Appendix “A”

Purpose and Need Statement

Concept Development
Route 24 and Columbia Turnpike Interchange Improvements
Purpose and Need Statement

INTRODUCTION

The project is located in the area between the Route 24 EB ramp to Columbia Turnpike and the signalized intersection of Columbia Turnpike and Park Avenue in Morris and Hanover Townships, Morris County. Based on the Smart Solution Study, the intersection is currently near capacity with several movements failing and the signal is over capacity during the AM peak hours.

The Route 24 EB ramp merges with Columbia Turnpike approximately 650 feet east of the signalized intersection and there is a heavy movement from this ramp to the double left-turn lane at the intersection; however queuing in the left-turn lane prevents motorists from this ramp from entering the lane, and they then impede the movement of through traffic. The westbound Columbia Turnpike approach to Park Avenue is currently striped as two through lanes, two left lanes and one right lane. This intersection is currently near capacity with several movements failing and over capacity during the AM peak hours.

A Project Location Map and NJDOT Straight Line Diagrams for NJ Route 24, Columbia Turnpike and Park Avenue are attached.

PURPOSE

The purpose of this project is to develop recommendations that would improve the traffic flow between the ramp and the intersection and reduce crashes, along with providing improvements to the operation of the intersection that could be investigated further. The Route 24 EB ramp merges with Columbia Turnpike WB approximately 650 feet east of the signalized intersection of Columbia Turnpike and Park Avenue. At this intersection there is a heavy AM left turn movement on the Columbia Turnpike WB approach that currently utilizes a double left-turn lane.

NEED

Operational Deficiency: The Route 24 EB ramp merges with Columbia Turnpike approximately 650 feet east of the signalized intersection at Park Avenue. There is a heavy movement from this ramp to the double left-turn lane at the intersection. Columbia Turnpike is currently striped as two through lanes, two left lanes and one right lane.

The ramp movement from EB Route 24 to WB Columbia Turnpike is impacted by the weaving movement from this turn to left turns from Columbia Turnpike WB to Park Avenue SB. There is inadequate transition room for this movement to operate smoothly, and left-turn queuing often leaves this traffic waiting to enter the left-turn lane thus impeding the flow of through traffic. This creates congestion that backs up onto the Route 24 mainline, especially during the weekday morning peak period.

The intersection of Columbia Turnpike and Park Avenue operates at or close to capacity during both peak hours. During the morning peak hours, the WB left and SB through movements operate at unacceptable levels of service. During the evening peak hour, the NB approach operates at marginal levels of service.

GOALS AND OBJECTIVES

It is the intent of this project to fulfill the purpose and address the needs while minimizing environmental, quality of life, access, right of way and utility impacts. Any proposed improvements will consider improvements to pedestrian accommodations and circulation, as well as impacts to emergency services and road user costs.

EXISTING DEFICIENCIES

Information gathered from available record plans and reports, combined data observation during field visits, was used to identify areas that were noted to be deficient according to current design criteria. Section II summarizes the project's purpose and need as well as goals and objectives based on these deficiencies.

The focus of the project is the traffic flow between the ramp and the intersection along with providing improvements to the operation of the intersection. There are no bridge replacement issues, flooding issues or other significant maintenance issues related to the structure. However, upon evaluation the following deficiencies exist:

- Right turn from EB Route 24 to WB Columbia Turnpike are impacted by the weaving movement from this turn to left turns from Columbia Turnpike WB to Park Avenue SB. There is inadequate transition room for this movement to operate smoothly and left-turn queuing contributes to ramp traffic blocking westbound through travel lanes. This creates congestion that backs up onto the Route 24 mainline during the morning peak.
- The intersection of Columbia Turnpike and Park Avenue operates at or close to capacity during both peak hours. During the morning peak hours, the WB left and SB through movements operate at unacceptable levels of service. During the evening peak hour, the NB approach operates at marginal levels of service.

Appendix “B”

Bridge Re-evaluation Survey Report (latest cycle)

(Not Applicable)

Appendix “C”

Bridge Scour Evaluation Report (latest cycle)

(Not Applicable)

Appendix "D"

As-Built Plans and Jurisdiction Maps

FED. ROAD DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
1	N.J.	F-48(107)	1	1088

STATE OF NEW JERSEY
DEPARTMENT OF TRANSPORTATION

PLANS OF

ROUTE 24 FREEWAY SECTIONS 9E AND 10H

FROM RTE. 287 TO EAST OF COLUMBIA TURNPIKE

GRADING, PAVING, & STRUCTURES

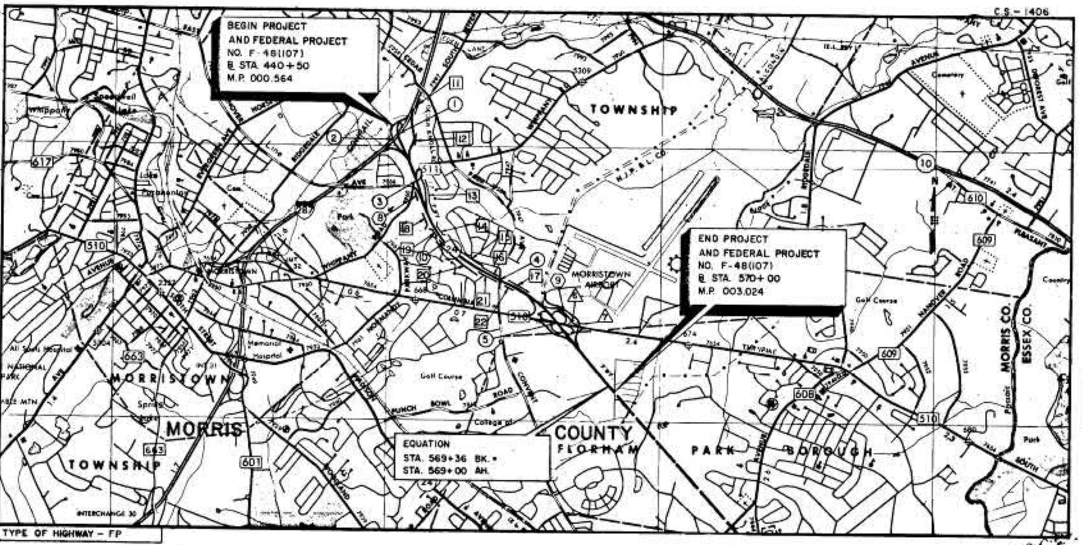
AS-BUILT

BOROUGH OF FLORHAM PARK
TOWNSHIPS OF MORRIS AND HANOVER
SCALES AS INDICATED

MORRIS COUNTY
NOVEMBER 1989

PUBLIC UTILITIES
TEXAS EASTERN GAS PIPELINE COMPANY (GAS MAINS)
ALGONQUIN GAS TRANSMISSION COMPANY (GAS MAINS)
PUBLIC SERVICE ELECTRIC AND GAS COMPANY (GAS MAINS)
NEW JERSEY NATURAL GAS COMPANY (GAS MAINS)
JERSEY CENTRAL POWER AND LIGHT COMPANY (POLE LINES)
SOUTHEAST MORRIS WATER AUTHORITY (WATER MAINS)
TOWNSHIP OF MORRIS (SANITARY SEWER)
FLORHAM PARK SEWERAGE AUTHORITY (SANITARY SEWER)
HANOVER SEWERAGE AUTHORITY (SANITARY SEWER)
SAMMONS COMMUNICATIONS OF N.J. INC.
AMERICAN TELEPHONE AND TELEGRAPH (POLE LINES & COND.)
NEW JERSEY BELL (POLE LINES & CONDUITS)

STRUCTURES IN THIS CONTRACT	
①	RAMP B OVER ROUTE 287
②	RAMP A OVER ROUTE 287
③	ROUTE 24 OVER WHIPPANY ROAD
④	ROUTE 24 OVER PARK AVENUE
⑤	ROUTE 24 OVER COLUMBIA TURNPIKE
CULVERTS IN THIS CONTRACT	
△	COLUMBIA TURNPIKE CULVERT EXTENSION
△	ALGONQUIN PARKWAY CULVERT
WALLS IN THIS CONTRACT	
⑧	WALL #1 RAMP J RETAINING WALL
⑨	WALL #2 RAMP P RETAINING WALL
⑩	WALL #3 ROUTE 24 E.B. RETAINING WALL
NOISE WALLS IN THIS CONTRACT	
11	NOISE WALL A1
12	NOISE WALL A2
13	NOISE WALL B1
14	NOISE WALL B2
15	NOISE WALL B3
16	NOISE WALL B4
17	NOISE WALL B5
18	NOISE WALL C1
19	NOISE WALL C2
20	NOISE WALL C3
21	NOISE WALL C4
22	NOISE WALL C5



BEGIN PROJECT
AND FEDERAL PROJECT
NO. F-48(107)
℄ STA. 440+50
M.P. 000.564

END PROJECT
AND FEDERAL PROJECT
NO. F-48(107)
℄ STA. 570+00
M.P. 003.024

EQUATION
STA. 569+36 BK. =
STA. 569+00 AH.

KEY MAP

SCALE IN FEET 1" = 2000'

0 2000 4000 6000 8000

TOTAL LENGTH OF PROJECT = 12,986 LIN. FT. OR 2.460 MILES

TOTAL LENGTH OF FEDERAL PROJECT NO. F-48(107) = 12,986 LIN. FT. OR 2.460 MILES

STANDARD HIGHWAY SPECIFICATIONS OF 1983 WITH AMENDMENTS THERETO TO GOVERN

DESIGN TRAFFIC DATA			
I-287 TO WHIPPANY RD.		WHIPPANY RD. TO COLUMBIA TPK.	
ADT (1985) - 2 WAY =	0	ADT (1985) - 2 WAY =	0
ADT (2005) - 2 WAY =	18,900	ADT (2005) - 2 WAY =	31,900
DHV (2005) - 2 WAY =	2,030	DHV (2005) - 2 WAY =	3,420
D =	0.63	D =	0.63
T =	0.034	T =	0.034
RTE. 24			
V =	70		

STARTING DATE: JUNE 4, 1990

COMPLETION DATE: AUG 31, 1993

RESIDENT ENGINEER: PETE TOMORY

CONTRACTOR: GEORGE HARM CONSTRUCTION CO.

PART 1 OF 6

CERTIFICATION

I CERTIFY THAT TO THE BEST OF MY KNOWLEDGE THIS PROJECT HAS BEEN CONSTRUCTED IN CONFORMITY WITH THE ORIGINAL PLANS, SPECIFICATIONS AND MODIFICATION, IF ANY, AS DESCRIBED IN THE VARIOUS CONSTRUCTION ORDERS, NUMBERS THROUGH ,

RESIDENT ENGINEER DATE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED

Division Administrator Date

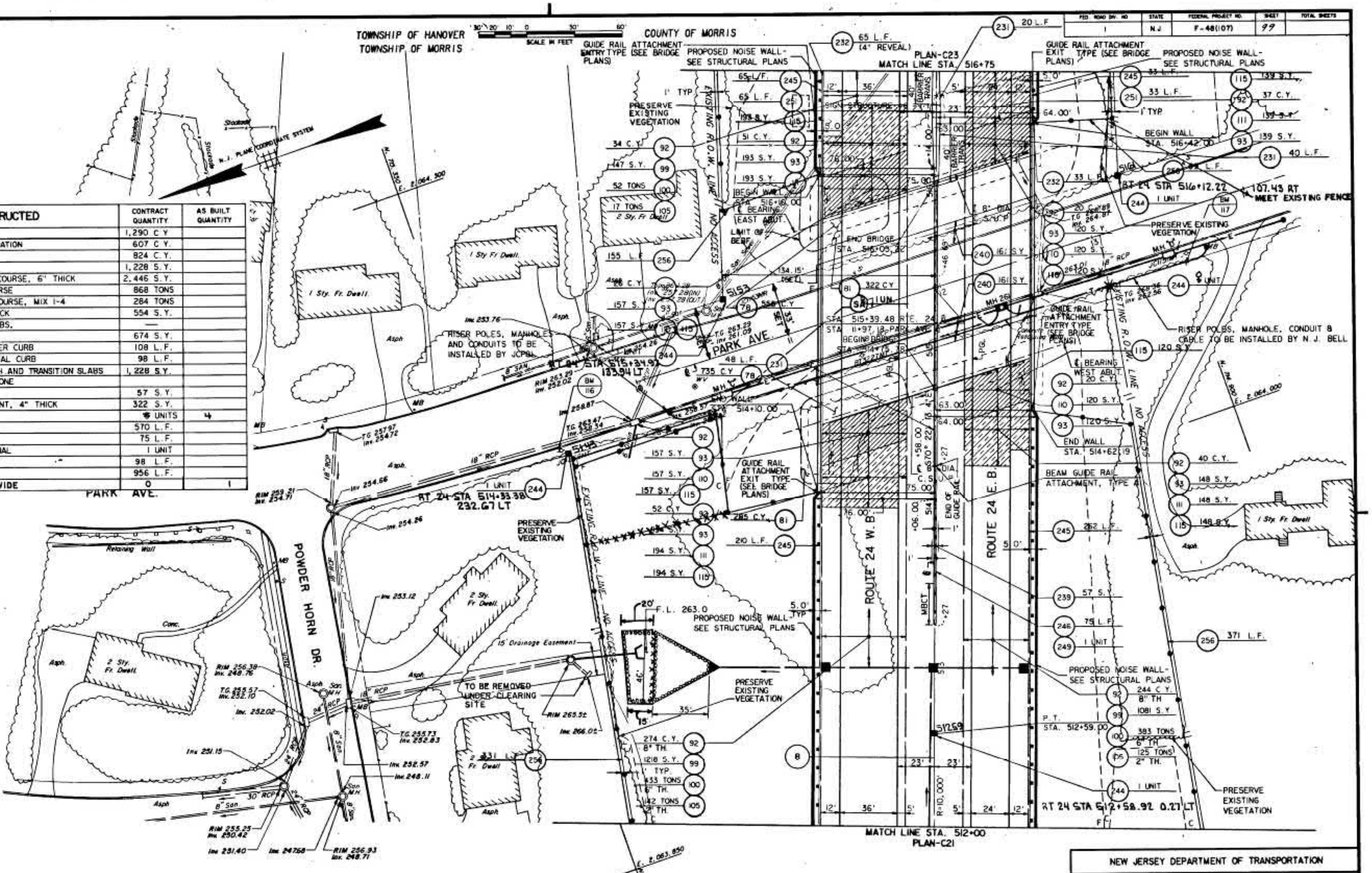
Submitted by Clifford A. Ellis 12/28/89
Chief Engineer of Regional Design Date

Approved by (for) Waddell 12/28/89
Assistant Commissioner, Design & Right of Way Date

1/1088

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS FAIRFIELD, N.J. AS BUILT PLANS PREPARED BY I PAR-TROY DESIGN AUG. 1993

FED. ROAD DIV. NO	STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
1	N.J	F-48(107)	99	



ITEM NO.	TO BE CONSTRUCTED	CONTRACT QUANTITY	AS BUILT QUANTITY
78	POROUS FILL	1,290 C Y	
81	BORROW EXCAVATION BRIDGE FOUNDATION	607 C Y.	
92	SUBBASE	824 C. Y.	
93	UNDERLAYER PREPARATION	1, 228 S. Y.	
99	DENSE GRADED AGGREGATE BASE COURSE, 6" THICK	2, 446 S. Y.	
100	BITUMINOUS STABILIZED BASE COURSE	868 TONS	
105	BITUMINOUS CONCRETE SURFACE COURSE, MIX I-4	284 TONS	
110	BRIDGE APPROACH SLABS, 18" THICK	554 S. Y.	
111	BRIDGE APPROACH TRANSITION SLABS,	—	
	13.5" AVERAGE THICKNESS	674 S. Y.	
231	24" X 41" WHITE CONCRETE BARRIER CURB	108 L. F.	
232	9" X 16" WHITE CONCRETE VERTICAL CURB	98 L. F.	
115	SAWCUT GROOVED BRIDGE APPROACH AND TRANSITION SLABS	1, 228 S.Y.	
239	COLORED BITUMINOUS TREATED STONE		
	SURFACE TREATMENT	57 S. Y.	
240	BROKEN STONE SURFACE TREATMENT, 4" THICK	322 S. Y.	
244	NEW MONUMENTS	~~5~~ UNITS	4
245	BEAM GUIDE RAIL	570 L. F.	
246	BEAM GUIDE RAIL, DUAL FACE	75 L. F.	
249	MEDIAN BREAKAWAY CABLE TERMINAL	1 UNIT	
251	RUB RAIL	98 L. F.	
256	CHAIN LINK FENCE, 6' HIGH	956 L. F.	
SA	GATES, CHAIN LINK FENCE, 3' WIDE	0	1

AS BUILT BENCH MARK
TOP OF MONUMENT ROUTE 24 ℄ STA 512+58.92
0.27 LEFT ELEV. 299.862

BM 116 ELEV. =265.13 R.R. SPIKE IN
UTILITY POLE #JC-228-MT
ROUTE 24 ℄ STA. 514+37 236' LT.
BM 117 ELEV. =275.12 R.R. SPIKE IN
UTILITY POLE #JC-115I-MT
ROUTE 24 ℄ STA. 515+62 157' RT.

HOWARD NEEDLES TAMMEN & BERGENDOFF CONSULTING ENGINEERS FAIRFIELD, N.J.

CONSTRUCTION PLAN - C22

NEW JERSEY DEPARTMENT OF TRANSPORTATION

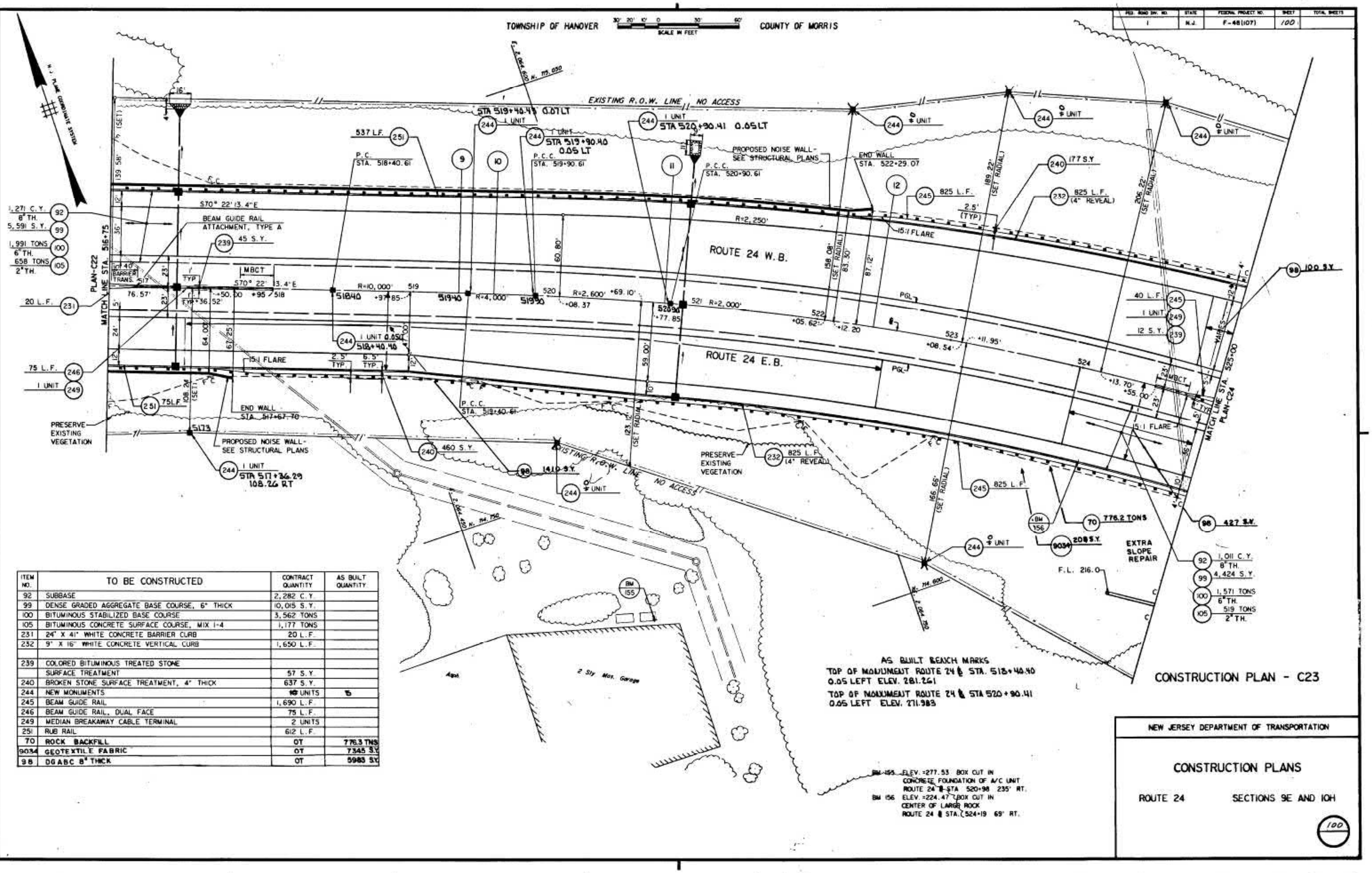
CONSTRUCTION PLANS

ROUTE 24 SECTIONS 9E AND 10H

99

FED. ROAD DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
1	N.J.	F-48(107)	100	

TOWNSHIP OF HANOVER   COUNTY OF MORRIS



ITEM NO.	TO BE CONSTRUCTED	CONTRACT QUANTITY	AS BUILT QUANTITY
92	SUBBASE	2,282 C.Y.	
99	DENSE GRADED AGGREGATE BASE COURSE, 6" THICK	10,015 S.Y.	
100	BITUMINOUS STABILIZED BASE COURSE	3,562 TONS	
105	BITUMINOUS CONCRETE SURFACE COURSE, MIX I-4	1,177 TONS	
231	24" X 41" WHITE CONCRETE BARRIER CURB	20 L.F.	
232	9" X 16" WHITE CONCRETE VERTICAL CURB	1,650 L.F.	
239	COLORED BITUMINOUS TREATED STONE		
	SURFACE TREATMENT	57 S.Y.	
240	BROKEN STONE SURFACE TREATMENT, 4" THICK	637 S.Y.	
244	NEW MONUMENTS	~~10~~ UNITS	5
245	BEAM GUIDE RAIL	1,690 L.F.	
246	BEAM GUIDE RAIL, DUAL FACE	75 L.F.	
249	MEDIAN BREAKAWAY CABLE TERMINAL	2 UNITS	
251	RUB RAIL	612 L.F.	
70	ROCK BACKFILL	OT	776.3 TNS
9034	GEOTEXTILE FABRIC	OT	7345 S.Y.
98	DGABC 8" THICK	OT	5983 S.Y.

AS BUILT BEACH MARKS
TOP OF MONUMENT ROUTE 24 ℄ STA. 518+40.40
0.05 LEFT ELEV. 281.261
TOP OF MONUMENT ROUTE 24 ℄ STA 520+90.41
0.05 LEFT ELEV. 271.983

BM 155 ELEV. =277.53 BOX CUT IN
CONCRETE FOUNDATION OF A/C UNIT
ROUTE 24 ℄ STA 520+98 235' RT.
BM 156 ELEV. =224.47 BOX CUT IN
CENTER OF LARGE ROCK
ROUTE 24 ℄ STA. 524+19 69' RT.

CONSTRUCTION PLAN - C23

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION PLANS

ROUTE 24   SECTIONS 9E AND 10H

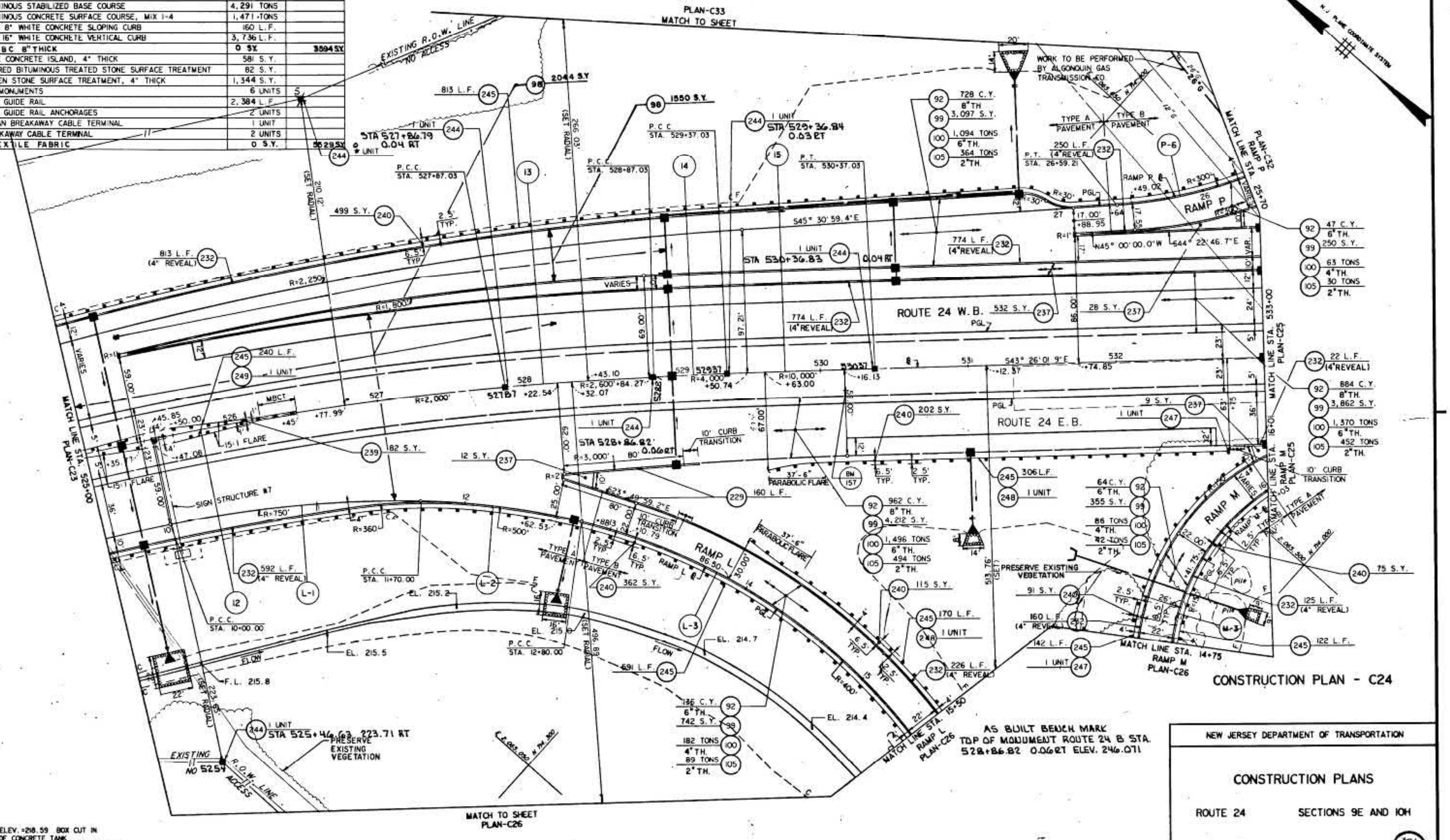
100

HOWARD NEEDLES TAMMEN & BERGENDOFF   CONSULTING ENGINEERS FAIRFIELD, N.J.

FED. ROAD DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
I	N.J.	F-48(107)	101	

ITEM NO.	TO BE CONSTRUCTED	CONTRACT QUANTITY	AS BUILT QUANTITY
92	SUBBASE	2,821 C.Y.	
99	DENSE GRADED AGGREGATE BASE COURSE, 6" THICK	12,518 S.Y.	
100	BITUMINOUS STABILIZED BASE COURSE	4,291 TONS	
105	BITUMINOUS CONCRETE SURFACE COURSE, MIX I-4	1,471 TONS	
229	15" X 8" WHITE CONCRETE SLOPING CURB	160 L.F.	
232	9" X 16" WHITE CONCRETE VERTICAL CURB	3,736 L.F.	
98	DGABC 8" THICK	0 SY	3594 SY
237	WHITE CONCRETE ISLAND, 4" THICK	581 S.Y.	
239	COLORED BITUMINOUS TREATED STONE SURFACE TREATMENT	82 S.Y.	
240	BROKEN STONE SURFACE TREATMENT, 4" THICK	1,344 S.Y.	
244	NEW MONUMENTS	6 UNITS	5
245	BEAM GUIDE RAIL	2,384 L.F.	
247	BEAM GUIDE RAIL ANCHORAGES	2 UNITS	
249	MEDIAN BREAKAWAY CABLE TERMINAL	1 UNIT	
248	BREAKAWAY CABLE TERMINAL	2 UNITS	
9034	GEOTEXTILE FABRIC	0 S.Y.	5529 SY

TOWNSHIP OF HANOVER — COUNTY OF MORRIS



AS BUILT BENCH MARK
TOP OF MONUMENT ROUTE 24 B STA. 528+86.82 0.06 RT ELEV. 246.071

BM 157 ELEV. =218.59 BOX CUT IN OF CONCRETE TANK ROUTE 24 ℄ STA. 530+17 14' RT.

CONSTRUCTION PLAN - C24

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION PLANS

ROUTE 24 — SECTIONS 9E AND 10H

101

HOWARD NEEDLES TAMMEN & BERGENDOFF CONSULTING ENGINEERS FAIRFIELD, N.J.

