Including Auxiliary Lanes) =	1
<b>Speed</b>	
85 % Speed >= 40 mph (Y or N)----->	Y
<b>Median</b>	
Raised median 4' or more in width on major street (Y or N)?----->	N
<b>Population</b>	
Community < 10,000 (Y or N)----->	Y

TIME Hour Begin	VOLUMES			WARRANT 1 CONDITION A		WARRANT 1 CONDITION B		WARRANT 2		WARRANT MET?		
	Major Street	Minor Street	Major Peds	Major Street	Minor Street	Major Street	Minor Street	Major Street	Minor Street	1A	1B	2
12:00 AM		0	0	350	105	525	53	800	60	NO	NO	NO
01:00 AM		0	0	350	105	525	53	800	60	NO	NO	NO
02:00 AM		0	0	350	105	525	53	800	60	NO	NO	NO
03:00 AM		0	0	350	105	525	53	800	60	NO	NO	NO
04:00 AM		0	0	350	105	525	53	800	60	NO	NO	NO
05:00 AM		195	40	350	105	525	53	800	60	NO	NO	NO
06:00 AM		1405	216	350	105	525	53	800	60	YES	YES	YES
07:00 AM		1483	323	350	105	525	53	800	60	YES	YES	YES
08:00 AM		1297	266	350	105	525	53	800	60	YES	YES	YES
09:00 AM		1051	216	350	105	525	53	800	60	YES	YES	YES
10:00 AM		921	189	350	105	525	53	800	60	YES	YES	YES
11:00 AM		986	202	350	105	525	53	800	60	YES	YES	YES
12:00 PM		746	179	350	105	525	53	800	60	YES	YES	NO
01:00 PM		709	170	350	105	525	53	800	60	YES	YES	NO
02:00 PM		700	168	350	105	525	53	800	60	YES	YES	NO
03:00 PM		801	192	350	105	525	53	800	60	YES	YES	YES
04:00 PM		965	249	350	105	525	53	800	60	YES	YES	YES
05:00 PM		1051	220	350	105	525	53	800	60	YES	YES	YES
06:00 PM		806	192	350	105	525	53	800	60	YES	YES	YES
07:00 PM		562	134	350	105	525	53	800	60	YES	YES	NO
08:00 PM		396	95	350	105	525	53	800	60	NO	NO	NO
09:00 PM			0	350	105	525	53	800	60	NO	NO	NO
10:00 PM			0	350	105	525	53	800	60	NO	NO	NO

NOTE : major peds = highest volume on major street crosswalk

TOTAL HOURS MEETING WARRANTS	14	14	10
TOTAL HOURS NEEDED TO SATISFY	8	8	4

MINIMUM VEHICULAR VOLUME	WARRANT 1A: SATISFIED -- CRITERIA MET FOR SIGNALIZATION
INTERRUPTION OF CONTINUOUS TRAFFIC	WARRANT 1B: SATISFIED -- CRITERIA MET FOR SIGNALIZATION
FOUR HOUR WARRANT	WARRANT 2: SATISFIED -- CRITERIA MET FOR SIGNALIZATION

**TABLE NO. 2 BD**

**SIGNAL WARRANTS ANALYSIS**

(Based on National Manual of Uniform Traffic Control Devices)

**INTERSECTION DATA**  
 MAJOR STREET: PALISADES PARKWAY SB ON/OFF RAMP  
 MINOR STREET: QUAKER ROAD  
 LOCATION: MINISCEONGO, NEW YORK  
 DATE: 10/22/2009  
 VOLUME BASIS..... 2011 BUILD TRAFFIC VOLUMES  
 CONDITION ..... TYPICAL WEEKDAY

**CHARACTERISTICS**  
 Number Of Lanes For Moving Traffic By Approach  
 Major Street (Excluding Auxiliary Lanes) = 1  
 Minor Street (Including Auxiliary Lanes) = 2  
 Speed  
 85 % Speed >= 40 mph (Y or N)-----> Y  
 Median  
 Raised median 4' or more in width on major street (Y or N)?-----> N  
 Population  
 Community < 10,000 (Y or N)-----> Y