FED. ROAD DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
1	N.J.	F-48(107)	102	

OK

ITEM NO.	TO BE CONSTRUCTED	CONTRACT QUANTITY	AS BUILT QUANTITY
61	REMOVAL OF 8" PIPE	482 L.F.	462
72	ROADWAY EXCAVATION, UNCLASSIFIED	88 C.Y.	83
91	PIPE BEDDING, CLASS C	41 C.Y.	0
92	SUBBASE	2,172 C.Y.	2,172
99	DENSE GRADED AGGREGATE BASE COURSE, 6" THICK	9,880 S.Y.	9,080
100	BITUMINOUS STABILIZED BASE COURSE	4,174 TONS	4,174
104	BITUMINOUS CONCRETE SURFACE COURSE, MIX I-3	675 TONS	675
105	BITUMINOUS CONCRETE SURFACE COURSE, MIX I-4	1,368 TONS	1,368
229	15" X 8" WHITE CONCRETE SLOPING CURB	189 L.F.	186
231	24" X 41" WHITE CONCRETE BARRIER CURB	500 L.F.	500
232	9" X 16" WHITE CONCRETE VERTICAL CURB	3,192 L.F.	3,259
233	9" X 18" WHITE CONCRETE VERTICAL CURB	784 L.F.	780.6
237	WHITE CONCRETE ISLAND, 4" THICK	492 S.Y.	492
239	COLORED BITUMINOUS TREATED STONE SURFACE TREATMENT	232 S.Y.	242.3
240	BROKEN STONE SURFACE TREATMENT, 4" THICK	553 S.Y.	554
244	NEW MONUMENTS	7 UNITS	5
245	BEAM GUIDE RAIL	1,159 L.F.	1,165.5
247	BEAM GUIDE RAIL ANCHORAGES	3 UNITS	3
248	BREAKAWAY CABLE TERMINALS	5 UNITS	5
249	MEDIAN BREAKAWAY CABLE TERMINALS	1 UNIT	1
255	MISCELLANEOUS CONCRETE	0.7 C.Y.	0
256	CHAIN LINK FENCE, 6' HIGH	763 L.F.	332
306	2" GATE VALVE	1 UNIT	0
316	8" DUCTILE IRON WATER PIPE, CLASS 51	500 L.F.	500
405	TOPSOILING, 4" THICK	265 S.Y.	
407	FERTILIZING AND SEEDING, TYPE A-3	265 S.Y.	
408	STRAW MULCHING	265 S.Y.	
	EMBANKMENT THIS SHEET	87 C.Y.	

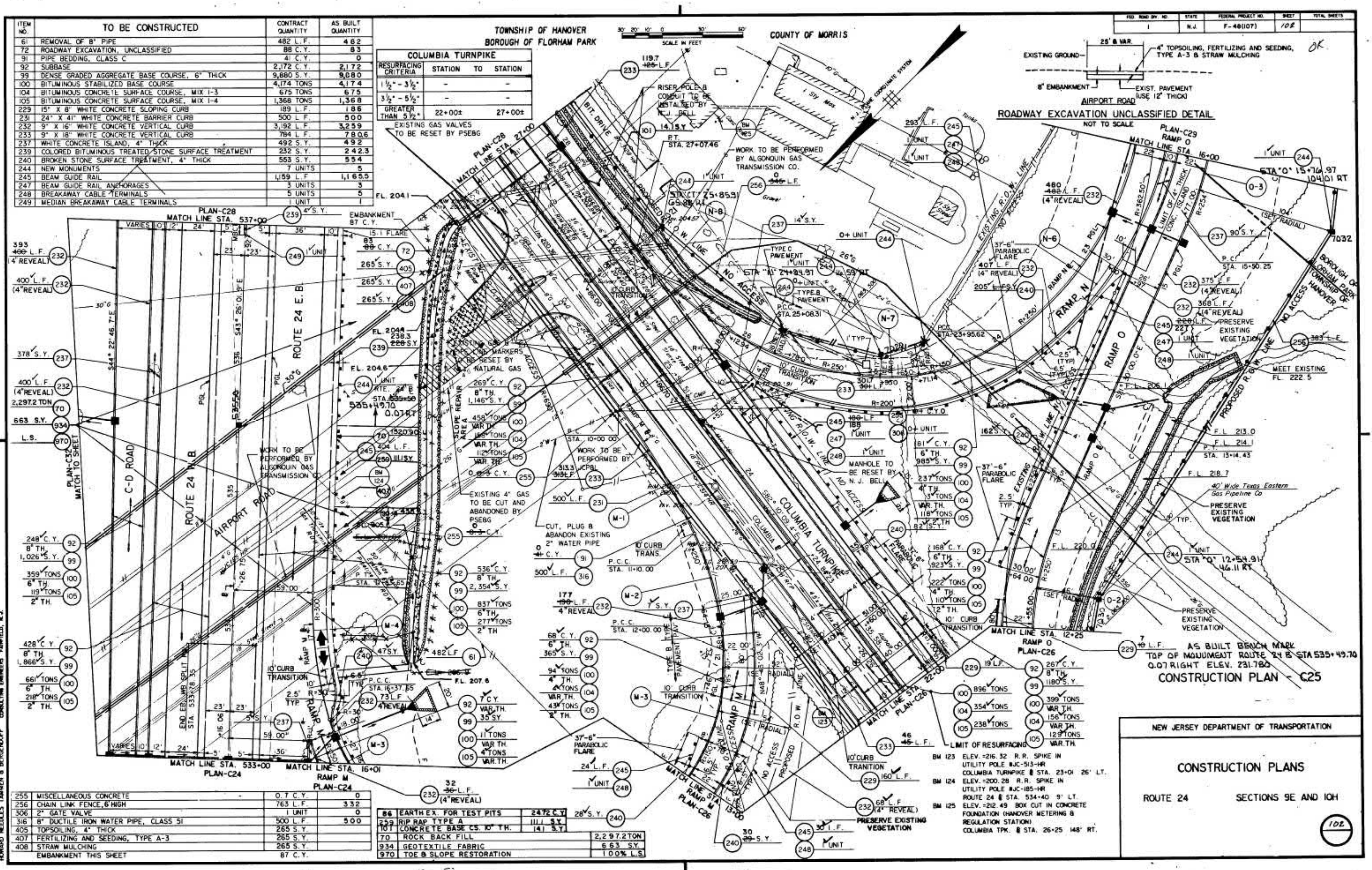
86	EARTH EX. FOR TEST PITS	247.2 C.Y.
259	RIP RAP TYPE A	111 S.Y.
101	CONCRETE BASE CS. 10" TH.	141 S.Y.
70	ROCK BACK FILL	2,297.2 TON
934	GEOTEXTILE FABRIC	663 S.Y.
970	TOE & SLOPE RESTORATION	100% L.S.

TOWNSHIP OF HANOVER
BOROUGH OF FLORHAM PARK

COUNTY OF MORRIS

COLUMBIA TURNPIKE			
RESURFACING CRITERIA	STATION	TO	STATION
1½" - 3½"	-		-
3½" - 5½"	-		-
GREATER THAN 5½"	22+00±		27+00±

EXISTING GAS VALVES TO BE RESET BY PSEBG



AS BUILT BENCH MARK
TOP OF MONUMENT ROUTE 24 & STA 535+49.70
0.07 RIGHT ELEV. 231.780

CONSTRUCTION PLAN - C25

BM 123 ELEV. =216.32 R.R. SPIKE IN UTILITY POLE #JC-513-HR COLUMBIA TURNPIKE & STA. 23+01 26' LT.

BM 124 ELEV. =200.28 R.R. SPIKE IN UTILITY POLE #JC-185-HR ROUTE 24 & STA. 534+40 9' LT.

BM 125 ELEV. =212.49 BOX CUT IN CONCRETE FOUNDATION (HANOVER METERING & REGULATION STATION) COLUMBIA TPK. & STA. 26+25 148' RT.

NEW JERSEY DEPARTMENT OF TRANSPORTATION

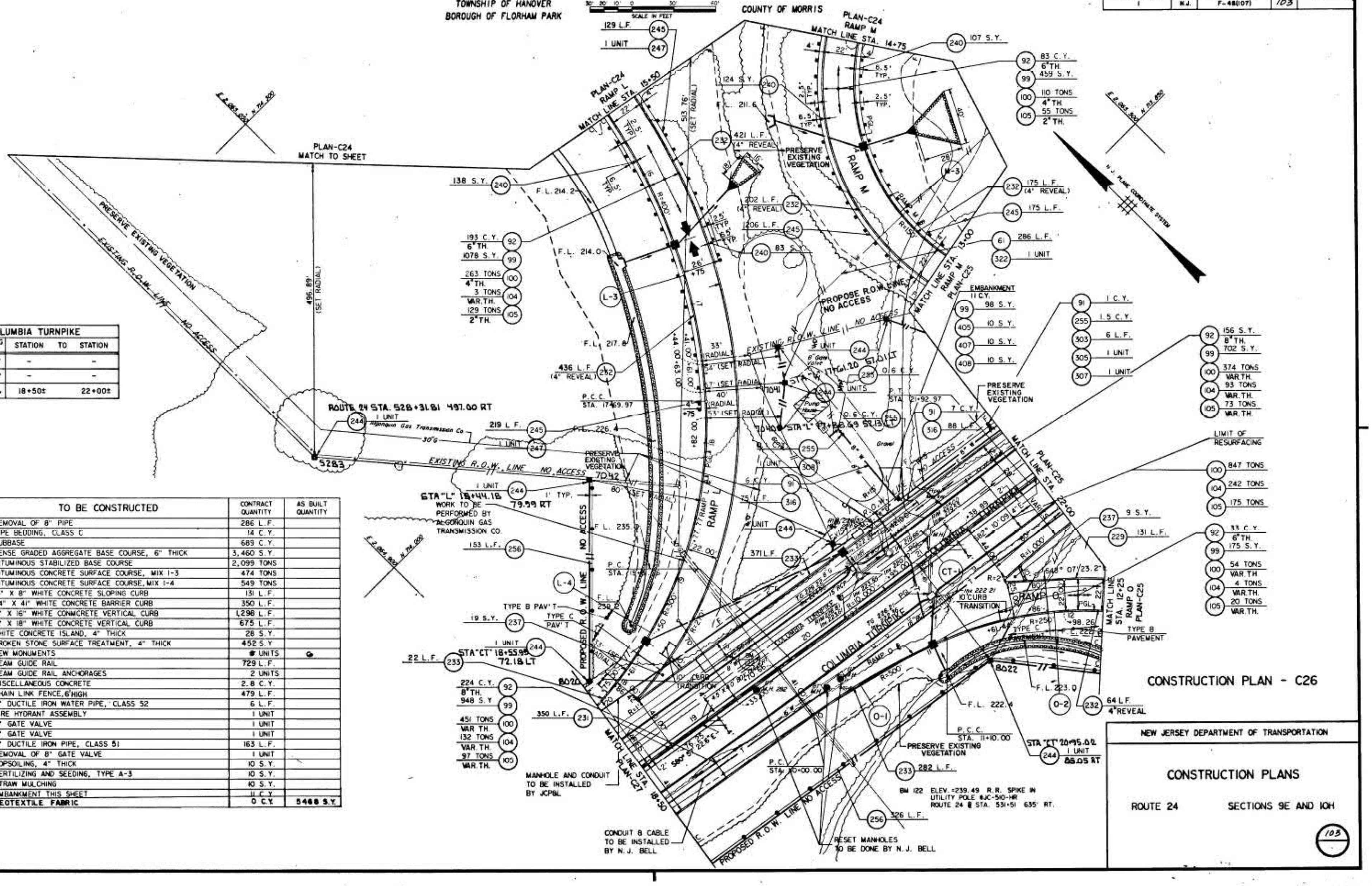
CONSTRUCTION PLANS

ROUTE 24 SECTIONS 9E AND 10H

102

HOWARD NEEDLES TAMMEN & BERGENDOFF CONSULTING ENGINEERS FAIRFIELD, N.J.

FED. ROAD DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
1	N.J.	F-48(107)	103	



COLUMBIA TURNPIKE		
RESURFACING CRITERIA	STATION TO	STATION
1½" - 3½"	-	-
3½" - 5½"	-	-
GREATER THAN 5½"	18+50±	22+00±

ITEM NO.	TO BE CONSTRUCTED	CONTRACT QUANTITY	AS BUILT QUANTITY
61	REMOVAL OF 8" PIPE	286 L.F.	
91	PIPE BEDDING, CLASS C	14 C.Y.	
92	SUBBASE	689 C.Y.	
99	DENSE GRADED AGGREGATE BASE COURSE, 6" THICK	3,460 S.Y.	
100	BITUMINOUS STABILIZED BASE COURSE	2,099 TONS	
104	BITUMINOUS CONCRETE SURFACE COURSE, MIX I-3	474 TONS	
105	BITUMINOUS CONCRETE SURFACE COURSE, MIX I-4	549 TONS	
229	15" X 8" WHITE CONCRETE SLOPING CURB	131 L.F.	
231	24" X 41" WHITE CONCRETE BARRIER CURB	350 L.F.	
232	9" X 16" WHITE CONMCRETE VERTICAL CURB	1,298 L.F.	
233	9" X 18" WHITE CONCRETE VERTICAL CURB	675 L.F.	
237	WHITE CONCRETE ISLAND, 4" THICK	28 S.Y.	
240	BROKEN STONE SURFACE TREATMENT, 4" THICK	452 S.Y.	
244	NEW MONUMENTS	[illegible] UNITS	6
245	BEAM GUIDE RAIL	729 L.F.	
247	BEAM GUIDE RAIL ANCHORAGES	2 UNITS	
255	MISCELLANEOUS CONCRETE	2.8 C.Y.	
256	CHAIN LINK FENCE, 6' HIGH	479 L.F.	
303	6" DUCTILE IRON WATER PIPE, CLASS 52	6 L.F.	
305	FIRE HYDRANT ASSEMBLY	1 UNIT	
307	6" GATE VALVE	1 UNIT	
308	8" GATE VALVE	1 UNIT	
316	8" DUCTILE IRON PIPE, CLASS 51	163 L.F.	
322	REMOVAL OF 8" GATE VALVE	1 UNIT	
405	TOPSOILING, 4" THICK	10 S.Y.	
407	FERTILIZING AND SEEDING, TYPE A-3	10 S.Y.	
408	STRAW MULCHING	10 S.Y.	
	EMBANKMENT THIS SHEET	11 C.Y.	
9034	GEOTEXTILE FABRIC	0 C.Y.	5468 S.Y.

CONSTRUCTION PLAN - C26

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION PLANS

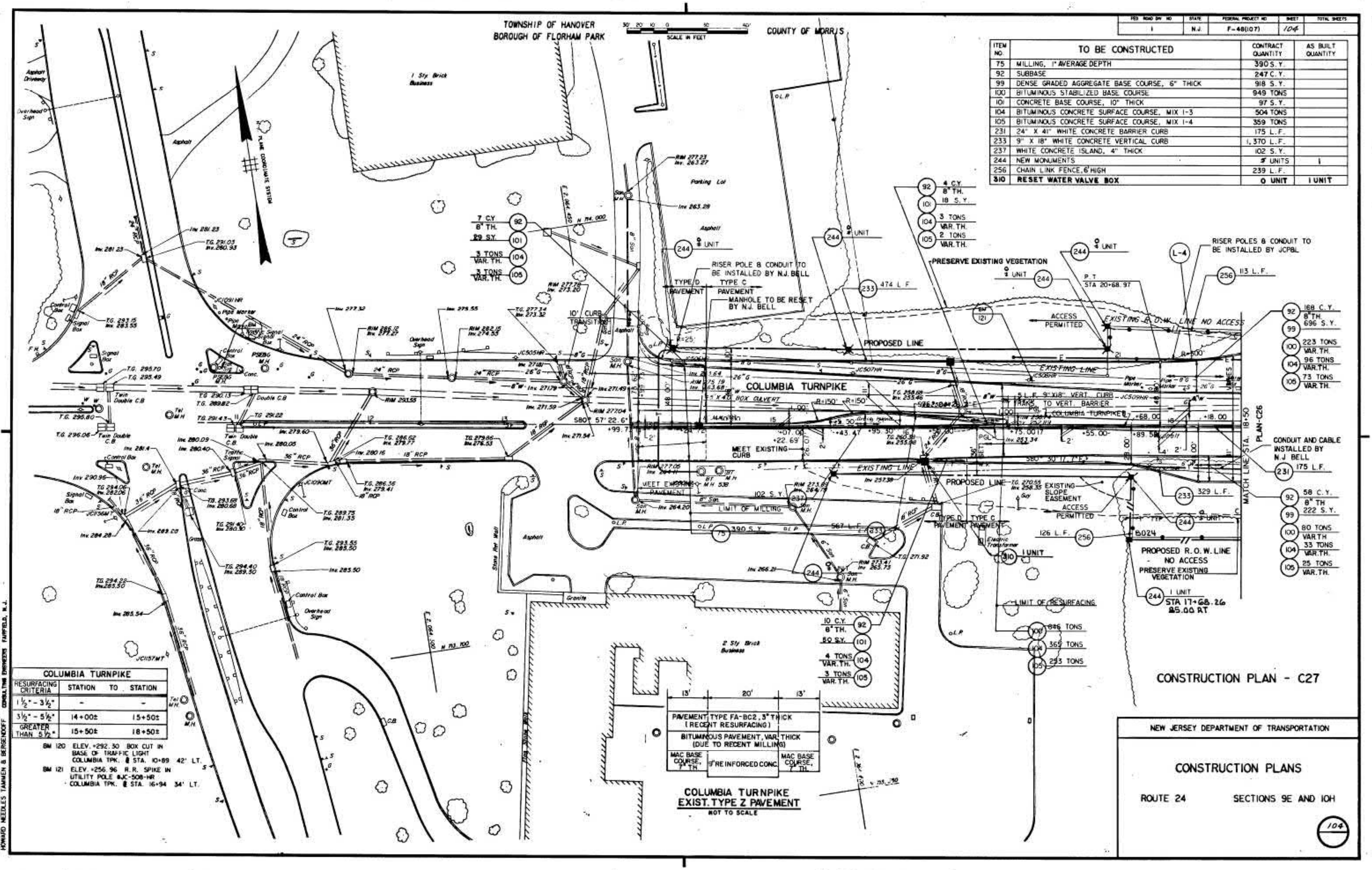
ROUTE 24 SECTIONS 9E AND 10H

103

HOWARD NEEDLES TAMMEN & BERGENDOFF CONSULTING ENGINEERS FAIRFIELD, N.J.

FED. ROAD DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
I	N.J.	F-48(107)	104	

ITEM NO.	TO BE CONSTRUCTED	CONTRACT QUANTITY	AS BUILT QUANTITY
75	MILLING, 1" AVERAGE DEPTH	390 S.Y.	
92	SUBBASE	247 C.Y.	
99	DENSE GRADED AGGREGATE BASE COURSE, 6" THICK	918 S.Y.	
100	BITUMINOUS STABILIZED BASE COURSE	949 TONS	
101	CONCRETE BASE COURSE, 10" THICK	97 S.Y.	
104	BITUMINOUS CONCRETE SURFACE COURSE, MIX I-3	504 TONS	
105	BITUMINOUS CONCRETE SURFACE COURSE, MIX I-4	359 TONS	
231	24" X 41" WHITE CONCRETE BARRIER CURB	175 L.F.	
233	9" X 18" WHITE CONCRETE VERTICAL CURB	1,370 L.F.	
237	WHITE CONCRETE ISLAND, 4" THICK	102 S.Y.	
244	NEW MONUMENTS	5 UNITS	1
256	CHAIN LINK FENCE, 6' HIGH	239 L.F.	
310	**RESET WATER VALVE BOX**	**0 UNIT**	**1 UNIT**



COLUMBIA TURNPIKE		
RESURFACING CRITERIA	STATION	TO STATION
1½" - 3½"	-	-
3½" - 5½"	14+00±	15+50±
GREATER THAN 5½"	15+50±	18+50±

BM 120 ELEV. +292.30 BOX CUT IN BASE OF TRAFFIC LIGHT COLUMBIA TPK. ℄ STA. 10+89 42' LT.

BM 121 ELEV. +256.96 R.R. SPIKE IN UTILITY POLE #JC-508-HR COLUMBIA TPK. ℄ STA. 16+94 34' LT.

CONSTRUCTION PLAN - C27

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION PLANS

ROUTE 24 SECTIONS 9E AND 10H

104

HOWARD NEEDLES TAMMEN & BERGENDOFF CONSULTING ENGINEERS FAIRFIELD, N.J.

FED. ROAD DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
1	N.J.	F-48(07)	105	

ITEM NO.	TO BE CONSTRUCTED	CONTRACT QUANTITY		AS BUILT QUANTITY
62	REMOVAL OF 12" PIPE	430	L.F.	33
91	PIPE BEDDING, CLASS C	59	C.Y.	40.94
92	SUBBASE	2,670	C.Y.	2,670
93	UNDERLAYER PREPARATION	1,992	S.Y.	1,992
99	DENSE GRADED AGGREGATE BASE COURSE, 6" THICK	9,704	S.Y.	9,704
100	BITUMINOUS STABILIZED BASE COURSE	3,519	TONS	
104	BITUMINOUS CONCRETE SURFACE COURSE, MIX I-3	882	TONS	
105	BITUMINOUS CONCRETE SURFACE COURSE, MIX I-4	1,392	TONS	
109	CONCRETE SURFACE COURSE, REINFORCED, 9" THICK	292	S.Y.	292
110	BRIDGE APPROACH SLABS, 18" THICK	684	S.Y.	684
111	BRIDGE APPROACH TRANSITION SLABS,	—		
—	13.5" AVERAGE THICKNESS	1,016	S.Y.	1,016
113	TRANSVERSE EXPANSION JOINT, TYPE A	128	L.F.	128
123	12" DUCTILE IRON SEWER PIPE	300	L.F.	545.5
229	15" X 8" WHITE CONCRETE SLOPING CURB	320	L.F.	320
230	15" X 41" WHITE CONCRETE BARRIER CURB	1,130	L.F.	979.7
231	24" X 41" WHITE CONCRETE BARRIER CURB	125	L.F.	125
232	9" X 16" WHITE CONCRETE VERTICAL CURB	2,639	L.F.	2,590
233	9" X 18" WHITE CONCRETE VERTICAL CURB	1,760	L.F.	1,740.7
236	BITUMINOUS CONCRETE DRIVEWAY, 6" THICK	56	S.Y.	132
237	WHITE CONCRETE ISLAND, 4" THICK	923	S.Y.	923
78	POROUS FILL	2,080	C.Y.	2,098.2

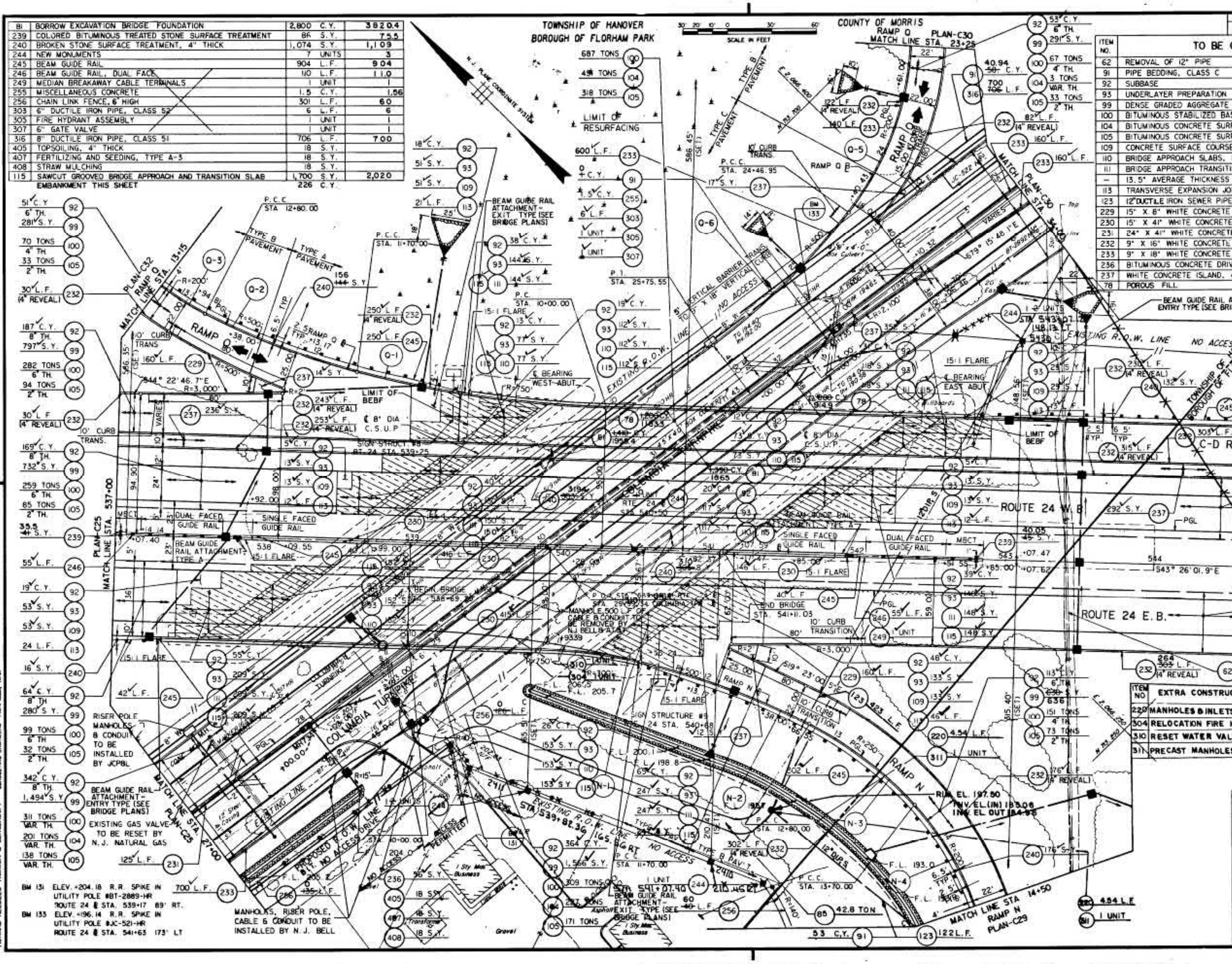
81	BORROW EXCAVATION BRIDGE FOUNDATION	2,800	C.Y.	3820.4
239	COLORED BITUMINOUS TREATED STONE SURFACE TREATMENT	86	S.Y.	75.5
240	BROKEN STONE SURFACE TREATMENT, 4" THICK	1,074	S.Y.	1,109
244	NEW MONUMENTS	7	UNITS	3
245	BEAM GUIDE RAIL	904	L.F.	904
246	BEAM GUIDE RAIL, DUAL FACE	110	L.F.	110
249	MEDIAN BREAKAWAY CABLE TERMINALS	1	UNIT	1
255	MISCELLANEOUS CONCRETE	1.5	C.Y.	1.56
256	CHAIN LINK FENCE, 6' HIGH	301	L.F.	60
303	6" DUCTILE IRON PIPE, CLASS 52	6	L.F.	6
305	FIRE HYDRANT ASSEMBLY	1	UNIT	1
307	6" GATE VALVE	1	UNIT	1
316	8" DUCTILE IRON PIPE, CLASS 51	706	L.F.	700
405	TOPSOILING, 4" THICK	18	S.Y.	
407	FERTILIZING AND SEEDING, TYPE A-3	18	S.Y.	
408	STRAW MULCHING	18	S.Y.	
115	SAWCUT GROOVED BRIDGE APPROACH AND TRANSITION SLAB	1,700	S.Y.	2,020
	EMBANKMENT THIS SHEET	226	C.Y.	

ITEM NO.	TO BE CONSTRUCTED	AS BUILT QUANTITY
311	PRECAST MANHOLE, SANITARY SEWER	1 UN.
85	CONSTRUCTION DRIVEWAY	42.8 TON
220	MANHOLES AND INLETS, ADDITIONAL DEPTH	4.54 L.F.

ITEM NO	EXTRA CONSTRUCTION	AS BUILT
220	MANHOLES & INLETS ADD DEPTH	4.54 L.F.
304	RELOCATION FIRE HYDRANT	1 UNIT
310	RESET WATER VALVE BOX	2 UNIT
311	PRECAST MANHOLES SAN.SEWER	1 UNITS

COLUMBIA TURNPIKE

RESURFACING CRITERIA	STATION	TO STATION
1½" - 3½"	-	-
3½" - 5½"	-	-
GREATER THAN 5½"	27+00±	34+00±



BM 131 ELEV. +204.18 R.R. SPIKE IN UTILITY POLE #BT-2889-HR ROUTE 24 ℄ STA. 539+17 89' RT.

BM 133 ELEV. +196.14 R.R. SPIKE IN UTILITY POLE #JC-521-HR ROUTE 24 ℄ STA. 541+63 173' LT

HOWARD NEEDLES TAMMEN & BERGENDOFF CONSULTING ENGINEERS FAIRFIELD, N.J.

CONSTRUCTION PLAN - C28

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION PLANS

ROUTE 24 SECTIONS 9E AND 10H

105

FED. ROAD DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
1	N.J.	F-48(107)	106	

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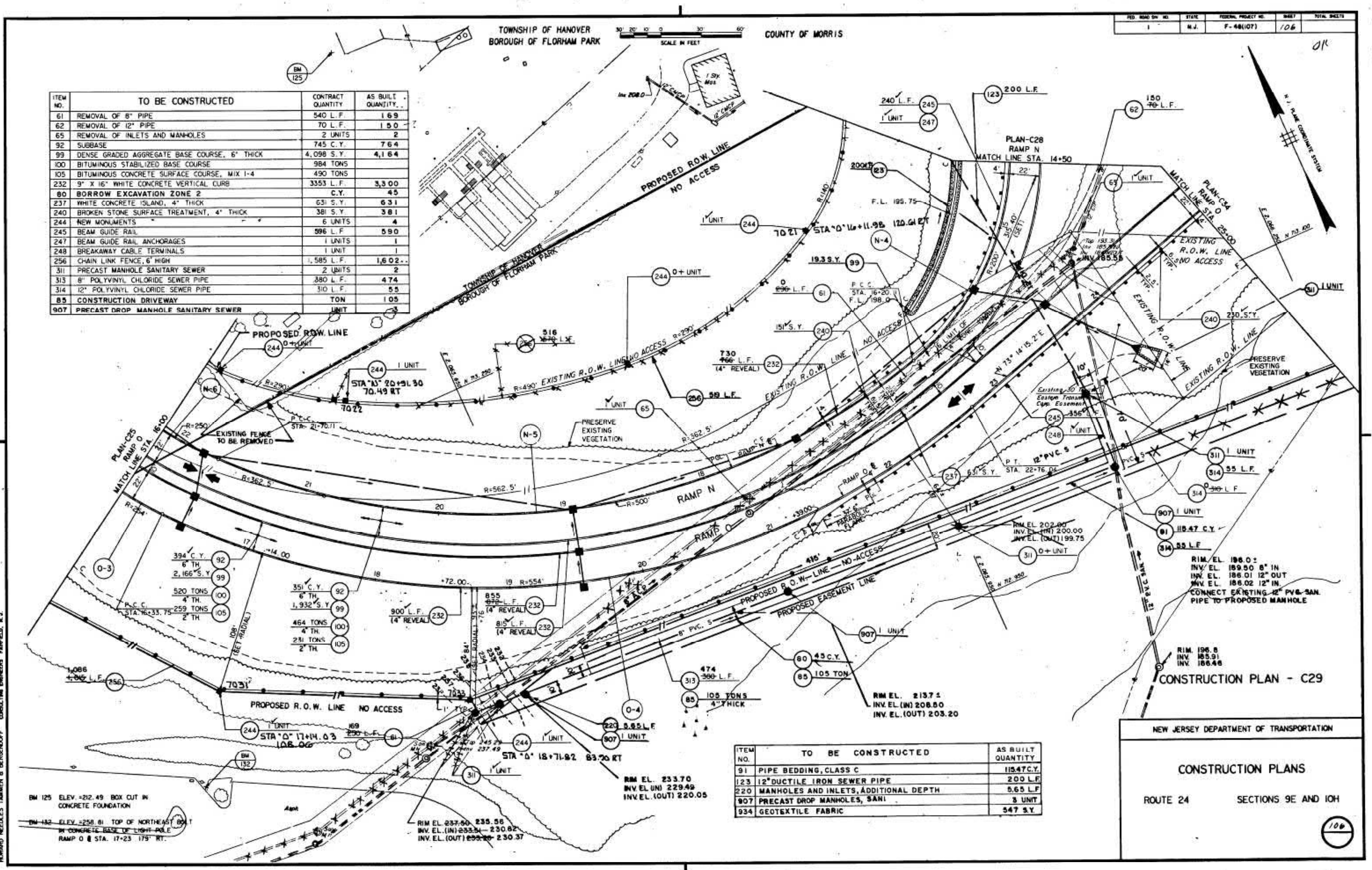
TOWNSHIP OF HANOVER
BOROUGH OF FLORHAM PARK

COUNTY OF MORRIS



ITEM NO.	TO BE CONSTRUCTED	CONTRACT QUANTITY	AS BUILT QUANTITY
61	REMOVAL OF 8" PIPE	540 L.F.	169
62	REMOVAL OF 12" PIPE	70 L.F.	150
65	REMOVAL OF INLETS AND MANHOLES	2 UNITS	2
92	SUBBASE	745 C.Y.	764
99	DENSE GRADED AGGREGATE BASE COURSE, 6" THICK	4,098 S.Y.	4,164
100	BITUMINOUS STABILIZED BASE COURSE	984 TONS	
105	BITUMINOUS CONCRETE SURFACE COURSE, MIX I-4	490 TONS	
232	9" X 16" WHITE CONCRETE VERTICAL CURB	3353 L.F.	3,300
80	**BORROW EXCAVATION ZONE 2**	C.Y.	45
237	WHITE CONCRETE ISLAND, 4" THICK	631 S.Y.	631
240	BROKEN STONE SURFACE TREATMENT, 4" THICK	381 S.Y.	381
244	NEW MONUMENTS	6 UNITS	4
245	BEAM GUIDE RAIL	596 L.F.	590
247	BEAM GUIDE RAIL ANCHORAGES	1 UNITS	1
248	BREAKAWAY CABLE TERMINALS	1 UNIT	1
256	CHAIN LINK FENCE, 6' HIGH	1,585 L.F.	1,602
311	PRECAST MANHOLE SANITARY SEWER	2 UNITS	2
313	8" POLYVINYL CHLORIDE SEWER PIPE	380 L.F.	474
314	12" POLYVINYL CHLORIDE SEWER PIPE	310 L.F.	55
85	**CONSTRUCTION DRIVEWAY**	TON	105
907	**PRECAST DROP MANHOLE SANITARY SEWER**	UNIT	3

ITEM NO.	TO BE CONSTRUCTED	AS BUILT QUANTITY
91	PIPE BEDDING, CLASS C	115.47 C.Y.
123	12" DUCTILE IRON SEWER PIPE	200 L.F.
220	MANHOLES AND INLETS, ADDITIONAL DEPTH	5.65 L.F.
907	PRECAST DROP MANHOLES, SANI	3 UNIT
934	GEOTEXTILE FABRIC	547 S.Y.

BM 125 ELEV. =212.49 BOX CUT IN
CONCRETE FOUNDATION

~~BM 132 ELEV. =258.81 TOP OF NORTHEAST BOLT~~
~~IN CONCRETE BASE OF LIGHT POLE~~
RAMP O ℄ STA. 17+23 179' RT.

CONSTRUCTION PLAN - C29

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION PLANS

ROUTE 24 SECTIONS 9E AND 10H

106

HOWARD NEEDLES TAMMEN & BERGENDOFF CONSULTING ENGINEERS FAIRFIELD, N.J.

FED. ROAD DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
1	N.J.	F-48(107)	107	

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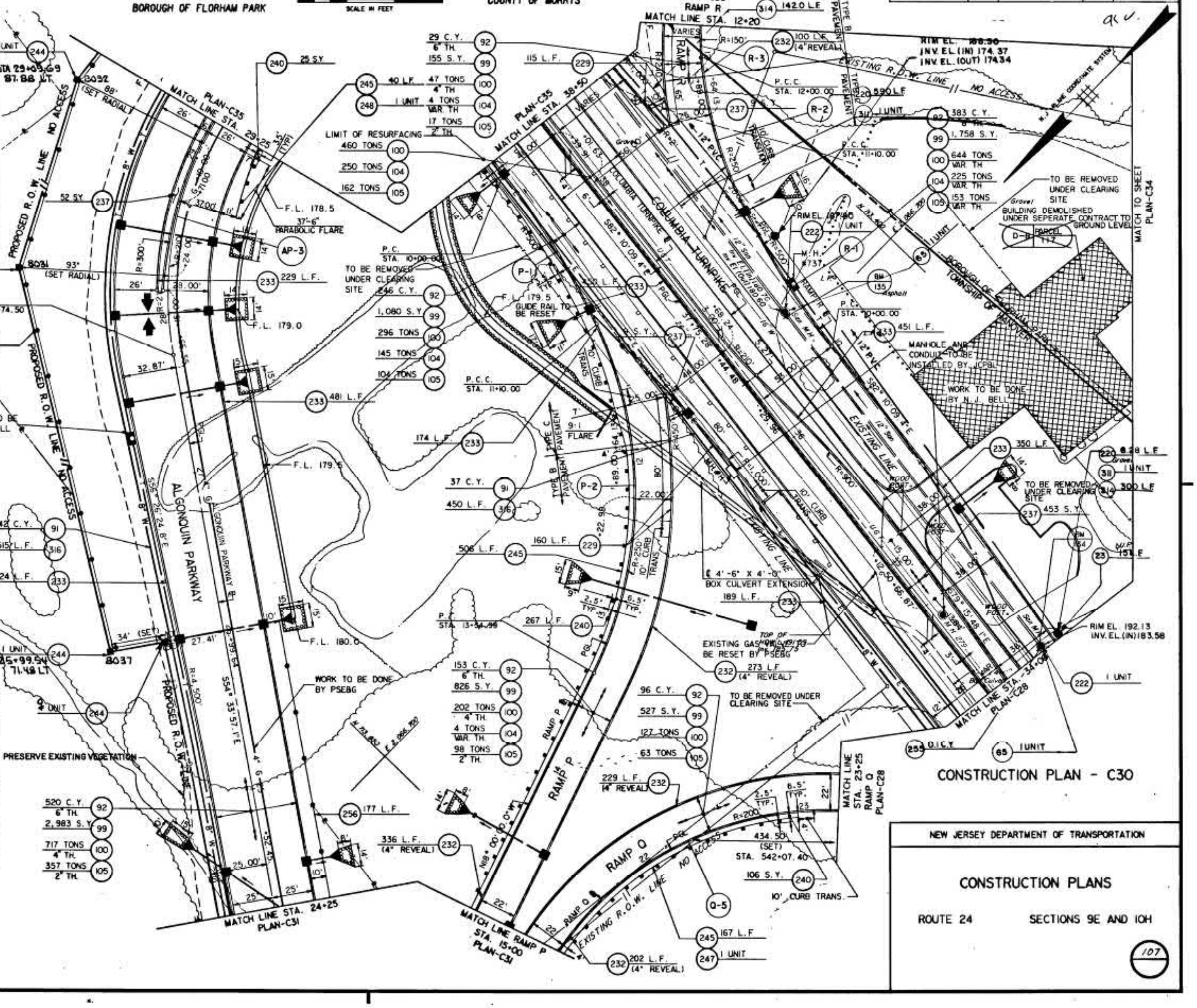
ITEM NO.	TO BE CONSTRUCTED	CONTRACT QUANTITY	AS BUILT QUANTITY
91	PIPE BEDDING, CLASS C	79 C.Y.	
92	SUBBASE	1,427 C.Y.	
99	DENSE GRADED AGGREGATE BASE COURSE, 6" THICK	7,329 S.Y.	
100	BITUMINOUS STABILIZED BASE COURSE	2,493 TONS	
104	BITUMINOUS CONCRETE BASE COURSE, MIX I-3	628 TONS	
105	BITUMINOUS CONCRETE SURFACE COURSE, MIX I-4	954 TONS	
229	15 X 8" WHITE CONCRETE SLOPING CURB	275 L.F.	
232	9" X 16" WHITE CONCRETE VERTICAL CURB	1,140 L.F.	
233	9" X 18" WHITE CONCRETE VERTICAL CURB	2,848 L.F.	
237	WHITE CONCRETE ISLAND, 4" THICK	523 S.Y.	
240	BROKEN STONE SURFACE TREATMENT, 4" THICK	398 S.Y.	
244	NEW MONUMENTS	4 UNITS	5
245	BEAM GUIDE RAIL	713 L.F.	
247	BEAM GUIDE RAIL ANCHORAGES	1 UNITS	
256	CHAIN LINK FENCE, 6' HIGH	595 L.F.	
222	RESET CASTINGS	2 UNITS	
316	8" DUCTILE IRON PIPE, CLASS 51	965 L.F.	
248	BREAKAWAY CABLE TERMINALS	1 UNIT	



COLUMBIA TURNPIKE		
RESURFACING CRITERIA	STATION TO	STATION
1½" - 3½"	-	-
3½" - 5½"	-	-
GREATER THAN 5½"	34+00±	38+50±

ITEM	DESCRIPTION	AS BUILT
65	REMOVAL OF INLETS & MANHOLES	EXTRA 2 UNITS
123	12" DUCTILE IRON SEWER PIPE	EXTRA 15 L.F.
220	MANHOLES & INLETS ADD. DEPTH	EXTRA 12.24 L.F.
222	RESET CASTING	2 UNITS
311	PRECAST MANHOLE SAN. SEWER	EXTRA 2 UNITS
314	12" POLYVINYL CHLORIDE SEW. PIPE	EXTRA 442 L.F.
288	MISCELLANOUS CONCRETE	EXTRA 0.1 C.Y.

N 714,150 E 2,067,000

BM 134 ELEV. +192.06 X-CUT IN
RIM OF MANHOLE
ROUTE 24 ℄ STA. 543+32 222' LT.
BM 135 ELEV. +187.80 X-CUT IN
RIM OF MANHOLE
COLUMBIA TPK. ℄ STA. 36+62 42' RT.

HOWARD NEEDLES TAMMEN & BERGENDOFF CONSULTING ENGINEERS FAIRFIELD, N.J.

CONSTRUCTION PLAN - C30

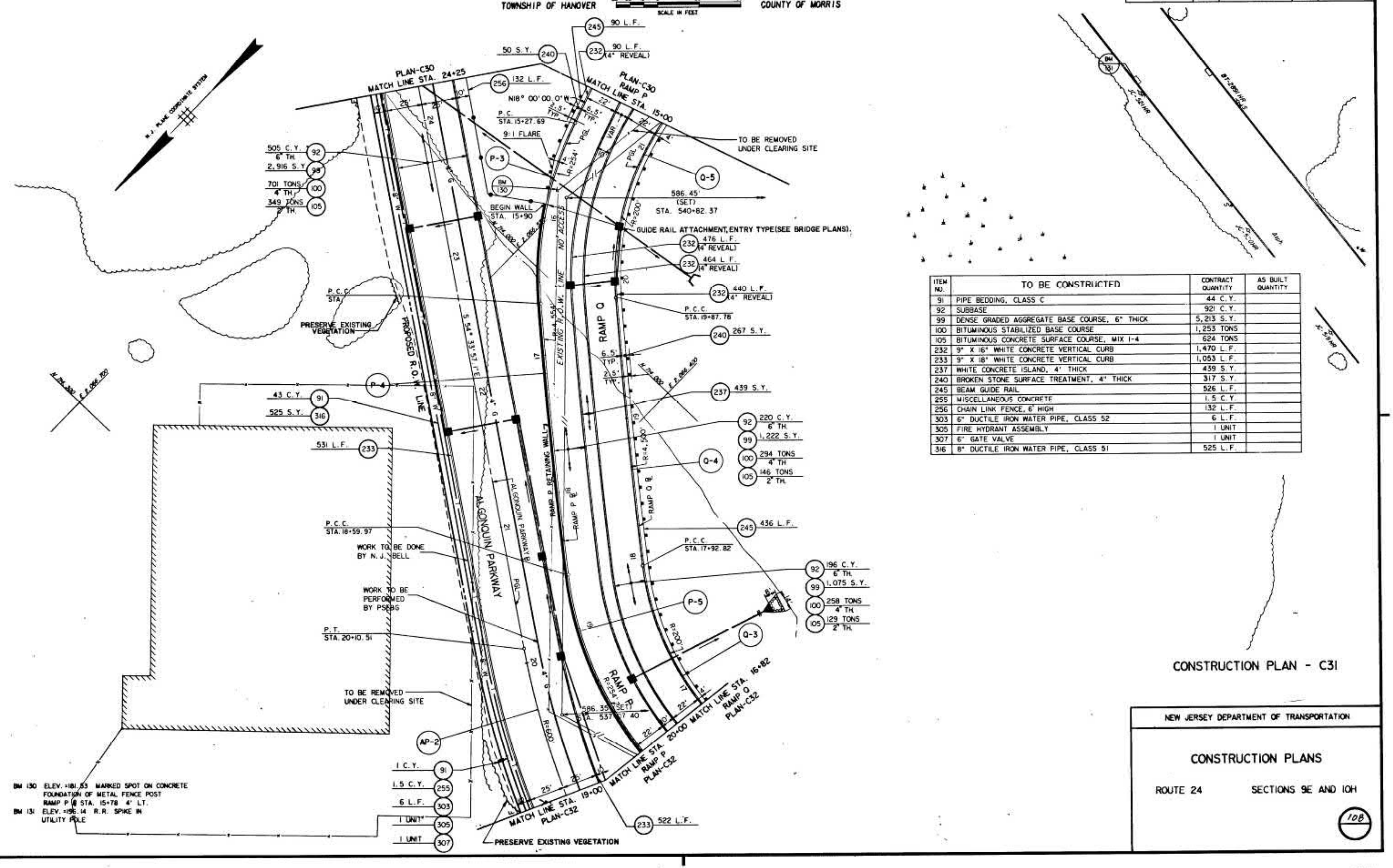
NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION PLANS

ROUTE 24 SECTIONS 9E AND 10H

107

FED. ROAD DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
1	N.J.	F-48(107)	108	



ITEM NO.	TO BE CONSTRUCTED	CONTRACT QUANTITY	AS BUILT QUANTITY
91	PIPE BEDDING, CLASS C	44 C.Y.	
92	SUBBASE	921 C.Y.	
99	DENSE GRADED AGGREGATE BASE COURSE, 6" THICK	5,213 S.Y.	
100	BITUMINOUS STABILIZED BASE COURSE	1,253 TONS	
105	BITUMINOUS CONCRETE SURFACE COURSE, MIX I-4	624 TONS	
232	9" X 16" WHITE CONCRETE VERTICAL CURB	1,470 L.F.	
233	9" X 18" WHITE CONCRETE VERTICAL CURB	1,053 L.F.	
237	WHITE CONCRETE ISLAND, 4' THICK	439 S.Y.	
240	BROKEN STONE SURFACE TREATMENT, 4" THICK	317 S.Y.	
245	BEAM GUIDE RAIL	526 L.F.	
255	MISCELLANEOUS CONCRETE	1.5 C.Y.	
256	CHAIN LINK FENCE, 6' HIGH	132 L.F.	
303	6" DUCTILE IRON WATER PIPE, CLASS 52	6 L.F.	
305	FIRE HYDRANT ASSEMBLY	1 UNIT	
307	6" GATE VALVE	1 UNIT	
316	8" DUCTILE IRON WATER PIPE, CLASS 51	525 L.F.	

BM 130 ELEV. =181.53 MARKED SPOT ON CONCRETE
FOUNDATION OF METAL FENCE POST
RAMP P ℄ STA. 15+78 4' LT.
BM 131 ELEV. =196.14 R.R. SPIKE IN
UTILITY POLE

CONSTRUCTION PLAN - C31

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION PLANS

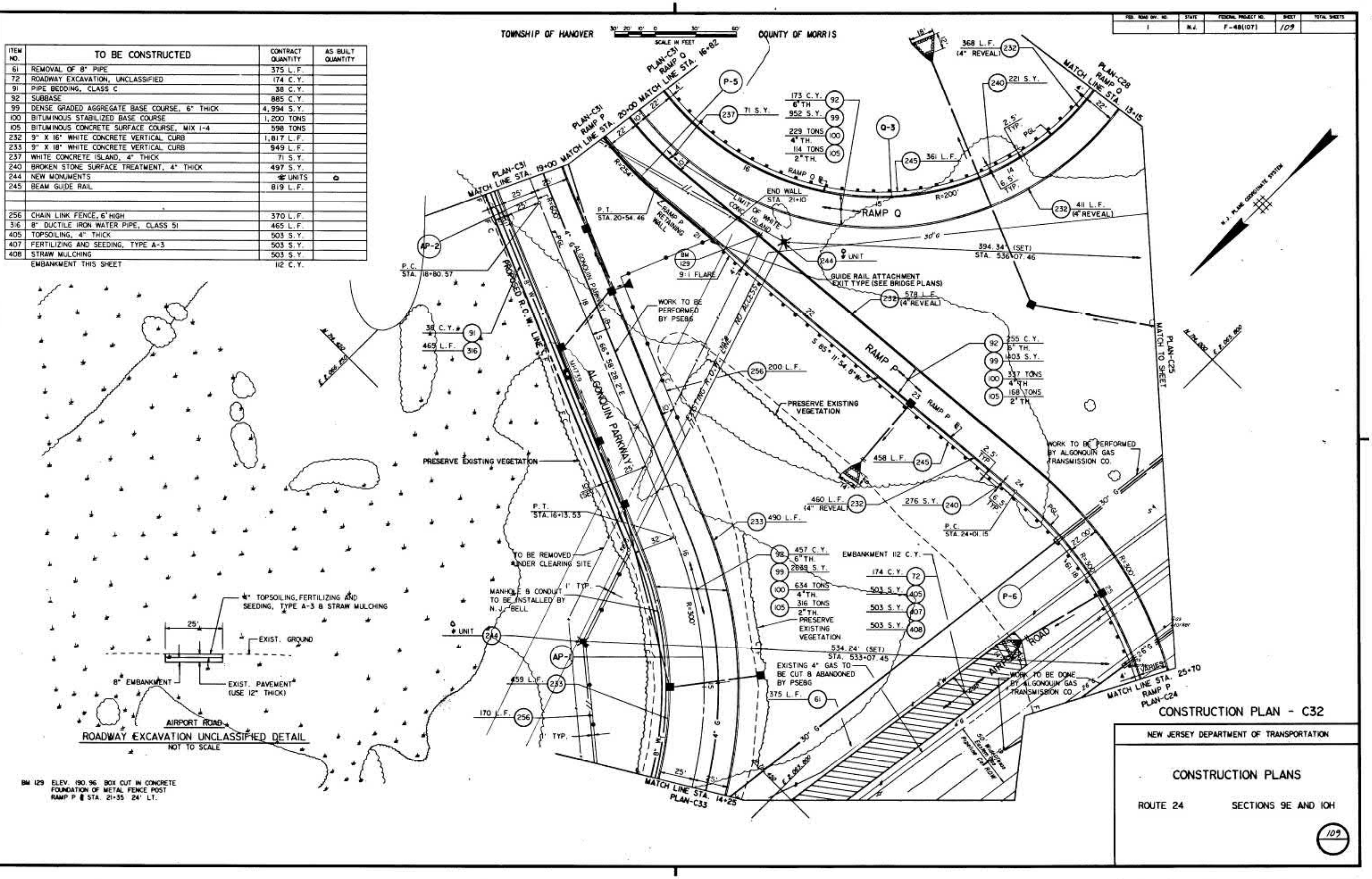
ROUTE 24 SECTIONS 9E AND 10H

108

HOWARD NEEDLES TAMMEN & BERGENDOFF CONSULTING ENGINEERS FAIRFIELD, N.J.

FED. ROAD DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
1	N.J.	F-48(107)	109	

ITEM NO.	TO BE CONSTRUCTED	CONTRACT QUANTITY	AS BUILT QUANTITY
61	REMOVAL OF 8" PIPE	375 L.F.	
72	ROADWAY EXCAVATION, UNCLASSIFIED	174 C.Y.	
91	PIPE BEDDING, CLASS C	38 C.Y.	
92	SUBBASE	885 C.Y.	
99	DENSE GRADED AGGREGATE BASE COURSE, 6" THICK	4,994 S.Y.	
100	BITUMINOUS STABILIZED BASE COURSE	1,200 TONS	
105	BITUMINOUS CONCRETE SURFACE COURSE, MIX I-4	598 TONS	
232	9" X 16" WHITE CONCRETE VERTICAL CURB	1,817 L.F.	
233	9" X 18" WHITE CONCRETE VERTICAL CURB	949 L.F.	
237	WHITE CONCRETE ISLAND, 4" THICK	71 S.Y.	
240	BROKEN STONE SURFACE TREATMENT, 4" THICK	497 S.Y.	
244	NEW MONUMENTS	[illegible] UNITS	0
245	BEAM GUIDE RAIL	819 L.F.	
256	CHAIN LINK FENCE, 6' HIGH	370 L.F.	
316	8" DUCTILE IRON WATER PIPE, CLASS 51	465 L.F.	
405	TOPSOILING, 4" THICK	503 S.Y.	
407	FERTILIZING AND SEEDING, TYPE A-3	503 S.Y.	
408	STRAW MULCHING	503 S.Y.	
	EMBANKMENT THIS SHEET	112 C.Y.	



ROADWAY EXCAVATION UNCLASSIFIED DETAIL
NOT TO SCALE

BM 129 ELEV. 190.96 BOX CUT IN CONCRETE FOUNDATION OF METAL FENCE POST RAMP P ℄ STA. 21+35 24' LT.

HOWARD NEEDLES TAMMEN & BERGENDOFF CONSULTING ENGINEERS FAIRFIELD, N.J.

CONSTRUCTION PLAN - C32

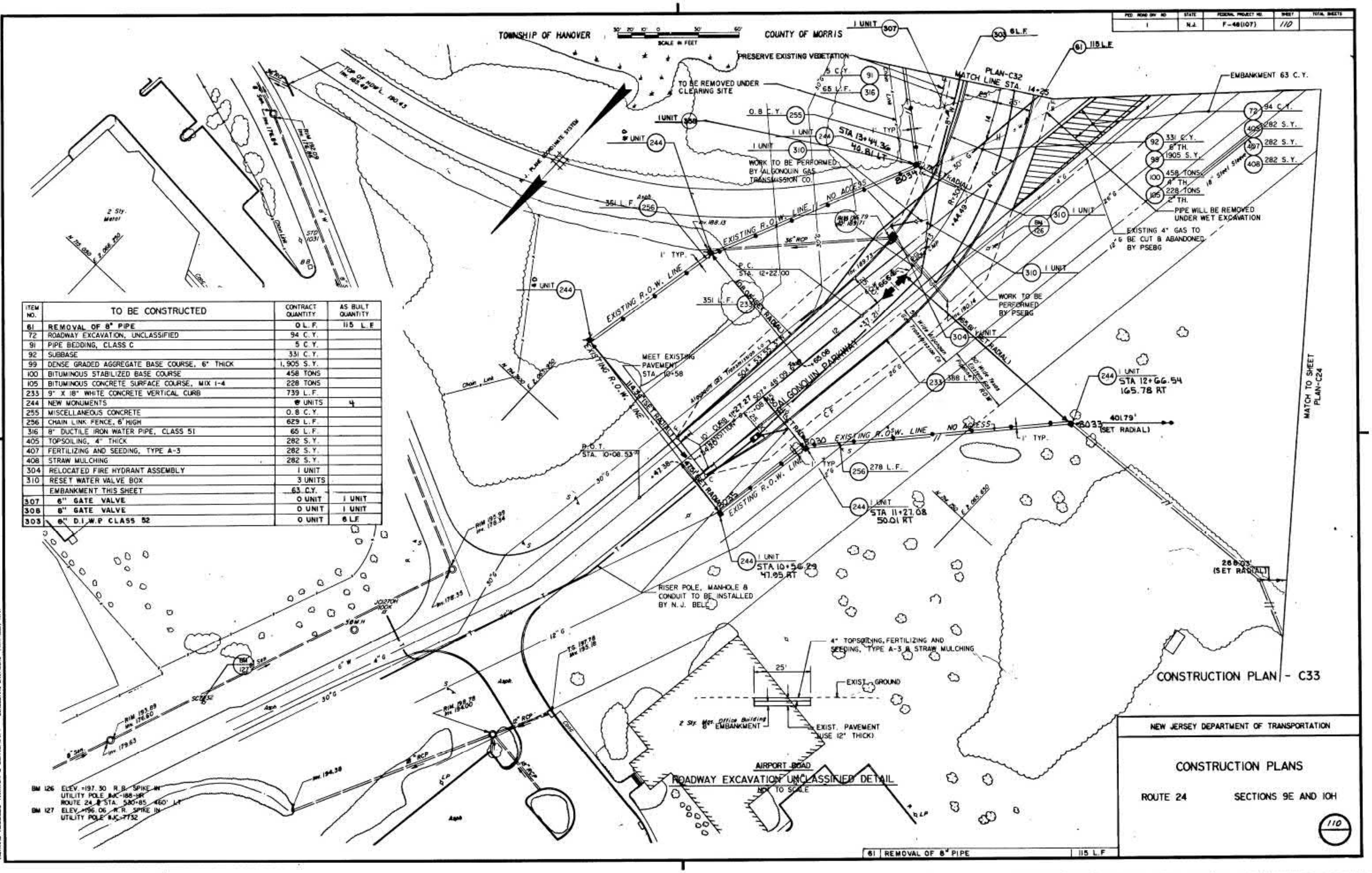
NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION PLANS

ROUTE 24 SECTIONS 9E AND 10H

109

FED. ROAD DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
1	N.J.	F-48(107)	110	



ITEM NO.	TO BE CONSTRUCTED	CONTRACT QUANTITY	AS BUILT QUANTITY
61	REMOVAL OF 8" PIPE	0 L.F.	115 L.F
72	ROADWAY EXCAVATION, UNCLASSIFIED	94 C.Y.	
91	PIPE BEDDING, CLASS C	5 C.Y.	
92	SUBBASE	331 C.Y.	
99	DENSE GRADED AGGREGATE BASE COURSE, 6" THICK	1,905 S.Y.	
100	BITUMINOUS STABILIZED BASE COURSE	458 TONS	
105	BITUMINOUS CONCRETE SURFACE COURSE, MIX I-4	228 TONS	
233	9" X 18" WHITE CONCRETE VERTICAL CURB	739 L.F.	
244	NEW MONUMENTS	8 UNITS	4
255	MISCELLANEOUS CONCRETE	0.8 C.Y.	
256	CHAIN LINK FENCE, 6' HIGH	629 L.F.	
316	8" DUCTILE IRON WATER PIPE, CLASS 51	65 L.F.	
405	TOPSOILING, 4" THICK	282 S.Y.	
407	FERTILIZING AND SEEDING, TYPE A-3	282 S.Y.	
408	STRAW MULCHING	282 S.Y.	
304	RELOCATED FIRE HYDRANT ASSEMBLY	1 UNIT	
310	RESET WATER VALVE BOX	3 UNITS	
	EMBANKMENT THIS SHEET	63 C.Y.	
307	6" GATE VALVE	0 UNIT	1 UNIT
308	8" GATE VALVE	0 UNIT	1 UNIT
303	6" D.I.W.P CLASS 52	0 UNIT	6 L.F.