TIME Hour Begin	VOLUMES			WARRANT 1 CONDITION A		WARRANT 1 CONDITION B		WARRANT 2		WARRANT MET?		
	Major Street	Minor Street	Major Peds	Major Street	Minor Street	Major Street	Minor Street	Major Street	Minor Street	1A	1B	2
12:00 AM		0	0	350	140	525	70	650	80	NO	NO	NO
01:00 AM		0	0	350	140	525	70	650	80	NO	NO	NO
02:00 AM		0	0	350	140	525	70	650	80	NO	NO	NO
03:00 AM		0	0	350	140	525	70	650	80	NO	NO	NO
04:00 AM		0	0	350	140	525	70	650	80	NO	NO	NO
05:00 AM	219	42	0	350	140	525	70	650	80	NO	NO	NO
06:00 AM	1447	220	0	350	140	525	70	650	80	YES	YES	YES
07:00 AM	1556	331	0	350	140	525	70	650	80	YES	YES	YES
08:00 AM	1358	279	0	350	140	525	70	650	80	YES	YES	YES
09:00 AM	1098	225	0	350	140	525	70	650	80	YES	YES	YES
10:00 AM	961	197	0	350	140	525	70	650	80	YES	YES	YES
11:00 AM	1022	212	0	350	140	525	70	650	80	YES	YES	YES
12:00 PM	902	190	0	350	140	525	70	650	80	YES	YES	YES
01:00 PM	866	181	0	350	140	525	70	650	80	YES	YES	YES
02:00 PM	862	183	0	350	140	525	70	650	80	YES	YES	YES
03:00 PM	971	209	0	350	140	525	70	650	80	YES	YES	YES
04:00 PM	1173	282	0	350	140	525	70	650	80	YES	YES	YES
05:00 PM	1094	246	0	350	140	525	70	650	80	YES	YES	YES
06:00 PM	971	209	0	350	140	525	70	650	80	YES	YES	YES
07:00 PM	689	148	0	350	140	525	70	650	80	YES	YES	YES
08:00 PM	490	103	0	350	140	525	70	650	80	NO	NO	NO
09:00 PM		0	0	350	140	525	70	650	80	NO	NO	NO
10:00 PM		0	0	350	140	525	70	650	80	NO	NO	NO

NOTE : major peds = highest volume on major street crosswalk

TOTAL HOURS MEETING WARRANTS	14	14	14
TOTAL HOURS NEEDED TO SATISFY	8	8	4

MINIMUM VEHICULAR VOLUME	WARRANT 1A: SATISFIED -- CRITERIA MET FOR SIGNALIZATION
INTERRUPTION OF CONTINUOUS TRAFFIC	WARRANT 1B: SATISFIED -- CRITERIA MET FOR SIGNALIZATION
FOUR HOUR WARRANT	WARRANT 2: SATISFIED -- CRITERIA MET FOR SIGNALIZATION

**TABLE NO. 3 NB**

**SIGNAL WARRANTS ANALYSIS**  
(Based on National Manual of Uniform Traffic Control Devices)

**INTERSECTION DATA**  
 MAJOR STREET: NYS ROUTE 202  
 MINOR STREET: SITE ACCESS/COMMERCIAL DRIVEWAY  
 LOCATION: MINISCEONGO, NEW YORK  
 DATE: 10/22/2009  
 VOLUME BASIS..... 2011 NO-BUILD TRAFFIC VOLUMES  
 CONDITION ..... TYPICAL WEEKDAY

**CHARACTERISTICS**  
 Number Of Lanes For Moving Traffic By Approach  
 Major Street (Excluding Auxiliary Lanes) = 1  
 Minor Street (Including Auxiliary Lanes) = 1  
 Speed  
 85 % Speed >= 40 mph (Y or N)-----> Y  
 Median  
 Raised median 4' or more in width on major street (Y or N)?-----> N  
 Population  
 Community < 10,000 (Y or N)-----> Y

TIME Hour Begin	VOLUMES			WARRANT 1 CONDITION A		WARRANT 1 CONDITION B		WARRANT 2		WARRANT MET?		
	Major Street	Minor Street	Major Peds	Major Street	Minor Street	Major Street	Minor Street	Major Street	Minor Street	1A	1B	2
12:00 AM		0	0	350	105	525	53	800	60	NO	NO	NO
01:00 AM		0	0	350	105	525	53	800	60	NO	NO	NO
02:00 AM		0	0	350	105	525	53	800	60	NO	NO	NO
03:00 AM		0	0	350	105	525	53	800	60	NO	NO	NO
04:00 AM		0	0	350	105	525	53	800	60	NO	NO	NO
05:00 AM	232	6	0	350	105	525	53	800	60	NO	NO	NO
06:00 AM	930	23	0	350	105	525	53	800	60	NO	NO	NO
07:00 AM	1427	19	0	350	105	525	53	800	60	NO	NO	NO
08:00 AM	1548	37	0	350	105	525	53	800	60	NO	NO	NO
09:00 AM	1254	30	0	350	105	525	53	800	60	NO	NO	NO
10:00 AM	1099	26	0	350	105	525	53	800	60	NO	NO	NO
11:00 AM	1176	28	0	350	105	525	53	800	60	NO	NO	NO
12:00 PM	1458	21	0	350	105	525	53	800	60	NO	NO	NO
01:00 PM	1386	20	0	350	105	525	53	800	60	NO	NO	NO
02:00 PM	1368	20	0	350	105	525	53	800	60	NO	NO	NO
03:00 PM	1567	23	0	350	105	525	53	800	60	NO	NO	NO
04:00 PM	1703	48	0	350	105	525	53	800	60	NO	NO	NO
05:00 PM	1801	27	0	350	105	525	53	800	60	NO	NO	NO
06:00 PM	1498	17	0	350	105	525	53	800	60	NO	NO	NO
07:00 PM	1098	16	0	350	105	525	53	800	60	NO	NO	NO
08:00 PM	774	11	0	350	105	525	53	800	60	NO	NO	NO
09:00 PM		0	0	350	105	525	53	800	60	NO	NO	NO
10:00 PM			0	350	105	525	53	800	60	NO	NO	NO