61	REMOVAL OF 8" PIPE	115 L.F.

CONSTRUCTION PLAN - C33

NEW JERSEY DEPARTMENT OF TRANSPORTATION

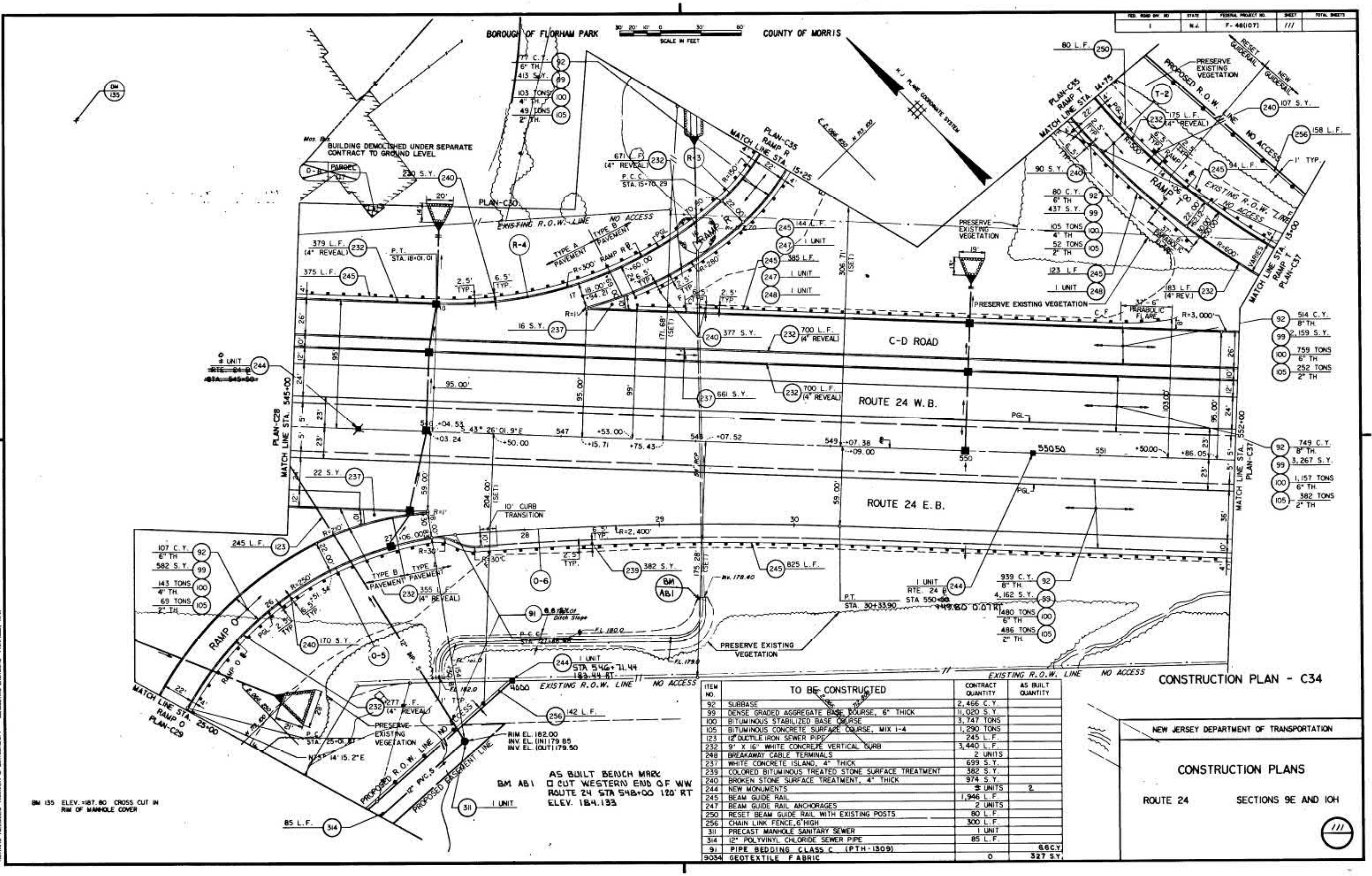
CONSTRUCTION PLANS

ROUTE 24 SECTIONS 9E AND 10H

110

HOWARD NEEDLES TAMMEN & BERGENDOFF CONSULTING ENGINEERS FAIRFIELD, N.J.

FED. ROAD DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
1	N.J.	F-48(107)	111	



CONSTRUCTION PLAN - C34

ITEM NO.	TO BE CONSTRUCTED	CONTRACT QUANTITY	AS BUILT QUANTITY
92	SUBBASE	2,466 C.Y.	
99	DENSE GRADED AGGREGATE BASE COURSE, 6" THICK	11,020 S.Y.	
100	BITUMINOUS STABILIZED BASE COURSE	3,747 TONS	
105	BITUMINOUS CONCRETE SURFACE COURSE, MIX I-4	1,290 TONS	
123	12" DUCTILE IRON SEWER PIPE	245 L.F.	
232	9" X 16" WHITE CONCRETE VERTICAL CURB	3,440 L.F.	
248	BREAKAWAY CABLE TERMINALS	2 UNITS	
237	WHITE CONCRETE ISLAND, 4" THICK	699 S.Y.	
239	COLORED BITUMINOUS TREATED STONE SURFACE TREATMENT	382 S.Y.	
240	BROKEN STONE SURFACE TREATMENT, 4" THICK	974 S.Y.	
244	NEW MONUMENTS	3 UNITS	2
245	BEAM GUIDE RAIL	1,946 L.F.	
247	BEAM GUIDE RAIL ANCHORAGES	2 UNITS	
250	RESET BEAM GUIDE RAIL WITH EXISTING POSTS	80 L.F.	
256	CHAIN LINK FENCE, 6' HIGH	300 L.F.	
311	PRECAST MANHOLE SANITARY SEWER	1 UNIT	
314	12" POLYVINYL CHLORIDE SEWER PIPE	85 L.F.	
91	PIPE BEDDING CLASS C (PTH-1309)		6.6 C.Y.
9034	GEOTEXTILE FABRIC	0	327 S.Y.

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION PLANS

ROUTE 24 SECTIONS 9E AND 10H

111

HOWARD NEEDLES TAMMEN & BERGENDOFF CONSULTING ENGINEERS FAIRFIELD, N.J.

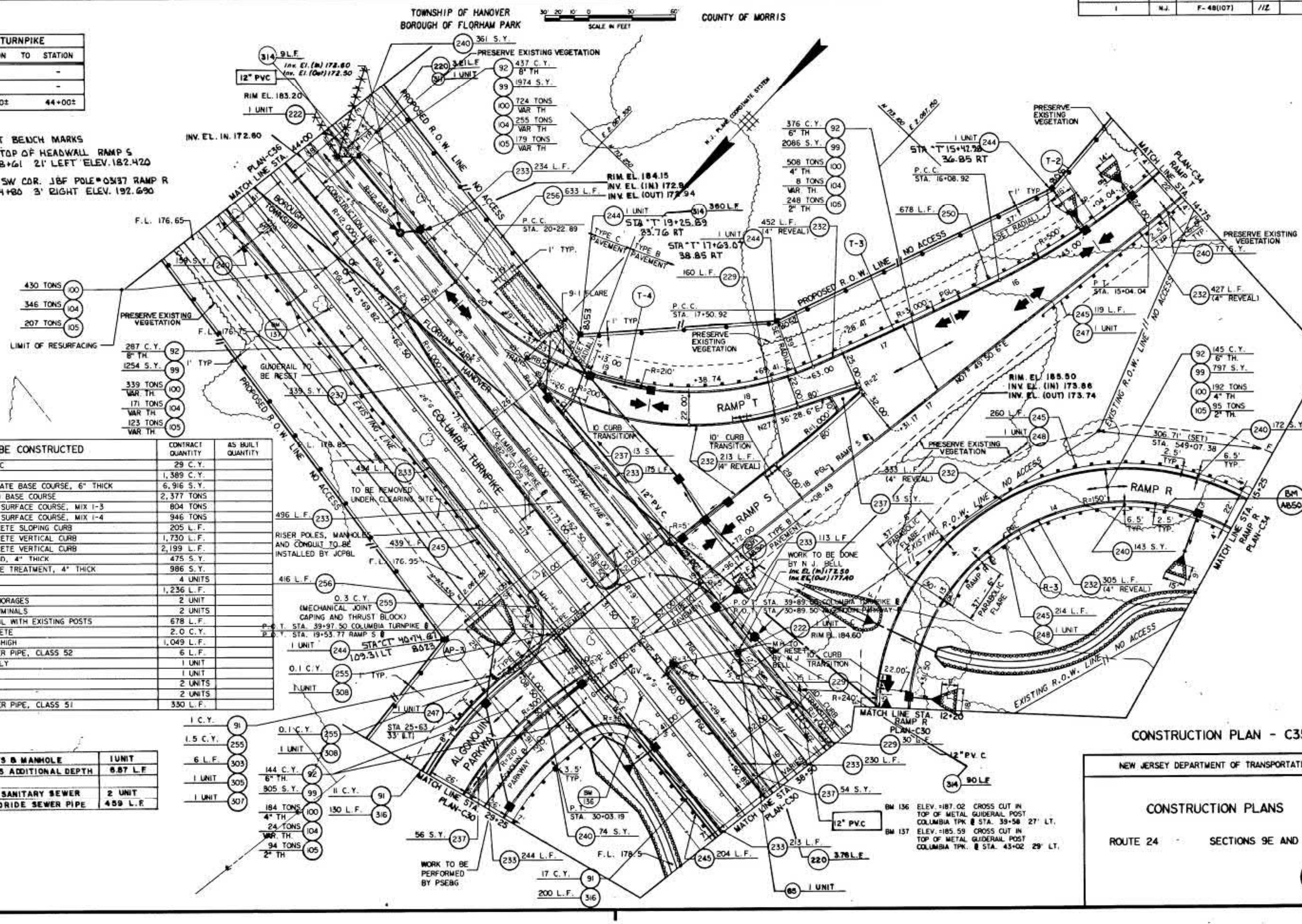
FED. ROAD DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
1	N.J.	F-48(107)	112	

COLUMBIA TURNPIKE			
RESURFACING CRITERIA	STATION	TO	STATION
1½" - 3½"	-		-
3½" - 5½"	-		-
GREATER THAN 5½"	38+50±		44+00±

AS BUILT BENCH MARKS

BM AB30 □ CUT TOP OF HEADWALL RAMP S
STA. 18+61 21' LEFT ELEV. 182.420

BM AB50 □ CUT SW COR. JBF POLE # 03137 RAMP R
STA 14+80 3' RIGHT ELEV. 192.690



ITEM NO.	TO BE CONSTRUCTED	CONTRACT QUANTITY	AS BUILT QUANTITY
91	PIPE BEDDING, CLASS C	29 C.Y.	
92	SUBBASE	1,389 C.Y.	
99	DENSE GRADED AGGREGATE BASE COURSE, 6" THICK	6,916 S.Y.	
100	BITUMINOUS STABILIZED BASE COURSE	2,377 TONS	
104	BITUMINOUS CONCRETE SURFACE COURSE, MIX I-3	804 TONS	
105	BITUMINOUS CONCRETE SURFACE COURSE, MIX I-4	946 TONS	
229	15" X 8" WHITE CONCRETE SLOPING CURB	205 L.F.	
232	9" X 16" WHITE CONCRETE VERTICAL CURB	1,730 L.F.	
233	9" X 18" WHITE CONCRETE VERTICAL CURB	2,199 L.F.	
237	WHITE CONCRETE ISLAND, 4" THICK	475 S.Y.	
240	BROKEN STONE SURFACE TREATMENT, 4" THICK	986 S.Y.	
244	NEW MONUMENTS	4 UNITS	
245	BEAM GUIDE RAIL	1,236 L.F.	
247	BEAM GUIDE RAIL ANCHORAGES	2 UNIT	
248	BREAKAWAY CABLE TERMINALS	2 UNITS	
250	RESET BEAM GUIDE RAIL WITH EXISTING POSTS	678 L.F.	
255	MISCELLANEOUS CONCRETE	2.0 C.Y.	
256	CHAIN LINK FENCE, 6' HIGH	1,049 L.F.	
303	6" DUCTILE IRON WATER PIPE, CLASS 52	6 L.F.	
305	FIRE HYDRANT ASSEMBLY	1 UNIT	
307	6" GATE VALVE	1 UNIT	
308	8" GATE VALVE	2 UNITS	
222	RESET CASTING	2 UNITS	
316	8" DUCTILE IRON WATER PIPE, CLASS 51	330 L.F.	

45	REMOVAL OF INLETS & MANHOLE	1 UNIT
20	MANHOLES & INLETS ADDITIONAL DEPTH	6.87 L.F
511	PRECAST MANHOLE SANITARY SEWER	2 UNIT
14	12" POLYVINYL CLORIDE SEWER PIPE	459 L.F

BM 136 ELEV. =187.02 CROSS CUT IN TOP OF METAL GUIDERAIL POST COLUMBIA TPK ℄ STA. 39+58 27' LT.

BM 137 ELEV. =185.59 CROSS CUT IN TOP OF METAL GUIDERAIL POST COLUMBIA TPK. ℄ STA. 43+02 29' LT.

CONSTRUCTION PLAN - C35

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION PLANS

ROUTE 24 SECTIONS 9E AND 10H

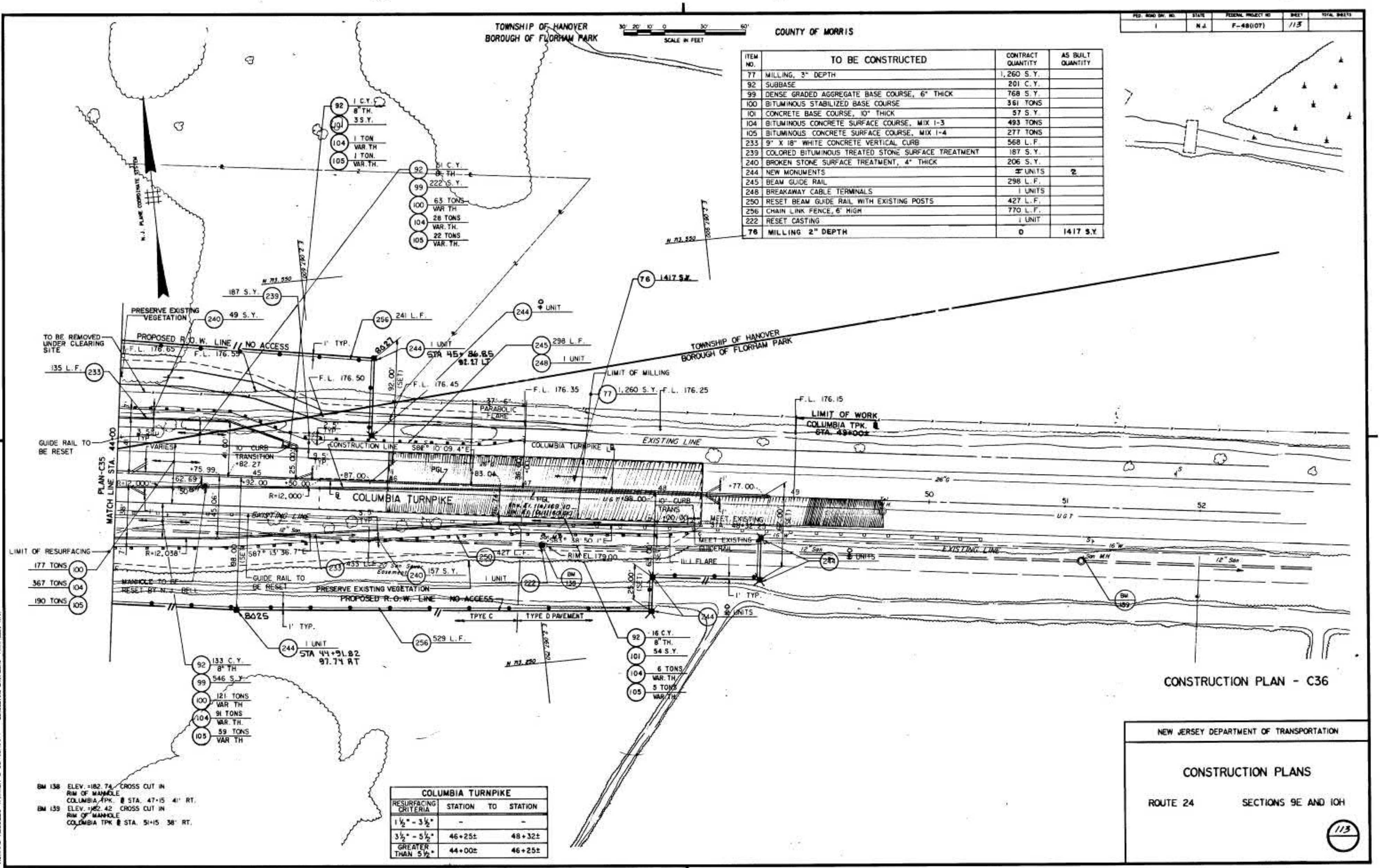
112

HOWARD NEEDLES TAMMEN & BERGENDOFF CONSULTING ENGINEERS FAIRFIELD, N.J.

FED. ROAD DIV. NO.	STATE	FEDERAL PROJECT NO	SHEET	TOTAL SHEETS
1	N.J.	F-48(107)	113	

TOWNSHIP OF HANOVER
BOROUGH OF FLORHAM PARK

COUNTY OF MORRIS



ITEM NO.	TO BE CONSTRUCTED	CONTRACT QUANTITY	AS BUILT QUANTITY
77	MILLING, 3" DEPTH	1,260 S.Y.	
92	SUBBASE	201 C.Y.	
99	DENSE GRADED AGGREGATE BASE COURSE, 6" THICK	768 S.Y.	
100	BITUMINOUS STABILIZED BASE COURSE	361 TONS	
101	CONCRETE BASE COURSE, 10" THICK	57 S.Y.	
104	BITUMINOUS CONCRETE SURFACE COURSE, MIX I-3	493 TONS	
105	BITUMINOUS CONCRETE SURFACE COURSE, MIX I-4	277 TONS	
233	9" X 18" WHITE CONCRETE VERTICAL CURB	568 L.F.	
239	COLORED BITUMINOUS TREATED STONE SURFACE TREATMENT	187 S.Y.	
240	BROKEN STONE SURFACE TREATMENT, 4" THICK	206 S.Y.	
244	NEW MONUMENTS	[illegible] UNITS	2
245	BEAM GUIDE RAIL	298 L.F.	
248	BREAKAWAY CABLE TERMINALS	1 UNITS	
250	RESET BEAM GUIDE RAIL WITH EXISTING POSTS	427 L.F.	
256	CHAIN LINK FENCE, 6' HIGH	770 L.F.	
222	RESET CASTING	1 UNIT	
76	MILLING 2" DEPTH	0	1417 S.Y.

BM 138 ELEV. =182.74 CROSS CUT IN RIM OF MANHOLE COLUMBIA TPK. ℄ STA. 47+15 41' RT.
BM 139 ELEV. =182.42 CROSS CUT IN RIM OF MANHOLE COLUMBIA TPK ℄ STA. 51+15 38' RT.

COLUMBIA TURNPIKE		
RESURFACING CRITERIA	STATION TO	STATION
1½" - 3½"	-	-
3½" - 5½"	46+25±	48+32±
GREATER THAN 5½"	44+00±	46+25±

CONSTRUCTION PLAN - C36

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION PLANS

ROUTE 24 SECTIONS 9E AND 10H

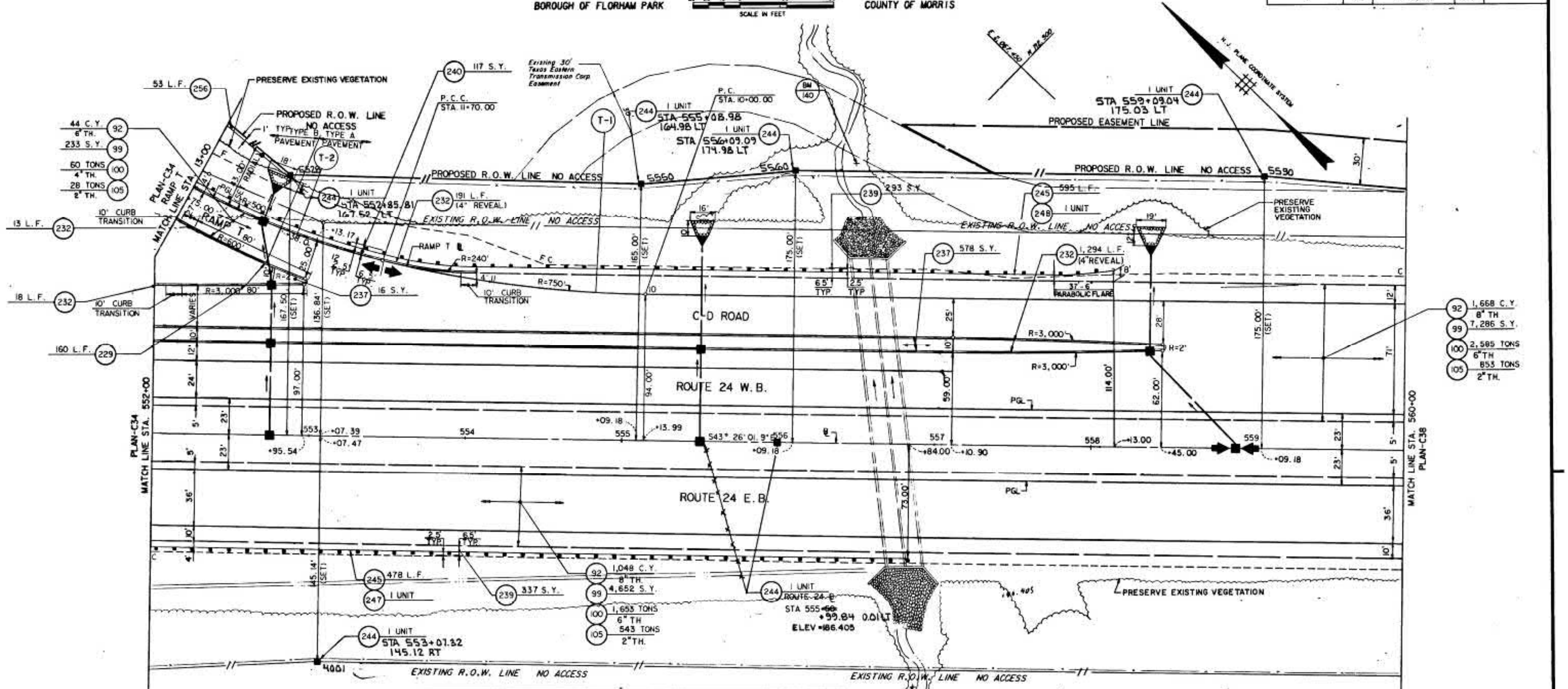
113

HOWARD NEEDLES TAMMEN & BERGENDOFF CONSULTING ENGINEERS FAIRFIELD, N.J.

FED. ROAD DIV. NO	STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
1	N.J.	F-48(107)	114	

BOROUGH OF FLORHAM PARK

COUNTY OF MORRIS



ITEM NO.	TO BE CONSTRUCTED	CONTRACT QUANTITY	AS BUILT QUANTITY
92	SUBBASE	2,760 C.Y.	
99	DENSE GRADED AGGREGATE BASE COURSE, 6" THICK	12,171 S.Y.	
100	BITUMINOUS STABILIZED BASE COURSE	4,298 TONS	
105	BITUMINOUS CONCRETE SURFACE COURSE, MIX I-4	1,424 TONS	
229	15" X 8" WHITE CONCRETE SLOPING CURB	160 L.F.	
232	9" X 16" WHITE CONCRETE VERTICAL CURB	1,516 L.F.	
237	WHITE CONCRETE ISLAND, 4" THICK	594 S.Y.	
239	COLORED BITUMINOUS TREATED STONE SURFACE TREATMENT	630 S.Y.	
240	BROKEN STONE TREATMENT, 4" THICK	117 S.Y.	
244	NEW MONUMENTS	6 UNITS.	6
245	BEAM GUIDE RAIL	1,073 L.F.	
256	CHAIN LINK FENCE, 6' HIGH	53 L.F.	
247	BEAM GUIDE RAIL ANCHORAGES	1 UNIT	
248	BREAKAWAY CABLE TERMINALS	1 UNIT	

BM 140 ELEV. =180.80 R.R. SPIKE IN
20" DIA. TREE
ROUTE 24 ℄ STA. 556+48 180' LT.
BM 141 ELEV. =182.37 R.R. SPIKE IN
24" DIA. TREE
ROUTE 24 ℄ STA. 556+88 156' RT.

HOWARD NEEDLES TAMMEN & BERGENDOFF CONSULTING ENGINEERS FAIRFIELD, N.J.

CONSTRUCTION PLAN - C37

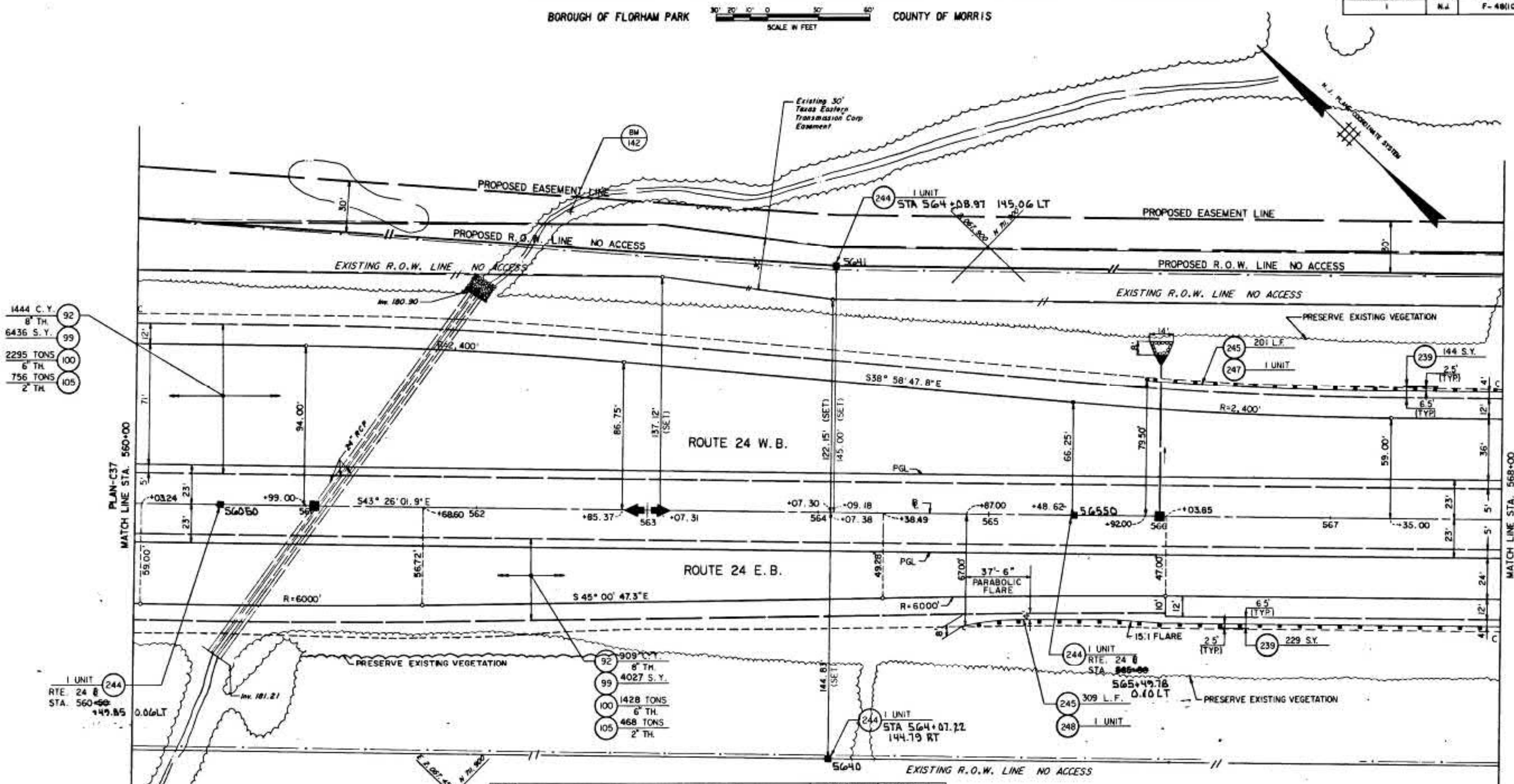
NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION PLANS

ROUTE 24 SECTIONS 9E AND 10H

114

FED. ROAD DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
1	N.J.	F-48(107)	115	



ITEM NO.	TO BE CONSTRUCTED	CONTRACT QUANTITY	AS BUILT QUANTITY
92	SUBBASE	2,353 C.Y.	
99	DENSE GRADED AGGREGATE BASE COURSE, 6" THICK	10,463 S.Y.	
100	BITUMINOUS STABILIZED BASE COURSE	3,723 TONS	
105	BITUMINOUS CONCRETE SURFACE COURSE, MIX I-4	1,224 TONS	
239	COLORED BITUMINOUS TREATED STONE		
	SURFACE TREATMENT	373 S.Y.	
244	NEW MONUMENTS	4 UNITS	4
245	BEAM GUIDE RAIL	510 L.F.	
247	BEAM GUIDE RAIL ANCHORAGES	1 UNIT	
248	BREAKAWAY CABLE TERMINAL	1 UNIT	

AS BUILT BENCH MARKS
TOP OF MONUMENT ROUTE 24 ℄ STA 560+49.85
0.06 LEFT ELEV. 185.482

TOP OF MONUMENT ROUTE 24 ℄ STA 565+49.78
0.10 LEFT ELEV. 185.623

E 2,067,600 N 711,600

BM 142 ELEV. +180.56 BOX CUT ON
TOP OF CONCRETE CULVERT
ROUTE 24 ℄ STA. 562+53 175' LT.

CONSTRUCTION PLAN - C38

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION PLANS

ROUTE 24

SECTIONS 9E AND 10H

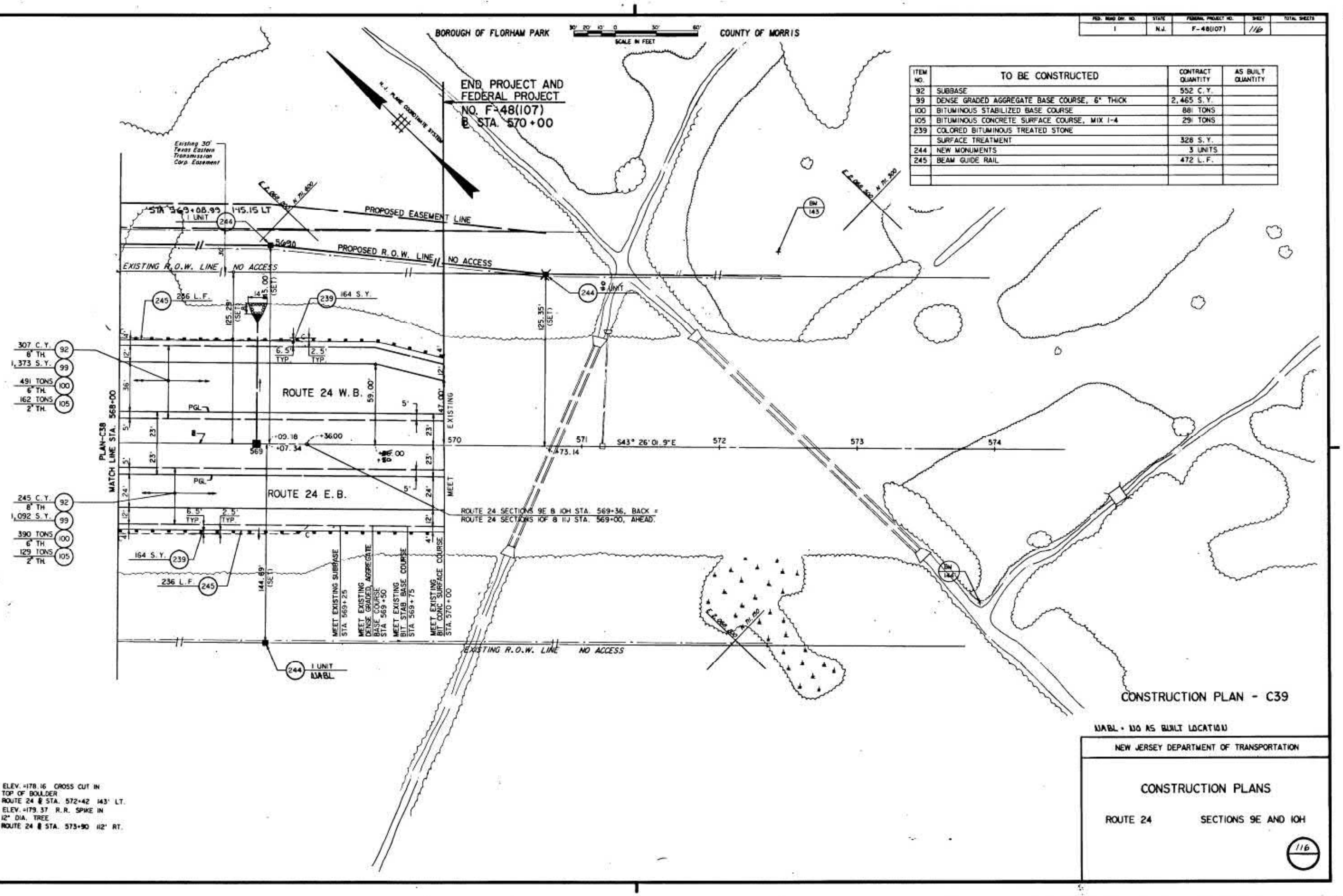
115

HOWARD NEEDLES TAMMEN & BERGENDOFF CONSULTING ENGINEERS FAIRFIELD, N.J.

FED. ROAD DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
1	N.J.	F-48(107)	116	

BOROUGH OF FLORHAM PARK

COUNTY OF MORRIS



ITEM NO.	TO BE CONSTRUCTED	CONTRACT QUANTITY	AS BUILT QUANTITY
92	SUBBASE	552 C.Y.	
99	DENSE GRADED AGGREGATE BASE COURSE, 6" THICK	2,465 S.Y.	
100	BITUMINOUS STABILIZED BASE COURSE	881 TONS	
105	BITUMINOUS CONCRETE SURFACE COURSE, MIX I-4	291 TONS	
239	COLORED BITUMINOUS TREATED STONE		
	SURFACE TREATMENT	328 S.Y.	
244	NEW MONUMENTS	3 UNITS	
245	BEAM GUIDE RAIL	472 L.F.	

BM 143 ELEV. =178.16 CROSS CUT IN
TOP OF BOULDER
ROUTE 24 ℄ STA. 572+42 143' LT.
BM 144 ELEV. =179.37 R.R. SPIKE IN
12" DIA. TREE
ROUTE 24 ℄ STA. 573+90 112' RT.

CONSTRUCTION PLAN - C39

NABL - NO AS BUILT LOCATION

NEW JERSEY DEPARTMENT OF TRANSPORTATION

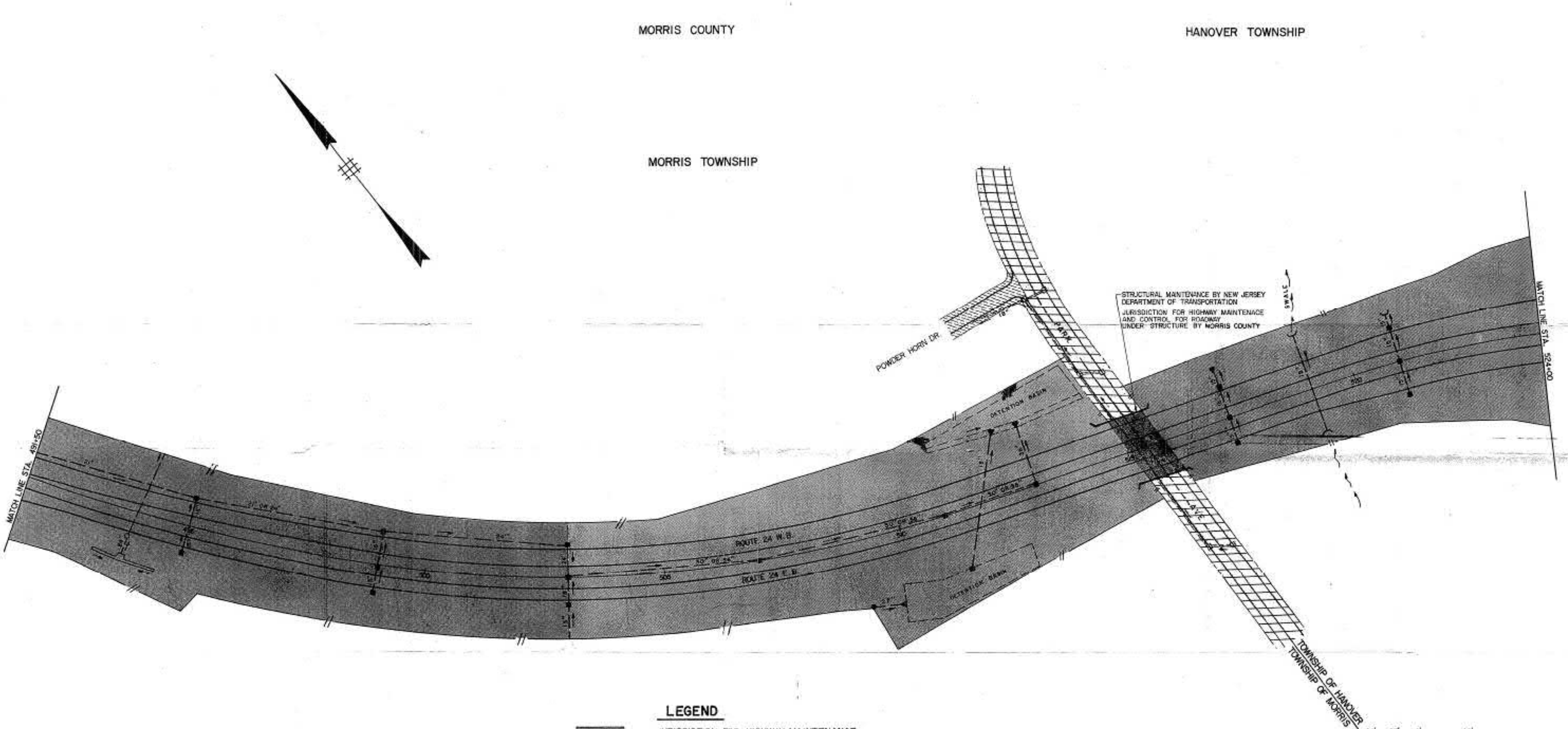
CONSTRUCTION PLANS

ROUTE 24 SECTIONS 9E AND 10H

116

HOWARD NEEDLES TAMMEN & BERGENDOFF CONSULTING ENGINEERS FAIRFIELD, N.J.

SH. 03



100' 50' 0' 100'
SCALE IN FEET

LEGEND

▓ = JURISDICTION FOR HIGHWAY MAINTENANCE AND CONTROL BY NEW JERSEY DEPARTMENT OF TRANSPORTATION

▨ = JURISDICTION FOR HIGHWAY MAINTENANCE AND CONTROL BY MORRIS COUNTY

▩ = JURISDICTION FOR HIGHWAY MAINTENANCE AND CONTROL BY MUNICIPALITY (WITHIN RESPECTIVE MUNICIPALITY)

—//— R.O.W. LINE (NO ACCESS)

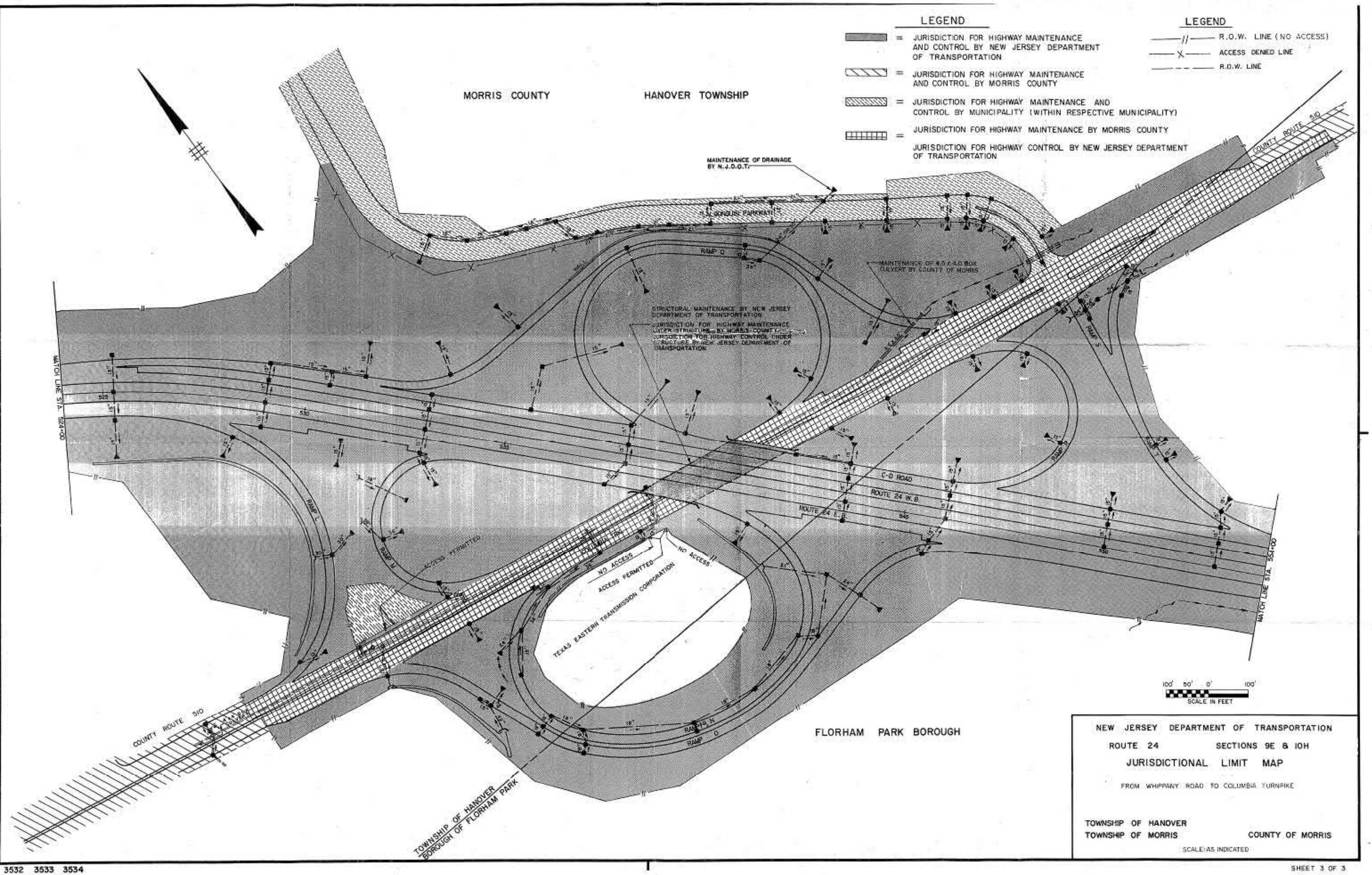
NEW JERSEY DEPARTMENT OF TRANSPORTATION
ROUTE 24 SECTIONS 9E & 10H
JURISDICTIONAL LIMIT MAP
FROM WHIPPANY ROAD TO COLUMBIA TURNPIKE

TOWNSHIP OF HANOVER
TOWNSHIP OF MORRIS
COUNTY OF MORRIS
SCALE: AS INDICATED

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS FAIRFIELD, N. J.

3532 3533 3534

SHEET 2 OF 3



LEGEND

■	=	JURISDICTION FOR HIGHWAY MAINTENANCE AND CONTROL BY NEW JERSEY DEPARTMENT OF TRANSPORTATION
▧	=	JURISDICTION FOR HIGHWAY MAINTENANCE AND CONTROL BY MORRIS COUNTY
▨	=	JURISDICTION FOR HIGHWAY MAINTENANCE AND CONTROL BY MUNICIPALITY (WITHIN RESPECTIVE MUNICIPALITY)
▦	=	JURISDICTION FOR HIGHWAY MAINTENANCE BY MORRIS COUNTY JURISDICTION FOR HIGHWAY CONTROL BY NEW JERSEY DEPARTMENT OF TRANSPORTATION

LEGEND

—//—	R.O.W. LINE (NO ACCESS)
—X—	ACCESS DENIED LINE
— — —	R.O.W. LINE

NEW JERSEY DEPARTMENT OF TRANSPORTATION
ROUTE 24 SECTIONS 9E & 10H
JURISDICTIONAL LIMIT MAP
FROM WHIPPANY ROAD TO COLUMBIA TURNPIKE

TOWNSHIP OF HANOVER
TOWNSHIP OF MORRIS COUNTY OF MORRIS
SCALE: AS INDICATED

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS FAIRFIELD, N. J.

SH. 03

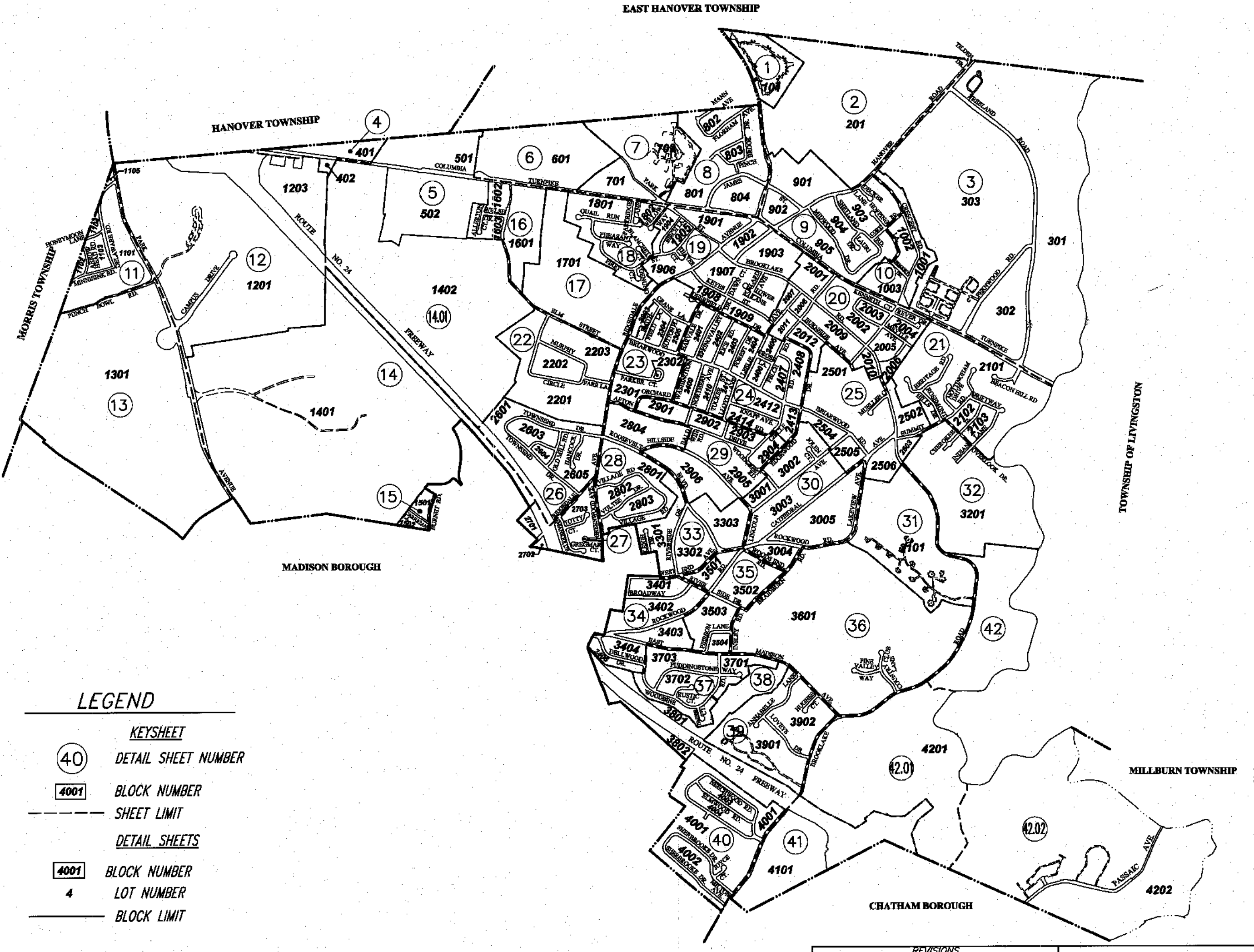
3532 3533 3534

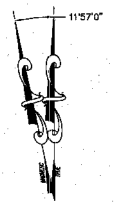
SHEET 3 OF 3

Appendix “E”

Tax Maps

KEYMAP





LEGEND

KEYSHEET

(40) DETAIL SHEET NUMBER

4001 BLOCK NUMBER

- - - - - SHEET LIMIT

DETAIL SHEETS

4001 BLOCK NUMBER

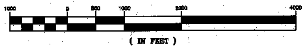
4 LOT NUMBER

——— BLOCK LIMIT

I HEREBY CERTIFY THAT THIS MAP AND ANY REQUIRED SURVEY HAS BEEN MADE UNDER MY IMMEDIATE SUPERVISION AND COMPLIES WITH THE LAWS OF THE STATE OF NEW JERSEY.

RICHARD F. SMITH, JR. NEW JERSEY LAND SURVEYOR LIC. NO.25048

GRAPHIC SCALE



(IN FEET)
1 inch = 1000 ft.

NOTES

1. FLOOD BOUNDARY INTERPOLATED FROM "FLOOD INSURANCE RATE MAP, BOROUGH OF FLORHAM PARK, NEW JERSEY, MORRIS COUNTY," COMMUNITY–PANEL NUMBERS 3403420017, 3403420019 3403420020 3403420036 3403420038; MAP REVISED: DECEMBER 20, 2002 ISSUED BY FEDERAL EMERGENCY MANAGEMENT AGENCY.

2. THIS SHEET IS A DIGITIZED COPY OF THE TAX MAP PREPARED BY RICHARD F. SMITH, JR. AND DATED SEPTEMBER 30, 2010. THE APPROVED ORIGINAL IS ON FILE IN THE ENGINEER'S OFFICE.

3. THIS SHEET HAS BEEN DRAWN USING COMPUTER AIDED DRAFTING/DESIGN.

4. THE AREA, BOUNDARIES AND DIMENSIONS, SHOWN ON THIS TAX MAP, ARE DERIVED FROM GROUND SURVEYS, AERIAL SURVEYS, AND RECORDED PLANS, MAPS, DEEDS, WILLS, AND ARE TO BE USED FOR ASSESSMENT PURPOSES ONLY.

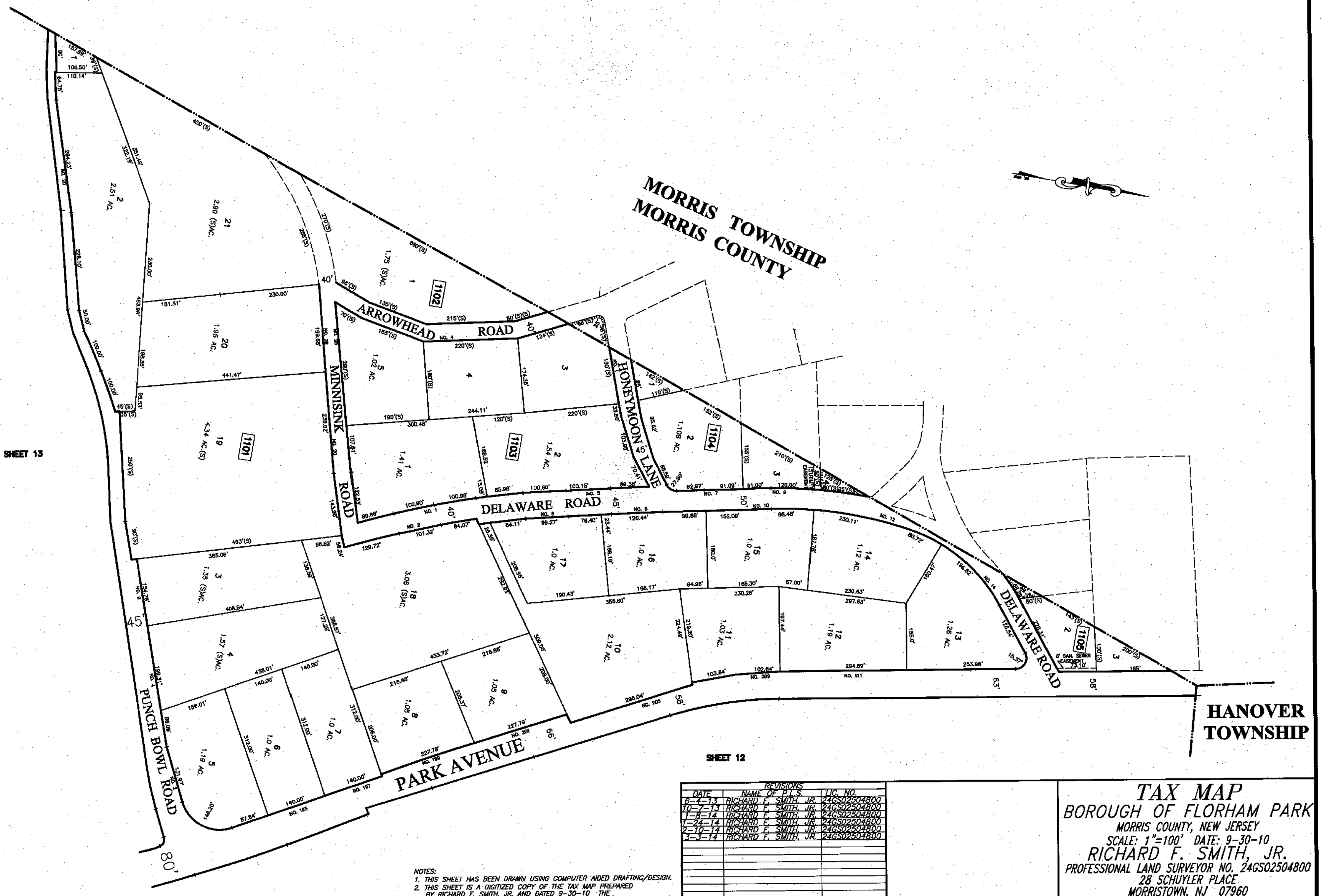
5. THIS TAX MAP SUPERCEDES THE TAX MAP APPROVED MARCH 28, 2006.

REVISIONS

DATE	NAME OF P.L.S.	LIC. NO.
6-4-13	RICHARD F. SMITH, JR.	24GS02504800
7-29-13	RICHARD F. SMITH, JR.	24GS02504800

TAX MAP
BOROUGH OF FLORHAM PARK
MORRIS COUNTY, NEW JERSEY
SCALE: 1"=1000' DATE: 9-30-10
RICHARD F. SMITH, JR.
PROFESSIONAL LAND SURVEYOR NO. 24GS02504800
28 SCHUYLER PLACE
MORRISTOWN, NJ 07960
TO SHOW CONDITIONS AS OF 3-12-14

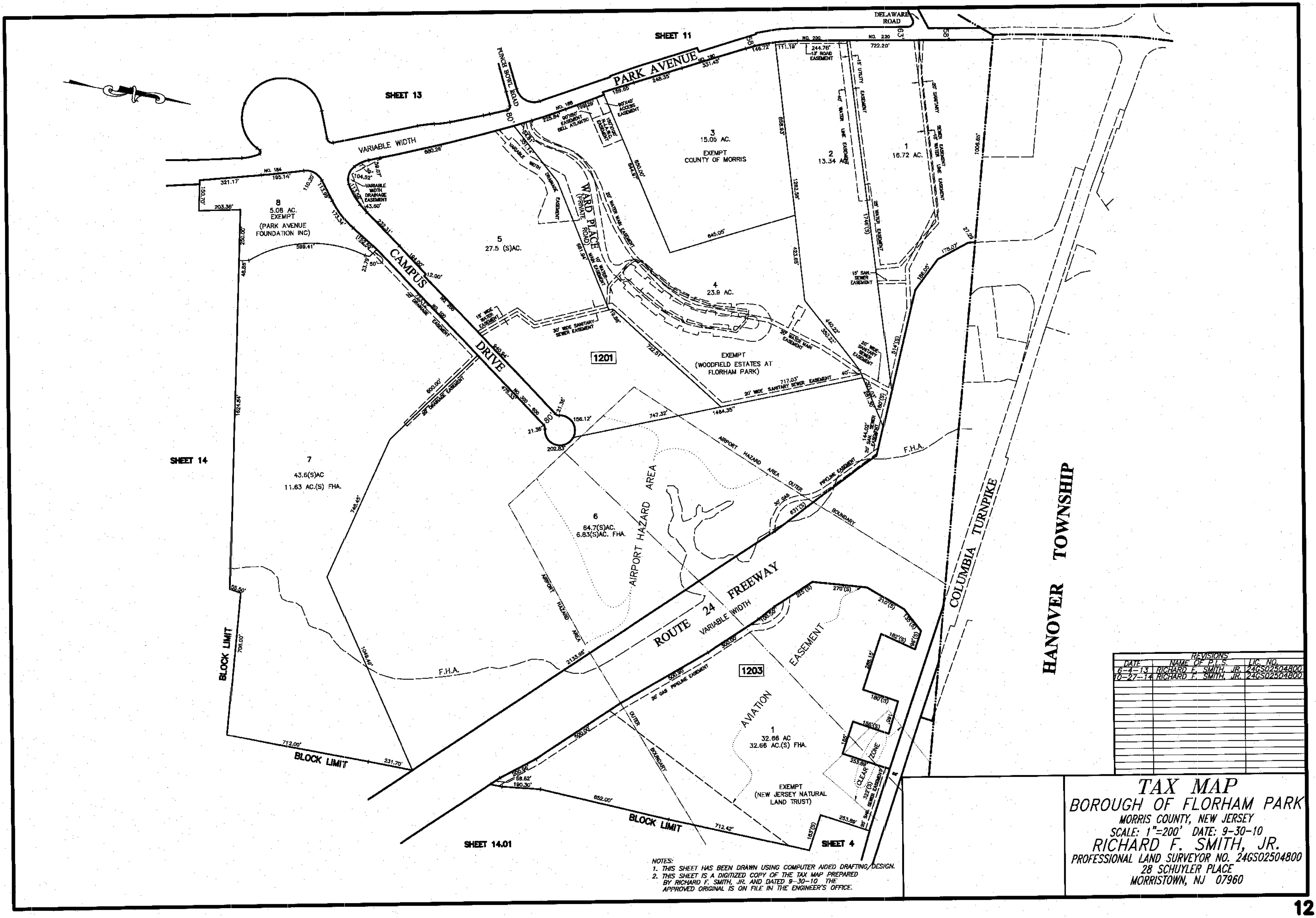
KEYMAP



NOTES:
1. THIS SHEET HAS BEEN DRAWN USING COMPUTER AIDED DRAFTING/DESIGN.
2. THIS SHEET IS A DIGITIZED COPY OF THE TAX MAP PREPARED BY RICHARD F. SMITH, JR. AND DATED 9-30-10 THE APPROVED ORIGINAL IS ON FILE IN THE ENGINEER'S OFFICE.