NOTE : major peds = highest volume on major street crosswalk

TOTAL HOURS MEETING WARRANTS	0	0	0
TOTAL HOURS NEEDED TO SATISFY	8	8	4

MINIMUM VEHICULAR VOLUME	WARRANT 1A: NOT SATISFIED -- NO SIGNAL
INTERRUPTION OF CONTINUOUS TRAFFIC	WARRANT 1B: NOT SATISFIED -- NO SIGNAL
FOUR HOUR WARRANT	WARRANT 2: NOT SATISFIED -- NO SIGNAL

**TABLE NO. 3 BD**

**SIGNAL WARRANTS ANALYSIS**

(Based on National Manual of Uniform Traffic Control Devices)

**INTERSECTION DATA**  
 MAJOR STREET: NYS ROUTE 202  
 MINOR STREET: SITE ACCESS/COMMERCIAL DRIVEWAY  
 LOCATION: MINISCEONGO, NEW YORK  
 DATE: 10/22/2009  
 VOLUME BASIS..... 2011 BUILD TRAFFIC VOLUMES  
 CONDITION ..... TYPICAL WEEKDAY

**CHARACTERISTICS**  
 Number Of Lanes For Moving Traffic By Approach  
 Major Street (Excluding Auxiliary Lanes) = 2  
 Minor Street (Including Auxiliary Lanes) = 3  
 Speed  
 85 % Speed >= 40 mph (Y or N)----> Y  
 Median  
 Raised median 4' or more in width on major street (Y or N)?----> N  
 Population  
 Community < 10,000 (Y or N)----> Y

TIME Hour Begin	VOLUMES			WARRANT 1 CONDITION A		WARRANT 1 CONDITION B		WARRANT 2		WARRANT MET?		
	Major Street	Minor Street	Major Peds	Major Street	Minor Street	Major Street	Minor Street	Major Street	Minor Street	1A	1B	2
12:00 AM		0	0	420	140	630	70	900	80	NO	NO	NO
01:00 AM		0	0	420	140	630	70	900	80	NO	NO	NO
02:00 AM		0	0	420	140	630	70	900	80	NO	NO	NO
03:00 AM		0	0	420	140	630	70	900	80	NO	NO	NO
04:00 AM		0	0	420	140	630	70	900	80	NO	NO	NO
05:00 AM	268	68	0	420	140	630	70	900	80	NO	NO	NO
06:00 AM	986	130	0	420	140	630	70	900	80	NO	YES	YES
07:00 AM	1525	207	0	420	140	630	70	900	80	YES	YES	YES
08:00 AM	1734	175	0	420	140	630	70	900	80	YES	YES	YES
09:00 AM	1387	137	0	420	140	630	70	900	80	NO	YES	YES
10:00 AM	1197	121	0	420	140	630	70	900	80	NO	YES	YES
11:00 AM	1278	112	0	420	140	630	70	900	80	NO	YES	YES
12:00 PM	1598	441	0	420	140	630	70	900	80	YES	YES	YES
01:00 PM	1526	440	0	420	140	630	70	900	80	YES	YES	YES
02:00 PM	1548	448	0	420	140	630	70	900	80	YES	YES	YES
03:00 PM	1831	454	0	420	140	630	70	900	80	YES	YES	YES
04:00 PM	2097	562	0	420	140	630	70	900	80	YES	YES	YES
05:00 PM	2119	456	0	420	140	630	70	900	80	YES	YES	YES
06:00 PM	1762	433	0	420	140	630	70	900	80	YES	YES	YES
07:00 PM	1272	345	0	420	140	630	70	900	80	YES	YES	YES
08:00 PM	881	260	0	420	140	630	70	900	80	YES	YES	NO
09:00 PM		0	0	420	140	630	70	900	80	NO	NO	NO
10:00 PM		0	0	420	140	630	70	900	80	NO	NO	NO

NOTE : major peds = highest volume on major street crosswalk

TOTAL HOURS MEETING WARRANTS	11	15	14
TOTAL HOURS NEEDED TO SATISFY	8	8	4

MINIMUM VEHICULAR VOLUME	WARRANT 1A: SATISFIED -- CRITERIA MET FOR SIGNALIZATION
INTERRUPTION OF CONTINUOUS TRAFFIC	WARRANT 1B: SATISFIED -- CRITERIA MET FOR SIGNALIZATION
FOUR HOUR WARRANT	WARRANT 2: SATISFIED -- CRITERIA MET FOR SIGNALIZATION