REVISIONS		
DATE	NAME OF P.L.S.	LIC. NO.
6-4-13	RICHARD F. SMITH, JR.	24GS02504800
10-7-13	RICHARD F. SMITH, JR.	24GS02504800
1-8-14	RICHARD F. SMITH, JR.	24GS02504800
1-24-14	RICHARD F. SMITH, JR.	24GS02504800
2-10-14	RICHARD F. SMITH, JR.	24GS02504800
3-3-14	RICHARD F. SMITH, JR.	24GS02504800

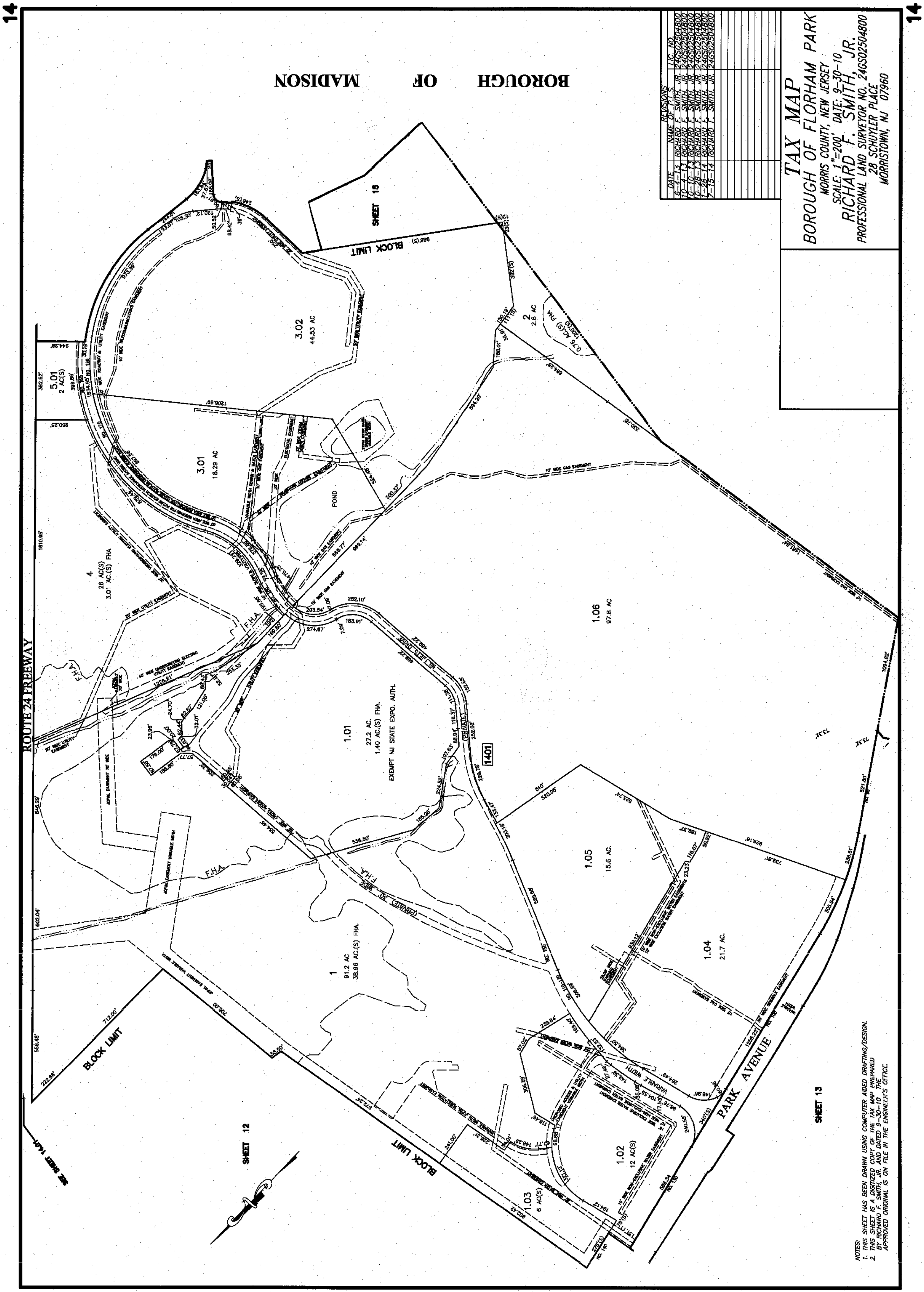
TAX MAP
BOROUGH OF FLORHAM PARK
MORRIS COUNTY, NEW JERSEY
SCALE: 1"=100' DATE: 9-30-10
RICHARD F. SMITH, JR.
PROFESSIONAL LAND SURVEYOR NO. 24GS02504800
28 SCHUYLER PLACE
MORRISTOWN, NJ 07960



REVISIONS		
DATE	NAME OF P.L.S.	LIC. NO.
6-4-13	RICHARD F. SMITH, JR.	24GS02504800
10-27-14	RICHARD F. SMITH, JR.	24GS02504800

TAX MAP
BOROUGH OF FLORHAM PARK
MORRIS COUNTY, NEW JERSEY
SCALE: 1"=200' DATE: 9-30-10
RICHARD F. SMITH, JR.
PROFESSIONAL LAND SURVEYOR NO. 24GS02504800
28 SCHUYLER PLACE
MORRISTOWN, NJ 07960

NOTES:
1. THIS SHEET HAS BEEN DRAWN USING COMPUTER AIDED DRAFTING/DESIGN.
2. THIS SHEET IS A DIGITIZED COPY OF THE TAX MAP PREPARED BY RICHARD F. SMITH, JR. AND DATED 9-30-10 THE APPROVED ORIGINAL IS ON FILE IN THE ENGINEER'S OFFICE.



TAX MAP
BOROUGH OF FLORHAM PARK
MORRIS COUNTY, NEW JERSEY
SCALE: 1"=200' DATE: 9-30-10
RICHARD F. SMITH, JR.
PROFESSIONAL LAND SURVEYOR NO. 24GS02504800
28 SCHUYLER PLACE
MORRISTOWN, NJ 07960

REVISIONS

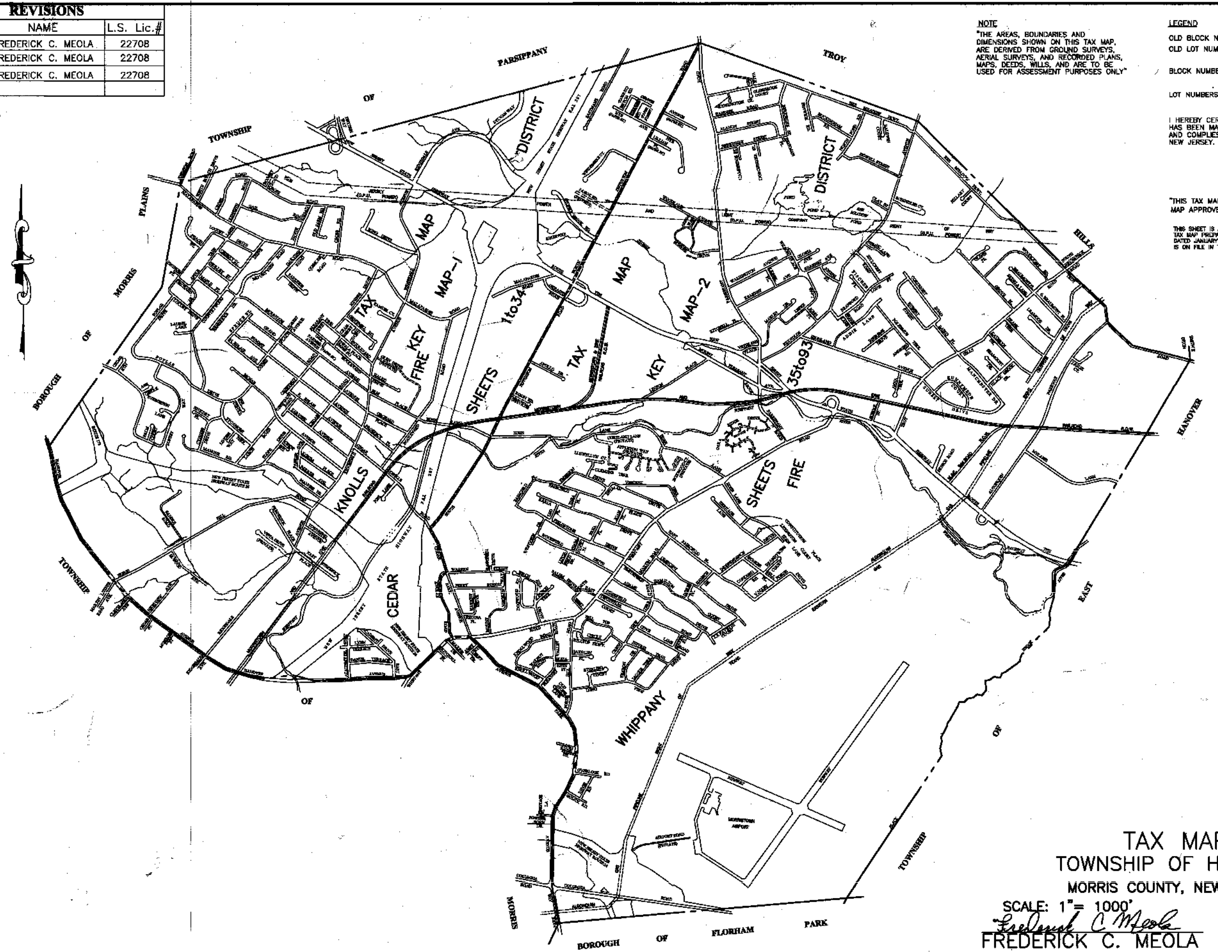
DATE	NAME OF P.L.S.	LIC. NO.
6-4-13	RICHARD F. SMITH, JR.	24GS02504800
10-4-13	RICHARD F. SMITH, JR.	24GS02504800
10-10-13	RICHARD F. SMITH, JR.	24GS02504800
10-28-13	RICHARD F. SMITH, JR.	24GS02504800
1-28-14	RICHARD F. SMITH, JR.	24GS02504800
7-15-14	RICHARD F. SMITH, JR.	24GS02504800

NOTES:
1. THIS SHEET HAS BEEN DRAWN USING COMPUTER AIDED DRAFTING/DESIGN.
2. THIS SHEET IS A DIGITIZED COPY OF THE TAX MAP PREPARED BY RICHARD F. SMITH, JR. AND DATED 9-30-10 THE APPROVED ORIGINAL IS ON FILE IN THE ENGINEER'S OFFICE.

(Page 1 of 1)

INDEX MAP

REVISIONS		
DATE	NAME	L.S. Lic.#
9/01/00	FREDERICK C. MEOLA	22708
1/01/01	FREDERICK C. MEOLA	22708
1/01/02	FREDERICK C. MEOLA	22708



NOTE

"THE AREAS, BOUNDARIES AND DIMENSIONS SHOWN ON THIS TAX MAP, ARE DERIVED FROM GROUND SURVEYS, AERIAL SURVEYS, AND RECORDED PLANS, MAPS, DEEDS, WILLS, AND ARE TO BE USED FOR ASSESSMENT PURPOSES ONLY"

LEGEND

OLD BLOCK NUMBERS:	92
OLD LOT NUMBERS:	8
BLOCK NUMBERS:	3002
LOT NUMBERS	⑧

I HEREBY CERTIFY THAT THIS MAP AND THE SURVEY HAS BEEN MADE UNDER MY IMMEDIATE SUPERVISION, AND COMPLIES WIT THE LAWS OF THE STATE OF NEW JERSEY.

Frederick C Meola
P.E. & L.S. No. 4079
FREDERICK C. MEOLA

"THIS TAX MAP SUPERSEDES THE TAX MAP APPROVED AUGUST 14, 1961"

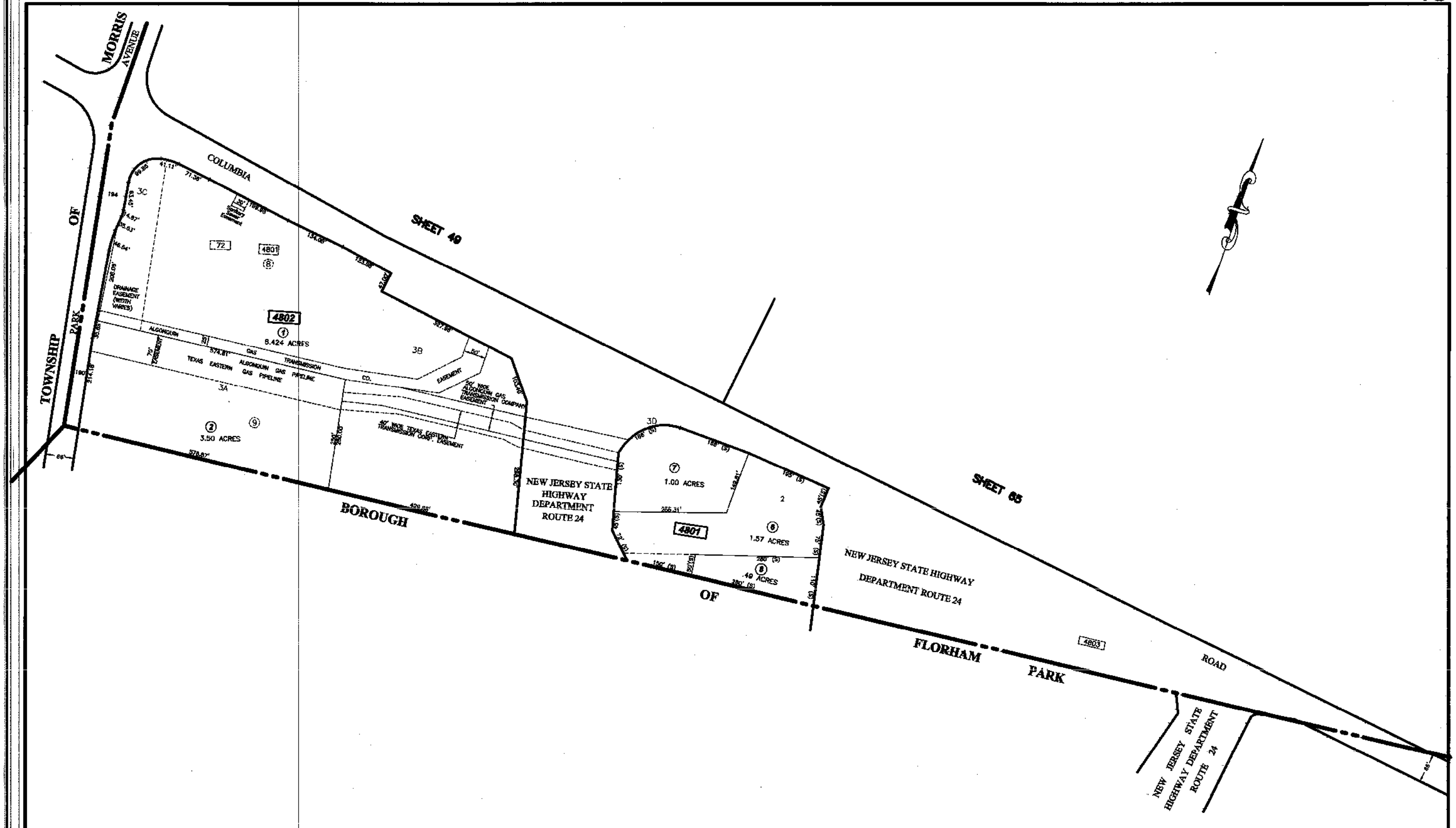
THIS SHEET IS A DIGITIZED COPY OF THE TAX MAP PREPARED BY FREDERICK C. MEOLA DATED JANUARY 1, 2001. THE APPROVED ORIGINAL IS ON FILE IN THE TOWNSHIP ENGINEER'S OFFICE.

TAX MAP
TOWNSHIP OF HANOVER
MORRIS COUNTY, NEW JERSEY

SCALE: 1"= 1000'   JANUARY 2001

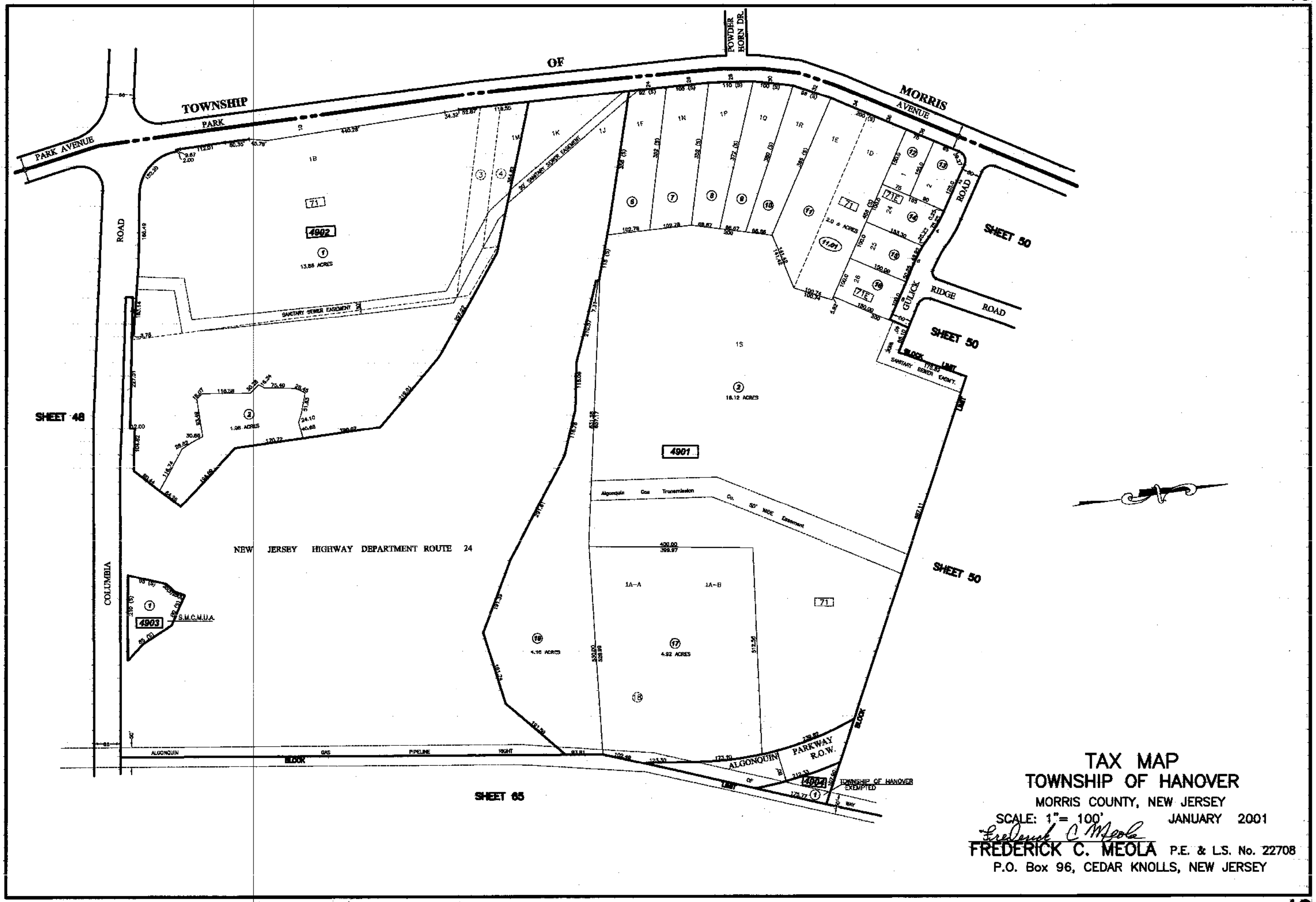
Frederick C Meola
FREDERICK C. MEOLA P.E. & L.S. No. 22708
P.O. Box 96, CEDAR KNOLLS, NEW JERSEY
TO SHOW CONDITIONS AS OF JANUARY 1, 2002

INDEX MAP



TAX MAP
TOWNSHIP OF HANOVER

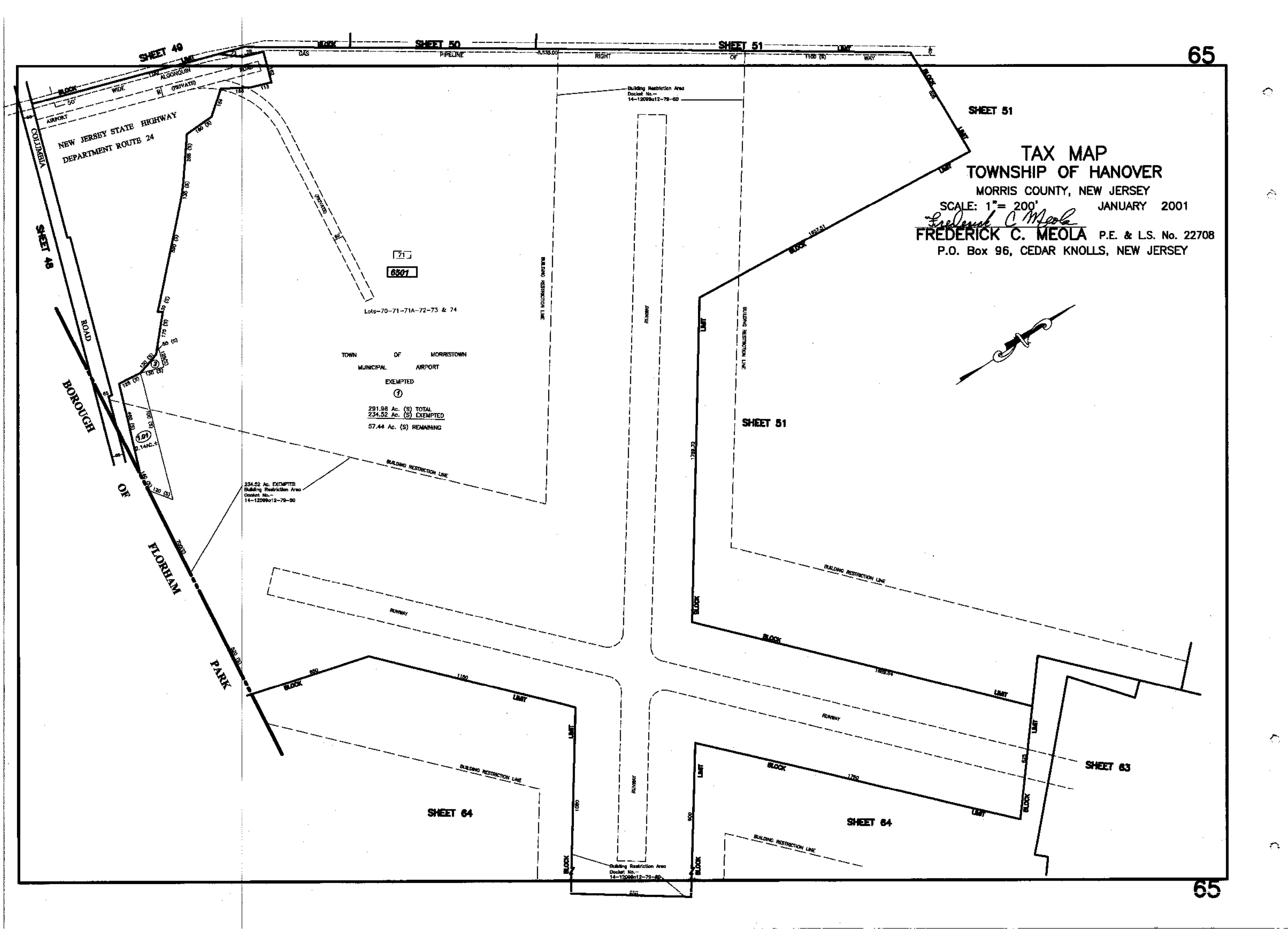
MORRIS COUNTY, NEW JERSEY
SCALE: 1"= 100' JANUARY 2001
Frederick C. Meola
FREDERICK C. MEOLA P.E. & L.S. No. 22708
P.O. Box 96, CEDAR KNOLLS, NEW JERSEY

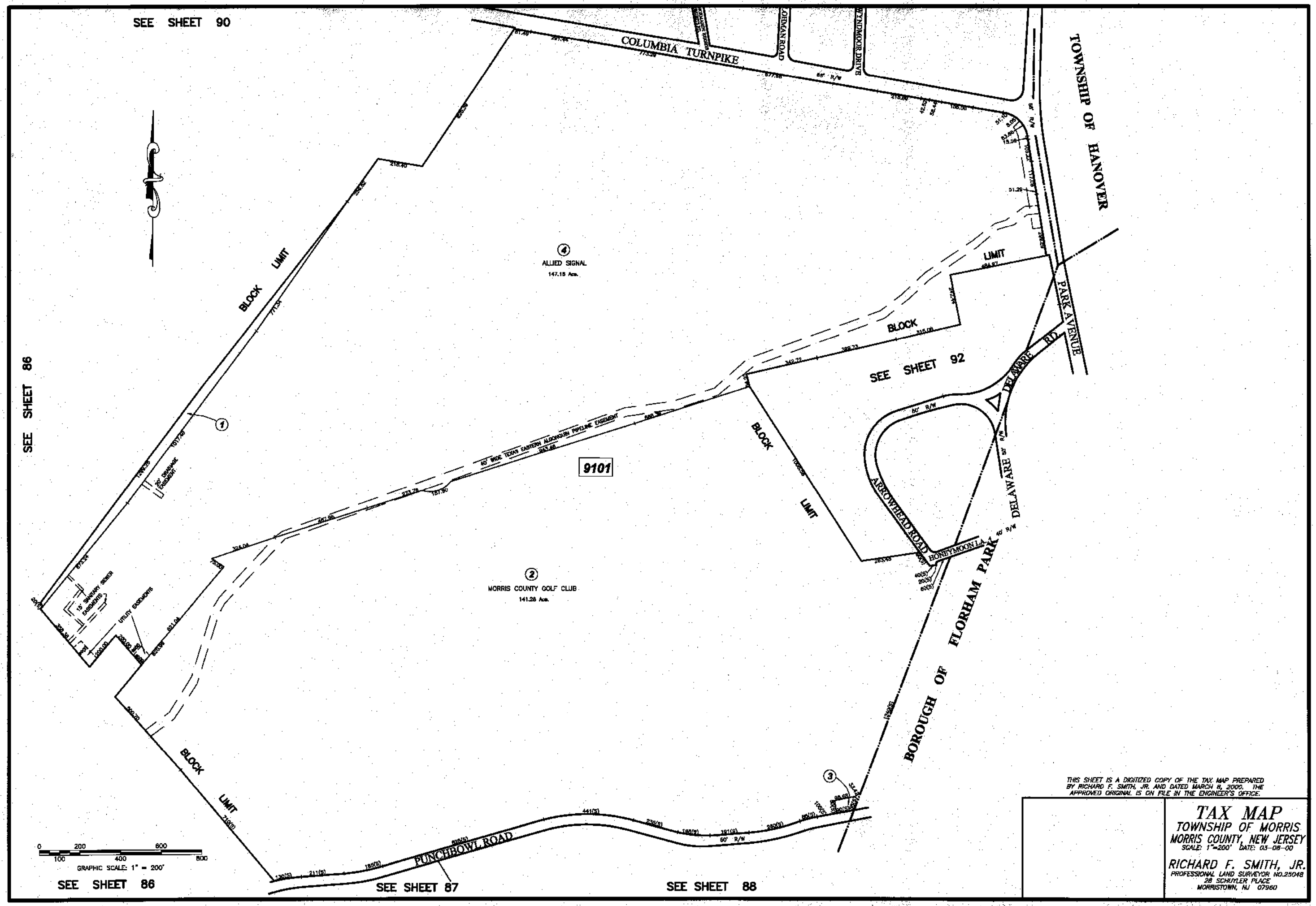


TAX MAP
TOWNSHIP OF HANOVER

MORRIS COUNTY, NEW JERSEY
SCALE: 1"= 100'   JANUARY 2001
Frederick C. Meola
FREDERICK C. MEOLA P.E. & L.S. No. 22708
P.O. Box 96, CEDAR KNOLLS, NEW JERSEY

(Page 1 of 1)


65
TAX MAP
TOWNSHIP OF HANOVER
MORRIS COUNTY, NEW JERSEY
SCALE: 1"= 200'
JANUARY 2001
Frederick C. Meola
FREDERICK C. MEOLA P.E. & L.S. No. 22708
P.O. Box 96, CEDAR KNOLLS, NEW JERSEY
SHEET 49
SHEET 50
SHEET 51
SHEET 48
SHEET 63
SHEET 64
GAS PIPELINE RIGHT OF WAY
ALGONQUIN
(PRIVATE)
AIRPORT
50' WIDE
NEW JERSEY STATE HIGHWAY DEPARTMENT ROUTE 24
COLUMBIA ROAD
BOROUGH OF FLORHAM PARK
71
6501
Lots-70-71-71A-72-73 & 74
TOWN OF MORRISTOWN
MUNICIPAL AIRPORT
EXEMPTED
①
291.98 Ac. (S) TOTAL
234.52 Ac. (S) EXEMPTED
57.44 Ac. (S) REMAINING
6.01
2.14 AC.
③
BUILDING RESTRICTION LINE
RUNWAY
Building Restriction Area
Docket No.-
14-12099e12-79-80
234.52 Ac. EXEMPTED
BLOCK
LIMIT
65


SEE SHEET 90
COLUMBIA TURNPIKE
LOHMAN ROAD
WYNDMOOR DRIVE
TOWNSHIP OF HANOVER
PARK AVENUE
DELAWARE RD.
DELAWARE RD.
ARROWHEAD ROAD
HONEYMOON LA.
BOROUGH OF FLORHAM PARK
BLOCK LIMIT
BLOCK LIMIT
BLOCK LIMIT
BLOCK LIMIT
SEE SHEET 92
SEE SHEET 86
SEE SHEET 86
SEE SHEET 87
SEE SHEET 88
9101
④
ALLIED SIGNAL
147.18 Acs.
②
MORRIS COUNTY GOLF CLUB
141.28 Acs.
①
③
40' WIDE TEXAS EASTERN ALGONQUIN PIPELINE EASEMENT
15' SANITARY SEWER EASEMENTS
UTILITY EASEMENTS
20' DRAINAGE EASEMENT
PUNCHBOWL ROAD
60' R/W
GRAPHIC SCALE: 1" = 200'
0
100
200
400
600
800
THIS SHEET IS A DIGITIZED COPY OF THE TAX MAP PREPARED BY RICHARD F. SMITH, JR. AND DATED MARCH 8, 2000. THE APPROVED ORIGINAL IS ON FILE IN THE ENGINEER'S OFFICE.
TAX MAP
TOWNSHIP OF MORRIS
MORRIS COUNTY, NEW JERSEY
SCALE: 1"=200' DATE: 03-08-00
RICHARD F. SMITH, JR.
PROFESSIONAL LAND SURVEYOR NO.25048
28 SCHUYLER PLACE
MORRISTOWN, NJ 07960

Appendix “F”

Crash Data

Crash Data
2016 - 2018

State of New Jersey

DEPARTMENT OF TRANSPORTATION
P.O. Box 600
Trenton, New Jersey 08625-0600

PHILIP D. MURPHY
Governor

SHEILA Y. OLIVER
Lt. Governor

DIANE GUTIERREZ-SCACCETTI
Commissioner

October 30, 2019

John Korunow, Civil Design Services Manager
IH Engineers, PC
103 College Road East, 1st floor
Princeton, NJ 08540

RE: Crash Analysis
CR 510 MP 14.13 to 14.60 and at 14.23
Various Municipalities, Morris County

This is in reference to your request dated October 2, 2019, requesting this office to furnish the crash data for the above referenced location for the years 2016 through 2018.

CRASH DATA RELATIVE TO OVERREPRESENTATIONS:

The crash summaries relative to overrepresentations for the following sections of CR 510, for the period January 1, 2016 to December 31, 2018 are herewith attached. The percentages on the summary are 2018 statewide average values corresponding to overrepresented crash categories.

Also, enclosed are the Details of Motor Vehicle Accidents for the years 2016 through 2018. The Details will show the frequency and severity at various locations (at/between intersection) along this portion of this roadway segment. This information may help your office in any engineering decision that might be made to improve or upgrade this intersection.

The following is the safety score:

Evaluation #2 Safety Score

Route	Mile Post	At Intersection	Safety Score
CR 510	4.23	CR 510/CR 623	10

If there are any further questions, please contact Yosy Cosme of this office at (609)-963-1873.

Very truly yours,

Marhaba Omer

Marhaba Omer, Principal Engineer
Bureau of Transportation Data and Safety

MO: YC
BSP Log #112-19
Cc: Eduard D'Arcy, Division of Program Management

CRASH SUMMARY

Route CR 510 MP 14.23
Various communities, Morris County
01/01/2016 THRU 12/31/2018

TOTAL CRASHES: **19**

SEVERITY	COUNT	% OF TOTAL	2018 Average
Fatal	0	0.00%	
Injury - Maj	0	0.00%	
Injury - Mod	1	**5.26%**	**5.01%**
Injury - Min	6	**31.58%**	**26.55%**
Property Damage	12	63.16%	
Total	**19**		

COLLISION TYPE	COUNT	% OF TOTAL	2018 Average	**
Same Dir.-Rear End	11	**57.89%**	**24.64%**	
Same Dir.-Sideswipe	3	15.79%	**12.47%**	
Angle	1	5.26%		
Head On	0	0.00%		
Parked Vehicle	0	0.00%		
Left Turn / U Turn	4	**21.05%**	**13.56%**	
Backing	0	0.00%		
Encroachment	0	0.00%		
Overturned	0	0.00%		
Fixed Object	0	0.00%		
Animal	0	0.00%		
Pedestrian	0	0.00%		
Pedalcycle	0	0.00%		
Non-Fixed Object	0	0.00%		
Unknown	0	0.00%		
Other	0	0.00%		
Total	**19**			

INTERSECTION	COUNT	% OF TOTAL	2018 Average	**
At Signalized Intersection	19	**100.00%**	**100.00%**	
At Unsignalized Intersection	0	0.00%		
Between Intersections	0	0.00%		
Railroad Crossing	0	0.00%		
Total	**19**			

SURFACE CONDITION	COUNT	% OF TOTAL	2018 Average	**
Dry	15	**78.95%**	**76.39%**	
Wet Surface	2	10.53%		
Snow	2	**10.53%**	**1.74%**	
Ice	0	0.00%		
Unknown	0	0.00%		
Other	0	0.00%		
Total	**19**			

LIGHT	COUNT	% OF TOTAL	2018 Average	**
Day	13	68.42%		
Dusk	0	0.00%		
Night	6	**31.58%**	**27.13%**	
Dawn	0	0.00%		
Unknown	0	0.00%		
Total	**19**			

Note:
** These columns indicate the number of fatal crashes in each accident category.
Length of Segment
Number of Years
AADT

Crash Rate/MVM

2018 Statewide Crash Rate/MVM

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF SAFETY PROGRAMS
DETAIL OF MOTOR VEHICLE ACCIDENTS

ON ROUTE 623
MILEPOST 2.400 TO 2.500
01/01/2016 TO 12/31/2018

ROAD SYS DLN / Ramp	COLLISION TYPE	VEHICLE 1 DIR TRAV VEH TYPE, VEH ACTN	VEHICLE 2 DIR TRAV VEH TYPE, VEH ACTN	WEA SUR	LITE	DATE	DOW	TIME	VEH 1 CONTRIB CIRCUMSTANCES	VEH 2 CONTRIB CIRCUMSTANCES	NO. KIL	NO. MAJ	INJURED MOD MIN	NO. ACC

County-Municipality Restrictions: 1: 2:

◆ Indicates Crash Occurred on a Ramp

CRASH SUMMARY

Route CR 510 MP 14.13 to 14.60
Various communities, Morris County
01/01/2016 THRU 12/31/2018

TOTAL CRASHES: **61**

SEVERITY	COUNT	% OF TOTAL	2018 Average
Fatal	0	0.00%	
Injury - Maj	1	**1.64%**	**0.47%**
Injury - Mod	1	1.64%	
Injury - Min	12	19.67%	
Property Damage	47	77.05%	**75.44%**
Total	**61**		

COLLISION TYPE	COUNT	% OF TOTAL	2018 Average	**
Same Dir.-Rear End	42	**68.85%**	**31.48%**	
Same Dir.-Sideswipe	10	**16.39%**	**13.14%**	
Angle	1	1.64%		
Head On	0	0.00%		
Parked Vehicle	0	0.00%		
Left Turn / U Turn	5	**8.20%**	**4.03%**	
Backing	0	0.00%		
Encroachment	0	0.00%		
Overturned	1	**1.64%**	**0.46%**	
Fixed Object	0	0.00%		
Animal	2	3.28%		
Pedestrian	0	0.00%		
Pedalcycle	0	0.00%		
Non-Fixed Object	0	0.00%		
Unknown	0	0.00%		
Other	0	0.00%		
Total	**61**			

INTERSECTION	COUNT	% OF TOTAL	2018 Average	**
At Signalized Intersection	11	**18.03%**	**14.03%**	
At Unsignalized Intersection	0	0.00%		
Between Intersections	50	**81.97%**	**64.21%**	
Railroad Crossing	0	0.00%		
Total	**61**			

SURFACE CONDITION	COUNT	% OF TOTAL	2018 Average	**
Dry	48	**78.69%**	**75.58%**	
Wet Surface	10	16.39%		
Snow	3	**4.92%**	**2.83%**	
Ice	0	0.00%		
Unknown	0	0.00%		
Other	0	0.00%		
Total	**61**			

LIGHT	COUNT	% OF TOTAL	2018 Average	**
Day	43	**70.49%**	**69.99%**	
Dusk	4	**6.56%**	**2.83%**	
Night	13	21.31%		
Dawn	0	0.00%		
Unknown	1	**1.64%**	**0.59%**	
Total	**61**			

Note:
** These columns indicate the number of fatal crashes in each accident category.

Length of Segment ____________
Number of Years ____________
AADT ____________

Crash Rate/MVM ____________

2018 Statewide Crash Rate/MVM ____________

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF SAFETY PROGRAMS
DETAIL OF MOTOR VEHICLE ACCIDENTS

ON ROUTE 510
MILEPOST 14.130 TO 14.600 @ 14.23 14.13 - 14.33
01/01/2016 TO 12/31/2018

ROAD SYS	COLLISION	VEHICLE 1 DIR TRAV	VEHICLE 2 DIR TRAV	WEA					VEH 1 CONTRIB	VEH 2 CONTRIB	NO.	NO.	INJURED		NO.
DLN / Ramp	TYPE	VEH TYPE, VEH ACTN	VEH TYPE, VEH ACTN	SUR	LITE	DATE	DOW	TIME	CIRCUMSTANCES	CIRCUMSTANCES	KIL	MAJ	MOD	MIN	ACC
COUNTY ROAD	*CR 510*	*MP 014.19*	*NEAR CR 623 / PARK AVE*				*MORRIS TWP*			*MORRIS*	*0*	*0*	*0*	*0*	*1*
18177159	ANIMAL	E- PASS-GOING STRT	- -	CL/DR	DARK	05/21/18	MON	00:10	ANIMALS IN RDWY		0	0	0	0	
COUNTY ROAD	*CR 510*	*MP 014.21*	*NEAR CR 623 / PARK AVE*				*MORRIS TWP*			*MORRIS*	*0*	*0*	*0*	*0*	*1*
17155983	SAME DIR-REAR	W- PASS-GOING STRT	W- PASS-GOING STRT	CL/DR	DARK	05/02/17	TUE	20:16	DRI INATTENTION	NONE-DRIVER/CYC	0	0	0	0	
COUNTY ROAD	*CR 510*	*MP 014.22*	*NEAR CR 623 / PARK AVE*				*MORRIS TWP*			*MORRIS*	*0*	*0*	*0*	*0*	*2*
16201021	SAME DIR-REAR	W- PASS-GOING STRT	W- PASS-SLOW-STOP	CL/DR	DAY	06/02/16	THR	06:50	FOLLOW TO CLOSE	NONE-DRIVER/CYC	0	0	0	0	
16287219	SAME DIR-REAR	E- PASS-STOP-TRAF	E- SUV-START TRAF	CL/DR	DAY	10/25/16	TUE	17:24	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
COUNTY ROAD	*CR 510*	*MP 014.23*	*NEAR CR 623 / PARK AVE*				*HANOVER TWP*			*MORRIS*	*0*	*0*	*0*	*1*	*10*
16116170	SAME DIR-REAR	E- SUV-STOP-TRAF	E- PASS-SLOW-STOP	SN/SN	DAY	02/05/16	FRI	07:59	NONE-DRIVER/CYC	FOLLOW TO CLOSE	0	0	0	0	
16163542	SAME DIR-REAR	W- PASS-START TRAF	W- SUV-START TRAF	CL/DR	DAY	04/21/16	THR	08:38	FOLLOW TO CLOSE	NONE-DRIVER/CYC	0	0	0	1	
16267022	SAME DIR-REAR	W- PASS-START TRAF	W- SUV-STOP-TRAF	CL/DR	DAY	09/14/16	WED	11:28	DRI INATTENTION	NONE-DRIVER/CYC	0	0	0	0	
17158292	SAME DIR-REAR	W- PASS-STOP-TRAF	W- PKUP-STOP-TRAF	CL/DR	DAY	04/17/17	MON	09:39	NONE-DRIVER/CYC	OTH VEHICLE FAC	0	0	0	0	
17231390	SAME DIR-REAR	W- PASS-START TRAF	W- SUV-STOP-TRAF	CL/DR	DAY	08/21/17	MON	12:33	FOLLOW TO CLOSE	NONE-DRIVER/CYC	0	0	0	0	
17351381	SAME DIR-REAR	N- PASS-STOP-TRAF	N- SUV-SLOW-STOP	CL/DR	DAY	12/28/17	THR	15:55	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
18161242	SAME DIR-REAR	W- SUV-STOP-TRAF	W- SUV-START TRAF	CL/DR	DAY	05/01/18	TUE	13:49	NONE-DRIVER/CYC	OTH DIST OUT VH	0	0	0	0	
18260305	SAME DIR-SIDE	W- SUV-GOING STRT	W- PASS-CHNG LANES	CL/DR	DARK	10/22/18	MON	23:35	NONE-DRIVER/CYC	IMP LANE CHANGE	0	0	0	0	
18285540	LEFT/U TURN	W- PASS-LEFT TURN	E- PASS-GOING STRT	CL/DR	DUSK	11/29/18	THR	16:20	FAIL TO YLD ROW	NONE-DRIVER/CYC	0	0	0	0	
18288929	SAME DIR-REAR	W- PASS-STOP-TRAF	W- UNKN-GOING STRT	CL/DR	DUSK	12/03/18	MON	18:19	NONE-DRIVER/CYC	UNKNOWN	0	0	0	0	
COUNTY ROAD	*CR 510*	*MP 014.23*	*NEAR CR 623 / PARK AVE*				*MORRIS TWP*			*MORRIS*	*0*	*0*	*0*	*5*	*9*
17249709	SAME DIR-REAR	E- SUV-SLOW-STOP	E- PASS-SLOW-STOP	CL/DR	DAY	09/15/17	FRI	17:19	FOLLOW TO CLOSE	NONE-DRIVER/CYC	0	0	0	0	
17305137	SAME DIR-REAR	E- SUV-SLOW-STOP	E- SUV-STOP-TRAF	CL/DR	DARK	10/18/17	WED	19:12	DRI INATTENTION	NONE-DRIVER/CYC	0	0	0	1	
17315172	ANIMAL	E- PASS-GOING STRT	- -	CL/DR		10/25/17	WED	19:25	ANIMALS IN RDWY		0	0	0	0	
18153553	SAME DIR-REAR	E- PASS-STOP-TRAF	E- PASS-SLOW-STOP	RN/DR	DAY	04/12/18	THR	16:14	NONE-DRIVER/CYC	UNKNOWN	0	0	0	0	
18222258	SAME DIR-REAR	E- PASS-START TRAF	E- PASS-SLOW-STOP	RN/WT	DAY	08/02/18	THR	15:30	DRI INATTENTION	NONE-DRIVER/CYC	0	0	0	4	
18213329	SAME DIR-REAR	E- PASS-GOING STRT	E- PASS-STOP-TRAF	CL/DR	DAY	08/06/18	MON	16:01	DRI INATTENTION	NONE-DRIVER/CYC	0	0	0	0	
18244099	SAME DIR-REAR	N- SUV-STOP-TRAF	N- PASS-START TRAF	CL/DR	DAY	09/14/18	FRI	17:02	NONE-DRIVER/CYC	FOLLOW TO CLOSE	0	0	0	0	
18249453	SAME DIR-REAR	E- SUV-STOP-TRAF	E- PASS-GOING STRT	RN/WT	DAY	10/08/18	MON	07:59	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
18308171	SAME DIR-REAR	E- PASS-SLOW-STOP	E- SUV-STOP-TRAF	RN/WT	DUSK	12/20/18	THR	18:11	DRI INATTENTION	NONE-DRIVER/CYC	0	0	0	0	
COUNTY ROAD	*CR 510*	*MP 014.23*	*AT CR 623 / PARK AVE*				*HANOVER TWP*			*MORRIS*	*0*	*0*	*1*	*5*	*6*
16149584	~~LEFT/U TURN~~ RA	E- SUV-RT TRN-NRD	N ~~W-~~ PASS-LEFT TURN	CL/DR	DAY	03/16/16	WED	14:00	NONE-DRIVER/CYC	DISOBEYED TSIG	0	0	0	0	
16181557	~~OPP HEAD-ON~~ LT	W ~~S-~~ PASS-LEFT TURN	E- PASS-GOING STRT	CL/DR	DAY	05/12/16	THR	16:57	DISOBEYED TSIG	NONE-DRIVER/CYC	0	0	1	2	
16218349	SAME DIR-SIDE	W- PASS-LEFT TURN	W- PASS-LEFT TURN	CL/DR	DAY	07/06/16	WED	09:31	IMPROPER TURN	IMPROPER TURN	0	0	0	0	
16286084	~~OPP HEAD-ON~~ LT	W- PASS-GOING STRT	E- PASS-LEFT TURN	CL/DR	DARK	10/28/16	FRI	21:29	NONE-DRIVER/CYC	DISOBEYED TSIG	0	0	0	3	
18152834	ENCROACHMENT SDS	W- SUV-LEFT TURN	W- PASS-LEFT TURN	CL/DR	DAY	04/21/18	SAT	15:45	IMPROPER TURN	IMPROPER TURN	0	0	0	0	
18157257	ENCROACHMENT SDS	W-S3AXL-LEFT TURN	W- SUV-LEFT TURN	CL/DR	DAY	04/22/18	SUN	17:41	IMPROPER TURN	NONE-DRIVER/CYC	0	0	0	0	

County-Municipality Restrictions: 1: 2:

❖ Indicates Crash Occurred on a Ramp

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF SAFETY PROGRAMS
DETAIL OF MOTOR VEHICLE ACCIDENTS

ON ROUTE 510
MILEPOST 14.130 TO 14.600
01/01/2016 TO 12/31/2018

ROAD SYS DLN / Ramp	COLLISION TYPE	VEHICLE 1 DIR TRAV VEH TYPE, VEH ACTN	VEHICLE 2 DIR TRAV VEH TYPE, VEH ACTN	WEA SUR	LITE	DATE	DOW	TIME	VEH 1 CONTRIB CIRCUMSTANCES	VEH 2 CONTRIB CIRCUMSTANCES	NO. KIL	NO. MAJ	INJURED MOD	MIN	NO. ACC
COUNTY ROAD	*CR 510*	*MP 014.23*	*AT CR 623 / PARK AVE*				*MORRIS TWP*			*MORRIS*	*0*	*0*	*0*	*4*	*4*
16221327	~~OPP HEAD-ON~~ LT	E- PASS-LEFT TURN	W- SUV-GOING STRT	CL/DR	DARK	07/05/16	TUE	22:07	NONE-DRIVER/CYC	DISOBEYED TSIG	0	0	0	0	
17157533	~~RIGHT ANGLE~~ LT	W S- PASS-GOING STRT	E- SUV-GOING STRT	CL/DR	DARK	04/22/17	SAT	22:16	UNKNOWN	UNKNOWN	0	0	0	2	
18110950	SAME DIR-REAR	E- PKUP-CHNG LANES	E- SUV-STOP-TRAF	CL/DR	DARK	02/01/18	THR	20:48	RUTS/HOLES/BMPS	NONE-DRIVER/CYC	0	0	0	1	
18119924	SAME DIR-REAR	E- PASS-SLOW-STOP	E- PASS-STOP-TRAF	SN/SN	DARK	02/17/18	SAT	20:44	RD SURF CNDTION	NONE-DRIVER/CYC	0	0	0	1	
COUNTY ROAD	*CR 510*	*MP 014.24*	*NEAR CR 623 / PARK AVE*				*HANOVER TWP*			*MORRIS*	*0*	*0*	*0*	*2*	*4*
50' 16265384	SAME DIR-REAR	W- SUV-GOING STRT	W- PASS-START TRAF	CL/DR	DAY	09/21/16	WED	17:31	DRI INATTENTION	NONE-DRIVER/CYC	0	0	0	0	
75' 17106805	SAME DIR-REAR	W- SUV-GOING STRT	W- SUV-STOP-TRAF	SN/SN	DAY	01/31/17	TUE	10:40	DRI INATTENTION	NONE-DRIVER/CYC	0	0	0	1	
50' 17247100	SAME DIR-REAR	W- PASS-START TRAF	W- PASS-START TRAF	CL/DR	DAY	09/26/17	TUE	07:32	NONE-DRIVER/CYC	FOLLOW TO CLOSE	0	0	0	1	
50' 17259530	SAME DIR-REAR	W- PASS-STOP-TRAF	W- SUV-SLOW-STOP	RN/WT	DAY	10/09/17	MON	12:53	NONE-DRIVER/CYC	UNSAFE SPEED	0	0	0	0	
COUNTY ROAD	*CR 510*	*MP 014.25*	*NEAR CR 623 / PARK AVE*				*HANOVER TWP*			*MORRIS*	*0*	*0*	*0*	*0*	*4*
100' 16155649	SAME DIR-SIDE	E- PASS-STOP-TRAF	E-OTHPV-RT TRN-NRD	CL/WT	DAY	04/09/16	SAT	16:46	NONE-DRIVER/CYC	IMPROPER TURN	0	0	0	0	
100' 16185237	SAME DIR-SIDE	W- PASS-GOING STRT	W- UNKN-GOING STRT	RN/WT	DUSK	05/18/16	WED	16:52	UNKNOWN	UNKNOWN	0	0	0	0	
100' 17140972	SAME DIR-SIDE	W- PASS-LEFT TURN	W- SUV-GOING STRT	CL/DR	DAY	03/17/17	FRI	10:07	IMPROPER TURN	NONE-DRIVER/CYC	0	0	0	0	
00' 18168638	SAME DIR-REAR	W- PASS-STOP-TRAF	W- PASS-STOP-TRAF	CL/DR	DAY	05/23/18	WED	08:20	OTHER	OTHER	0	0	0	0	
COUNTY ROAD	*CR 510*	*MP 014.26*	*NEAR CR 623 / PARK AVE*				*HANOVER TWP*			*MORRIS*	*0*	*0*	*0*	*1*	*2*
50' 16199423	SAME DIR-REAR	E- SUV-GOING STRT	E- SUV-GOING STRT	CL/DR	DAY	06/06/16	MON	13:54	FOLLOW TO CLOSE	OTH DR/PED ACT	0	0	0	1	
50 18245195	SAME DIR-SIDE	W- PASS-CHNG LANES	W- PKUP-CHNG LANES	CL/DR	DAY	10/01/18	MON	08:29	IMP LANE CHANGE	IMP LANE CHANGE	0	0	0	0	
COUNTY ROAD	*CR 510*	*MP 014.27*	*NEAR CR 623 / PARK AVE*				*HANOVER TWP*			*MORRIS*	*0*	*0*	*0*	*1*	*2*
16244069	SAME DIR-REAR	W- SUV-GOING STRT	W- SUV-STOP-TRAF	CL/DR	DAY	08/05/16	FRI	08:30	DRI INATTENTION	NONE-DRIVER/CYC	0	0	0	0	
200 17167330	OVERTURNED ✓	E- PASS-GOING STRT	- -	CL/DR	DARK	05/11/17	THR	23:11	DRI INATTENTION		0	0	0	1	
COUNTY ROAD	*CR 510*	*MP 014.29*	*NEAR CR 623 / PARK AVE*				*HANOVER TWP*			*MORRIS*	*0*	*0*	*0*	*0*	*1*
300' 18219397	~~LEFT/U TURN~~ SDR	W- PASS-LEFT TURN	E- PASS-GOING STRT	CL/DR	DAY	08/15/18	WED	08:33	FAIL TO YLD ROW	NONE-DRIVER/CYC	0	0	0	0	
COUNTY ROAD	*CR 510*	*MP 014.31*	*NEAR CR 623 / PARK AVE*				*HANOVER TWP*			*MORRIS*	*0*	*0*	*0*	*0*	*1*
400. 16159049	SAME DIR-REAR	W- SUV-SLOW-STOP	W- PASS-SLOW-STOP	CL/DR	DAY	03/22/16	TUE	11:11	NONE-DRIVER/CYC	FOLLOW TO CLOSE	0	0	0	0	
COUNTY ROAD	*CR 510*	*MP 014.32*	*NEAR CR 623 / PARK AVE*				*HANOVER TWP*			*MORRIS*	*0*	*0*	*0*	*0*	*2*
500' 17144006	SAME DIR-REAR	W- SUV-STOP-TRAF	W- SUV-MERGING	CL/DR	DAY	04/07/17	FRI	07:25	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
500' 18250847	SAME DIR-SIDE	S- SUV-GOING STRT	S- SUV-GOING STRT	CL/DR	DAY	10/12/18	FRI	09:32	IMP LANE CHANGE	NONE-DRIVER/CYC	0	0	0	0	
COUNTY ROAD	*CR 510*	*MP 014.33*	*NEAR CR 623 / PARK AVE*				*HANOVER TWP*			*MORRIS*	*0*	*0*	*0*	*0*	*2*
17131817	SAME DIR-REAR	W- SUV-CHNG LANES	W- SUV-STOP-TRAF	CL/DR	DAY	03/23/17	THR	16:57	FOLLOW TO CLOSE	NONE-DRIVER/CYC	0	0	0	0	
17144013	SAME DIR-REAR	W- PASS-GOING STRT	W- PASS-CHNG LANES	CL/DR	DAY	04/11/17	TUE	16:27	NONE-DRIVER/CYC	IMP LANE CHANGE	0	0	0	0	
COUNTY ROAD	*CR 510*	*MP 014.38*	*NEAR CR 623 / PARK AVE*				*HANOVER TWP*			*MORRIS*	*0*	*0*	*0*	*0*	*1*
18181855	SAME DIR-REAR	W- SUV-GOING STRT	W- PASS-GOING STRT	CL/DR	DAY	06/14/18	THR	18:12	FOLLOW TO CLOSE	NONE-DRIVER/CYC	0	0	0	0	

← 14.13 – 14.33 →

County-Municipality Restrictions: 1: 2:

❖ Indicates Crash Occurred on a Ramp

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF SAFETY PROGRAMS
DETAIL OF MOTOR VEHICLE ACCIDENTS

ON ROUTE 510
MILEPOST 14.130 TO 14.600
01/01/2016 TO 12/31/2018

ROAD SYS	COLLISION	VEHICLE 1 DIR TRAV	VEHICLE 2 DIR TRAV	WEA					VEH 1 CONTRIB	VEH 2 CONTRIB	NO.	NO.	INJURED		NO.
DLN / Ramp	TYPE	VEH TYPE, VEH ACTN	VEH TYPE, VEH ACTN	SUR	LITE	DATE	DOW	TIME	CIRCUMSTANCES	CIRCUMSTANCES	KIL	MAJ	MOD	MIN	ACC
COUNTY ROAD	*CR 510*	*MP 014.41*	*NEAR CR 623 / PARK AVE*				*HANOVER TWP*			*MORRIS*	*0*	*0*	*0*	*0*	*1*
16102538	SAME DIR-REAR	W- PASS-SLOW-STOP	W- PASS-SLOW-STOP	CL/DR	DARK	01/06/16	WED	17:17	NONE-DRIVER/CYC	FOLLOW TO CLOSE	0	0	0	0	
COUNTY ROAD	*CR 510*	*MP 014.42*	*NEAR CR 623 / PARK AVE*				*HANOVER TWP*			*MORRIS*	*0*	*0*	*0*	*0*	*1*
17117745	SAME DIR-REAR	W- SUV-STOP-TRAF	W- SUV-SLOW-STOP	RN/WT	DARK	01/03/17	TUE	17:25	FOLLOW TO CLOSE	NONE-DRIVER/CYC	0	0	0	0	
COUNTY ROAD	*CR 510*	*MP 014.48*	*NEAR CR 623 / PARK AVE*				*HANOVER TWP*			*MORRIS*	*0*	*0*	*0*	*1*	*3*
16149582	SAME DIR-REAR	W- PASS-STOP-TRAF	W- PASS-STOP-TRAF	CL/DR	DAY	03/24/16	THR	17:19	NONE-DRIVER/CYC	NONE-DRIVER/CYC	0	0	0	1	
16200999	SAME DIR-REAR	W- PASS-START TRAF	W- PASS-STOP-TRAF	CL/DR	DAY	06/17/16	FRI	17:17	DRI INATTENTION	NONE-DRIVER/CYC	0	0	0	0	
16210848	SAME DIR-REAR	W- PASS-GOING STRT	W- SUV-MERGING	CL/DR	DAY	06/30/16	THR	17:31	NONE-DRIVER/CYC	FOLLOW TO CLOSE	0	0	0	0	
COUNTY ROAD	*CR 510*	*MP 014.55*	*NEAR NJ 24*				*HANOVER TWP*			*MORRIS*	*0*	*0*	*0*	*0*	*1*
18295103	SAME DIR-REAR	W- PASS-STOP-TRAF	W- PASS-SLOW-STOP	RN/WT	DARK	12/20/18	THR	17:21	NONE-DRIVER/CYC	FOLLOW TO CLOSE	0	0	0	0	
COUNTY ROAD	*CR 510*	*MP 014.58*	*NEAR NJ 24*				*HANOVER TWP*			*MORRIS*	*0*	*0*	*0*	*0*	*1*
18270408	SAME DIR-SIDE	E- PASS-CHNG LANES	E- PASS-GOING STRT	RN/WT	DAY	11/05/18	MON	13:24	IMP LANE CHANGE	NONE-DRIVER/CYC	0	0	0	0	
COUNTY ROAD	*CR 510*	*MP 014.59*	*NEAR AIRPORT RD*				*HANOVER TWP*			*MORRIS*	*0*	*1*	*0*	*0*	*1*
18295107	SAME DIR-REAR	W- PASS-GOING STRT	W- PASS-SLOW-STOP	OC/WT	DAY	12/21/18	FRI	15:35	FOLLOW TO CLOSE	NONE-DRIVER/CYC	0	1	0	0	
COUNTY ROAD	*CR 510*	*MP 014.60*	*AT NJ 24*				*HANOVER TWP*			*MORRIS*	*0*	*0*	*0*	*0*	*1*
16190031	SAME DIR-REAR	W- PASS-SLOW-STOP	W- PASS-GOING STRT	CL/DR	DAY	06/01/16	WED	17:19	NONE-DRIVER/CYC	FOLLOW TO CLOSE	0	0	0	0	

County-Municipality Restrictions: 1: 2:

❖ Indicates Crash Occurred on a Ramp

Crash Data

2011 - 2013

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF SAFETY PROGRAMS
DETAIL OF MOTOR VEHICLE ACCIDENTS

ON ROUTE 510
MILEPOST 14.230 TO 14.230
01/01/2011 TO 12/31/2013

ROAD SYS D L N	TYPE COLLISION	VEHICLE 1 DIR TRAV VEH TYPE, VEH ACTN	VEHICLE 2 DIR TRAV VEH TYPE, VEH ACTN	WEA SUR	LITE	DATE	DOW	TIME	VEH 1 CONTRIB CIRCUMSTANCES	VEH 2 CONTRIB CIRCUMSTANCES	NO. KIL	NO. MAJ	INJURED MOD	MIN	NO. ACC
COUNTY ROAD	*CR 510*	*MP 014.23*	*NEAR CR 623 / PARK AVE*				*HANOVER TWP*			*MORRIS*	*0*	*0*	*0*	*0*	*4*
12018529	SAME DIR-REAR	W- PASS-STOP-TRAF	W- PASS-START TRAF	CL/DR	DUSK	01/24/12	TUE	15:50	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
12026503	SAME DIR-REAR	W- PASS-STOP-TRAF	W- SUV-START TRAF	CL/DR	DAY	02/13/12	MON	09:39	NONE-DRIVER/CYC	DISOBEYED TCD	0	0	0	0	
12037848	SAME DIR-SIDE	W- SUV-STOP-TRAF	W-OTHPV-CHNG LANES	CL/DR	DUSK	02/27/12	MON	17:18	NONE-DRIVER/CYC	IMP LANE CHANGE	0	0	0	0	
12259579	SAME DIR-REAR	W- PASS-SLOW-STOP	W- SUV-SLOW-STOP	RN/WT	DAY	12/17/12	MON	09:04	DISOBEYED TCD	FOLLOW TO CLOSE	0	0	0	0	
COUNTY ROAD	*CR 510*	*MP 014.23*	*NEAR CR 623 / PARK AVE*				*MORRIS TWP*			*MORRIS*	*0*	*0*	*0*	*0*	*3*
12196119	SAME DIR-REAR	E- SUV-SLOW-STOP	E- SUV-START TRAF	CL/DR	DAY	09/14/12	FRI	09:15	DRI INATTENTION	NONE-DRIVER/CYC	0	0	0	0	
13032001	SAME DIR-REAR	E- PASS-START TRAF	E- PASS-STOP-TRAF	CL/DR	DAY	04/23/13	TUE	11:55	DRI INATTENTION	NONE-DRIVER/CYC	0	0	0	0	
13240139	SAME DIR-SIDE	E- PASS-CHNG LANES	E- PASS-NEG CURVE	CL/DR	DAY	09/28/13	SAT	17:13	IMP LANE CHANGE	NONE-DRIVER/CYC	0	0	0	0	
COUNTY ROAD	*CR 510*	*MP 014.23*	*AT CR 623 / PARK AVE*				*HANOVER TWP*			*MORRIS*	*0*	*0*	*0*	*1*	*5*
11036857	LEFT/U TURN	W- PASS-GOING STRT	E- PASS-LEFT TURN	CL/DR	DAY	03/04/11	FRI	08:36	NONE-DRIVER/CYC	FAIL TO YLD ROW	0	0	0	0	
12017283	RIGHT ANGLE	W- PKUP-GOING STRT	N- PASS-LEFT TURN	RN/WT	DAY	01/23/12	MON	15:22	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
12018540	SAME DIR-REAR	W- PASS-STOP-TRAF	W- SUV-START TRAF	OC/WT	DAY	01/26/12	THR	07:37	NONE-DRIVER/CYC	FOLLOW TO CLOSE	0	0	0	0	
12217656	SAME DIR-REAR	W- PASS-STOP-TRAF	W-S2AXL-STOP-TRAF	RN/WT	DAY	10/19/12	FRI	11:58	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	1	
13010377	RIGHT ANGLE	N- PASS-LEFT TURN	W- PASS-GOING STRT	CL/DR	DARK	02/07/13	THR	21:03	NONE-DRIVER/CYC	DISOBEYED TCD	0	0	0	0	
COUNTY ROAD	*CR 510*	*MP 014.23*	*AT CR 623 / PARK AVE*				*MORRIS TWP*			*MORRIS*	*0*	*0*	*0*	*2*	*4*
11014612	SAME DIR-REAR	E- PASS-RT TRN-NRD	E- SUV-RT TRN-NRD	CL/DR	DAY	01/24/11	MON	09:44	NONE-DRIVER/CYC	FOLLOW TO CLOSE	0	0	0	0	
12028533	SAME DIR-REAR	E-STRWT-RT TRN-NRD	E- PASS-RT TRN-NRD	CL/DR	DAY	01/31/12	TUE	09:45	DRI INATTENTION	NONE-DRIVER/CYC	0	0	0	0	
12202774	FIXED OBJECT	E- PASS-GOING STRT	- -	FG/WT	DARK	10/08/12	MON	01:20	DRI INATTENTION		0	0	0	1	
13156461	RIGHT ANGLE	S- SUV-GOING STRT	W- SUV-LEFT TURN	CL/DR	DARK	04/27/13	SAT	20:34	UNKNOWN	UNKNOWN	0	0	0	1	

County-Municipality Restrictions: 1: None 2: None

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF SAFETY PROGRAMS
DETAIL OF MOTOR VEHICLE ACCIDENTS

ON ROUTE 510
MILEPOST 14.130 TO 14.600
01/01/2011 TO 12/31/2013

ROAD SYS D L N	TYPE COLLISION	VEHICLE 1 DIR TRAV VEH TYPE, VEH ACTN	VEHICLE 2 DIR TRAV VEH TYPE, VEH ACTN	WEA SUR	LITE	DATE	DOW	TIME	VEH 1 CONTRIB CIRCUMSTANCES	VEH 2 CONTRIB CIRCUMSTANCES	NO. KIL	NO. MAJ	INJURED MOD	MIN	NO. ACC
COUNTY ROAD	*CR 510*	*MP 014.18*	*NEAR CR 623 / PARK AVE*				*MORRIS TWP*			*MORRIS*	*0*	*0*	*0*	*0*	*1*
13281283	ANIMAL	W- SUV-GOING STRT	- -	CL/DR	DARK	11/22/13	FRI	22:45	ANIMALS IN RDWY		0	0	0	0	
COUNTY ROAD	*CR 510*	*MP 014.21*	*NEAR CR 623 / PARK AVE*				*MORRIS TWP*			*MORRIS*	*0*	*0*	*0*	*0*	*1*
11000789	SAME DIR-REAR	E- PASS-SLOW-STOP	E- PASS-STOP-TRAF	CL/DR	DARK	01/03/11	MON	18:06	DRI INATTENTION	NONE-DRIVER/CYC	0	0	0	0	
COUNTY ROAD	*CR 510*	*MP 014.22*	*NEAR CR 623 / PARK AVE*				*MORRIS TWP*			*MORRIS*	*0*	*0*	*0*	*0*	*1*
12103936	SAME DIR-REAR	W- PASS-SLOW-STOP	W- PASS-GOING STRT	CL/DR	DAY	06/01/12	FRI	14:04	DRI INATTENTION	NONE-DRIVER/CYC	0	0	0	0	
COUNTY ROAD	*CR 510*	*MP 014.23*	*NEAR CR 623 / PARK AVE*				*HANOVER TWP*			*MORRIS*	*0*	*0*	*0*	*0*	*4*
12018529	SAME DIR-REAR	W- PASS-STOP-TRAF	W- PASS-START TRAF	CL/DR	DUSK	01/24/12	TUE	15:50	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
12026503	SAME DIR-REAR	W- PASS-STOP-TRAF	W- SUV-START TRAF	CL/DR	DAY	02/13/12	MON	09:39	NONE-DRIVER/CYC	DISOBEYED TCD	0	0	0	0	
12037848	SAME DIR-SIDE	W- SUV-STOP-TRAF	W-OTHPV-CHNG LANES	CL/DR	DUSK	02/27/12	MON	17:18	NONE-DRIVER/CYC	IMP LANE CHANGE	0	0	0	0	
12259579	SAME DIR-REAR	W- PASS-SLOW-STOP	W- SUV-SLOW-STOP	RN/WT	DAY	12/17/12	MON	09:04	DISOBEYED TCD	FOLLOW TO CLOSE	0	0	0	0	
COUNTY ROAD	*CR 510*	*MP 014.23*	*NEAR CR 623 / PARK AVE*				*MORRIS TWP*			*MORRIS*	*0*	*0*	*0*	*0*	*3*
12196119	SAME DIR-REAR	E- SUV-SLOW-STOP	E- SUV-START TRAF	CL/DR	DAY	09/14/12	FRI	09:15	DRI INATTENTION	NONE-DRIVER/CYC	0	0	0	0	
13032001	SAME DIR-REAR	E- PASS-START TRAF	E- PASS-STOP-TRAF	CL/DR	DAY	04/23/13	TUE	11:55	DRI INATTENTION	NONE-DRIVER/CYC	0	0	0	0	
13240139	SAME DIR-SIDE	E- PASS-CHNG LANES	E- PASS-NEG CURVE	CL/DR	DAY	09/28/13	SAT	17:13	IMP LANE CHANGE	NONE-DRIVER/CYC	0	0	0	0	
COUNTY ROAD	*CR 510*	*MP 014.23*	*AT CR 623 / PARK AVE*				*HANOVER TWP*			*MORRIS*	*0*	*0*	*0*	*1*	*5*
11036857	LEFT/U TURN	W- PASS-GOING STRT	E- PASS-LEFT TURN	CL/DR	DAY	03/04/11	FRI	08:36	NONE-DRIVER/CYC	FAIL TO YLD ROW	0	0	0	0	
12017283	RIGHT ANGLE	W- PKUP-GOING STRT	N- PASS-LEFT TURN	RN/WT	DAY	01/23/12	MON	15:22	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
12018540	SAME DIR-REAR	W- PASS-STOP-TRAF	W- SUV-START TRAF	OC/WT	DAY	01/26/12	THR	07:37	NONE-DRIVER/CYC	FOLLOW TO CLOSE	0	0	0	0	
12217656	SAME DIR-REAR	W- PASS-STOP-TRAF	W-S2AXL-STOP-TRAF	RN/WT	DAY	10/19/12	FRI	11:58	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	1	
13010377	RIGHT ANGLE	N- PASS-LEFT TURN	W- PASS-GOING STRT	CL/DR	DARK	02/07/13	THR	21:03	NONE-DRIVER/CYC	DISOBEYED TCD	0	0	0	0	
COUNTY ROAD	*CR 510*	*MP 014.23*	*AT CR 623 / PARK AVE*				*MORRIS TWP*			*MORRIS*	*0*	*0*	*0*	*2*	*4*
11014612	SAME DIR-REAR	E- PASS-RT TRN-NRD	E- SUV-RT TRN-NRD	CL/DR	DAY	01/24/11	MON	09:44	NONE-DRIVER/CYC	FOLLOW TO CLOSE	0	0	0	0	
12028533	SAME DIR-REAR	E-STRWT-RT TRN-NRD	E- PASS-RT TRN-NRD	CL/DR	DAY	01/31/12	TUE	09:45	DRI INATTENTION	NONE-DRIVER/CYC	0	0	0	0	
12202774	FIXED OBJECT	E- PASS-GOING STRT	- -	FG/WT	DARK	10/08/12	MON	01:20	DRI INATTENTION		0	0	0	1	
13156461	RIGHT ANGLE	S- SUV-GOING STRT	W- SUV-LEFT TURN	CL/DR	DARK	04/27/13	SAT	20:34	UNKNOWN	UNKNOWN	0	0	0	1	
COUNTY ROAD	*CR 510*	*MP 014.24*	*NEAR CR 623 / PARK AVE*				*HANOVER TWP*			*MORRIS*	*0*	*0*	*1*	*0*	*10*
11024213	RIGHT ANGLE	E- SUV-GOING STRT	S- PASS-LEFT TURN	CL/DR	DARK	01/31/11	MON	17:58	NONE-DRIVER/CYC	FAIL TO YLD ROW	0	0	0	0	
11132321	SAME DIR-SIDE	W- PASS-GOING STRT	W- SUV-CHNG LANES	CL/DR	DAY	06/20/11	MON	13:52	NONE-DRIVER/CYC	IMP LANE CHANGE	0	0	0	0	
12043306	SAME DIR-SIDE	W- PASS-GOING STRT	W- SUV-CHNG LANES	CL/DR	DAY	02/28/12	TUE	12:38	NONE-DRIVER/CYC	IMP LANE CHANGE	0	0	0	0	
12136343	SAME DIR-REAR	W- PASS-STOP-TRAF	W- PASS-START TRAF	CL/DR	DAY	07/07/12	SAT	10:05	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
12155925	SAME DIR-REAR	W- SUV-STOP-TRAF	W- PASS-STOP-TRAF	CL/DR	DAY	07/30/12	MON	10:10	DRI INATTENTION	NONE-DRIVER/CYC	0	0	0	0	
12240418	SAME DIR-SIDE	W- SUV-GOING STRT	W- PASS-GOING STRT	CL/DR	DAY	11/19/12	MON	12:30	NONE-DRIVER/CYC	IMP LANE CHANGE	0	0	0	0	
12258021	OPP SIDESWIPE	E- PASS-GOING STRT	E- PASS-GOING STRT	OC/WT	DAY	12/08/12	SAT	11:12	NONE-DRIVER/CYC	NONE-DRIVER/CYC	0	0	1	0	

County-Municipality Restrictions: 1: None 2: None

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF SAFETY PROGRAMS
DETAIL OF MOTOR VEHICLE ACCIDENTS

ON ROUTE 510
MILEPOST 14.130 TO 14.600
01/01/2011 TO 12/31/2013

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               TYPE
ROAD SYS      COLLISION    VEHICLE 1 DIR TRAV   VEHICLE 2 DIR TRAV   WEA                           VEH 1 CONTRIB      VEH 2 CONTRIB       NO.  NO. INJURED  NO.
D L N                      VEH TYPE, VEH ACTN   VEH TYPE, VEH ACTN   SUR   LITE   DATE     DOW  TIME  CIRCUMSTANCES      CIRCUMSTANCES       KIL  MAJ MOD MIN  ACC

COUNTY ROAD   CR 510       MP 014.24            NEAR CR 623 / PARK AVE                    HANOVER TWP                 MORRIS               0    0   1   0   10
13004976   SAME DIR-REAR   W- PASS-STOP-TRAF    W-  SUV-START TRAF   CL/DR DAY  01/18/13  FRI 09:36  NONE-DRIVER/CYC  FOLLOW TO CLOSE      0    0   0   0
13026066   SAME DIR-REAR   W- PASS-STOP-TRAF    W-  SUV-GOING STRT   RN/WT DAY  03/25/13  MON 17:14  NONE-DRIVER/CYC  FOLLOW TO CLOSE      0    0   0   0
13201912   SAME DIR-REAR   W-  SUV-STOP-TRAF    W-  SUV-CHNG LANES   CL/DR DAY  06/28/13  FRI 07:11  NONE-DRIVER/CYC  IMP LANE CHANGE      0    0   0   0

COUNTY ROAD   CR 510       MP 014.25            NEAR CR 623 / PARK AVE                    HANOVER TWP                 MORRIS               0    0   0   0    3
12001351   SAME DIR-SIDE   W- PASS-GOING STRT   W- PASS-CHNG LANES   CL/DR DUSK 01/07/12  SAT 16:46  NONE-DRIVER/CYC  IMP LANE CHANGE      0    0   0   0
13004988   SAME DIR-REAR   W- PASS-STOP-TRAF    W- PASS-CHNG LANES   SN/SN DARK 01/25/13  FRI 18:23  NONE-DRIVER/CYC  DRI INATTENTION      0    0   0   0
13216470   SAME DIR-REAR   W- PASS-STOP-TRAF    W- PASS-START TRAF   CL/DR DAY  07/29/13  MON 09:28  NONE-DRIVER/CYC  FOLLOW TO CLOSE      0    0   0   0

COUNTY ROAD   CR 510       MP 014.26            NEAR CR 623 / PARK AVE                    HANOVER TWP                 MORRIS               0    0   0   1    2
11014425   SAME DIR-REAR   W- PASS-STOP-TRAF    W- PASS-START TRAF   CL/DR DAY  01/10/11  MON 11:31  NONE-DRIVER/CYC  DRI INATTENTION      0    0   0   1
12065216   SAME DIR-REAR   W- PASS-STOP-TRAF    W- PASS-START TRAF   CL/DR DAY  04/13/12  FRI 13:24  NONE-DRIVER/CYC  FOLLOW TO CLOSE      0    0   0   0

COUNTY ROAD   CR 510       MP 014.29            NEAR CR 623 / PARK AVE                    HANOVER TWP                 MORRIS               0    0   0   1    5
11255016   SAME DIR-REAR   W- PASS-STOP-TRAF    W- PASS-CHNG LANES   CL/DR DARK 11/17/11  THR 18:54  NONE-DRIVER/CYC  IMP LANE CHANGE      0    0   0   0
12171821   SAME DIR-SIDE   W- PKUP-GOING STRT   W- PASS-MERGING      CL/DR DAY  08/24/12  FRI 10:43  NONE-DRIVER/CYC  IMP LANE CHANGE      0    0   0   0
12193067   SAME DIR-SIDE   E- PASS-GOING STRT   E-  SUV-CHNG LANES   CL/DR DAY  09/12/12  WED 08:11  NONE-DRIVER/CYC  IMP LANE CHANGE      0    0   0   0
12208730   SAME DIR-SIDE   W- PASS-GOING STRT   W-TRPLE-CHNG LANES   OC/DR DAY  10/08/12  MON 09:31  NONE-DRIVER/CYC  FAIL TO YLD ROW      0    0   0   0
13201895   SAME DIR-REAR   W- PASS-GOING STRT   W-  SUV-STOP-TRAF    CL/DR DAY  06/25/13  TUE 07:50  DRI INATTENTION  NONE-DRIVER/CYC      0    0   0   1

COUNTY ROAD   CR 510       MP 014.30            NEAR CR 623 / PARK AVE                    HANOVER TWP                 MORRIS               0    0   0   1    1
13165276   SAME DIR-REAR   W-  SUV-SLOW-STOP    W- PASS-SLOW-STOP    CL/DR DAY  05/15/13  WED 08:55  NONE-DRIVER/CYC  FOLLOW TO CLOSE      0    0   0   1

COUNTY ROAD   CR 510       MP 014.31            NEAR CR 623 / PARK AVE                    HANOVER TWP                 MORRIS               0    0   0   2    1
12118204   SAME DIR-REAR   E- PASS-SLOW-STOP    E- PKUP-GOING STRT   CL/DR DAY  06/13/12  WED 13:25  NONE-DRIVER/CYC  DRI INATTENTION      0    0   0   2

COUNTY ROAD   CR 510       MP 014.32            NEAR CR 623 / PARK AVE                    HANOVER TWP                 MORRIS               0    0   0   2    3
12217657   SAME DIR-REAR   W-  SUV-GOING STRT   W-  SUV-STOP-TRAF    CL/DR DAY  10/17/12  WED 17:27  DRI INATTENTION  NONE-DRIVER/CYC      0    0   0   1
12228340   SAME DIR-REAR   W-  SUV-STOP-TRAF    W- PASS-SLOW-STOP    CL/DR DAY  10/22/12  MON 17:07  NONE-DRIVER/CYC  DRI INATTENTION      0    0   0   0
12271807   RIGHT ANGLE     W- PASS-GOING STRT   S- UNKN-LEFT TURN    CL/DR DAY  12/20/12  THR 14:19  NONE-DRIVER/CYC  IMPROPER TURN        0    0   0   1

COUNTY ROAD   CR 510       MP 014.33            NEAR CR 623 / PARK AVE                    HANOVER TWP                 MORRIS               0    0   0   0    5
11001495   SAME DIR-REAR   U- PASS-STOP-TRAF    W- PASS-STOP-TRAF    CL/DR DAY  01/05/11  WED 13:41  NONE-DRIVER/CYC  FOLLOW TO CLOSE      0    0   0   0
11083493   SAME DIR-SIDE   W- PASS-GOING STRT   W- PASS-CHNG LANES   CL/DR DAY  04/26/11  TUE 11:35  NONE-DRIVER/CYC  IMP LANE CHANGE      0    0   0   0
11132325   SAME DIR-REAR   W- PASS-MERGING      W-  SUV-GOING STRT   OC/DR DARK 06/23/11  THR 23:05  NONE-DRIVER/CYC  DRI INATTENTION      0    0   0   0
11183420   SAME DIR-REAR   W- PASS-MERGING      W-  SUV-GOING STRT   CL/DR DAY  08/24/11  WED 18:11  NONE-DRIVER/CYC  FOLLOW TO CLOSE      0    0   0   0
13009506   SAME DIR-REAR   E- PASS-SLOW-STOP    E- PASS-SLOW-STOP    OC/WT DAY  01/30/13  WED 16:11  NONE-DRIVER/CYC  NONE-DRIVER/CYC      0    0   0   0

COUNTY ROAD   CR 510       MP 014.42            NEAR CR 623 / PARK AVE                    HANOVER TWP                 MORRIS               0    0   0   0    2
12193068   SAME DIR-REAR   E- PASS-SLOW-STOP    E- PASS-SLOW-STOP    CL/DR DAY  09/12/12  WED 08:31  DRI INATTENTION  FOLLOW TO CLOSE      0    0   0   0
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County-Municipality Restrictions: 1: None 2: None

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF SAFETY PROGRAMS
DETAIL OF MOTOR VEHICLE ACCIDENTS

ON ROUTE 510
MILEPOST 14.130 TO 14.600
01/01/2011 TO 12/31/2013

ROAD SYS D L N	TYPE COLLISION	VEHICLE 1 DIR TRAV VEH TYPE, VEH ACTN	VEHICLE 2 DIR TRAV VEH TYPE, VEH ACTN	WEA SUR	LITE	DATE	DOW	TIME	VEH 1 CONTRIB CIRCUMSTANCES	VEH 2 CONTRIB CIRCUMSTANCES	NO. KIL	NO. MAJ	INJURED MOD	MIN	NO. ACC
COUNTY ROAD	*CR 510*	*MP 014.42*	*NEAR CR 623 / PARK AVE*				*HANOVER TWP*			*MORRIS*	*0*	*0*	*0*	*0*	*2*
13150654	SAME DIR-REAR	W- PASS-STOP-TRAF	W- PASS-GOING STRT	CL/DR	DAY	04/26/13	FRI	16:57	NONE-DRIVER/CYC	FOLLOW TO CLOSE	0	0	0	0	
COUNTY ROAD	*CR 510*	*MP 014.43*	*NEAR CR 623 / PARK AVE*				*HANOVER TWP*			*MORRIS*	*0*	*0*	*0*	*1*	*2*
12056177	SAME DIR-REAR	W- SUV-SLOW-STOP	W- PASS-SLOW-STOP	CL/DR	DAY	03/21/12	WED	17:58	NONE-DRIVER/CYC	FOLLOW TO CLOSE	0	0	0	1	
13207531	SAME DIR-SIDE	W- SUV-GOING STRT	W- PASS-CHNG LANES	CL/DR	DAY	07/18/13	THR	07:22	NONE-DRIVER/CYC	IMP LANE CHANGE	0	0	0	0	
COUNTY ROAD	*CR 510*	*MP 014.48*	*NEAR CR 623 / PARK AVE*				*HANOVER TWP*			*MORRIS*	*0*	*0*	*0*	*0*	*1*
13157937	SAME DIR-REAR	W- SUV-SLOW-STOP	W- PASS-CHNG LANES	CL/DR	DAY	04/30/13	TUE	17:26	NONE-DRIVER/CYC	IMP LANE CHANGE	0	0	0	0	
COUNTY ROAD	*CR 510*	*MP 014.60*	*AT NJ 24*				*HANOVER TWP*			*MORRIS*	*0*	*0*	*1*	*1*	*1*
13165268	FIXED OBJECT	E- PASS-GOING STRT	E- PASS-GOING STRT	RN/WT	DAY	05/23/13	THR	09:24	NONE-DRIVER/CYC	UNSAFE SPEED	0	0	1	1	

Appendix “G”

Traffic Counts and Traffic Data

Figure 1 - Intersection Turning Movement Traffic Volumes
Columbia Turnpike (CR 510) and Park Avenue (CR 623)
Morris and Hanover Townships, Morris County, NJ
Counts conducted Thursday, October 17, 2019

	CR 510 EASTBOUND				CR 510 WESTBOUND				CR 623 NORTHBOUND				CR 623 SOUTHBOUND			
	LEFT	THRU	RIGHT	PEDS	LEFT	THRU	RIGHT	PEDS	LEFT	THRU	RIGHT	PEDS	LEFT	THRU	RIGHT	PEDS
7:00 AM to 7:15 AM	0	156	27	0	89	72	10	0	11	27	75	0	39	94	7	0
7:15 AM to 7:30 AM	4	221	61	0	302	99	27	0	12	56	77	0	78	122	5	0
7:30 AM to 7:45 AM	4	215	66	0	378	128	43	0	30	73	138	0	110	196	12	0
7:45 AM to 8:00 AM	5	228	45	0	429	162	45	0	43	97	136	0	102	176	7	0
8:00 AM to 8:15 AM	5	177	68	0	392	132	24	0	34	79	142	0	66	203	6	0
8:15 AM to 8:30 AM	0	197	102	0	324	136	31	0	12	72	123	0	75	202	6	0
8:30 AM to 8:45 AM	6	174	56	0	300	112	20	0	26	73	128	0	71	179	8	0
8:45 AM to 9:00 AM	3	175	102	0	347	166	28	0	21	92	120	0	47	165	8	0
	27	**1543**	**527**	**0**	**2561**	**1008**	**226**	**0**	**189**	**569**	**939**	**0**	**588**	**1337**	**59**	**0**
7:30 AM to 8:30 AM	**14**	**817**	**281**	**0**	**1523.93**	**559.226**	**142.296**	**0**	**119**	**321**	**539**	**0**	**353**	**777**	**31**	**0**
PHF	0.70	0.90	0.69		0.89	0.86	0.80		0.69	0.83	0.95		0.80	0.96	0.65	
HV VOLUME	0	13	2		0	0	0		1	11	15		7	19	9	
%HV	0.0%	1.6%	0.7%		0.0%	0.0%	0.0%		0.8%	3.4%	2.8%		2.0%	2.4%	29.0%	
Peak hour Total	**14**	**817**	**281**		**1524**	**559**	**142**		**119**	**321**	**539**		**353**	**777**	**31**	
4:00 PM to 4:15 PM	5	224	29	0	168	243	78	0	45	249	255	0	83	53	4	0
4:15 PM to 4:30 PM	8	291	21	0	147	217	119	0	39	238	312	0	80	71	6	0
4:30 PM to 4:45 PM	4	279	18	0	228	279	173	0	55	249	260	0	95	60	7	0
4:45 PM to 5:00 PM	6	218	18	0	194	284	143	0	15	258	243	0	94	65	7	0
5:00 PM to 5:15 PM	6	224	9	0	175	270	145	0	51	214	339	0	106	95	5	0
5:15 PM to 5:30 PM	2	214	30	0	261	391	191	0	50	235	343	0	124	95	7	0
5:30 PM to 5:45 PM	11	258	23	0	207	253	120	0	28	194	276	0	121	112	10	0
5:45 PM to 6:00 PM	16	181	29	0	168	227	102	0	40	249	242	0	74	77	5	0
	58	**1889**	**177**	**0**	**1547**	**2164**	**1072**	**0**	**323**	**1886**	**2270**	**0**	**777**	**628**	**51**	**0**
5:00 PM to 6:00 PM	**35**	**877**	**91**	**0**	**810.586**	**1140.49**	**558.027**	**0**	**169**	**892**	**1200**	**0**	**425**	**379**	**27**	**0**
PHF	0.55	0.85	0.76		0.78	0.73	0.73		0.83	0.90	0.87		0.86	0.85	0.68	
HV VOLUME	1	5	0		0	0	0		1	6	6		2	3	0	
%HV	2.9%	0.6%	0.0%		0.0%	0.0%	0.0%		0.6%	0.7%	0.5%		0.5%	0.8%	0.0%	

Figure 1 - Intersection Turning Movement Traffic Volumes
Columbia Turnpike (CR 510) and Park Avenue (CR 623)
Morris and Hanover Townships, Morris County, NJ
Counts conducted Wednesday, April 27, 2016

			CR 510 EASTBOUND				CR 510 WESTBOUND				CR 623 NORTHBOUND				CR 623 SOUTHBOUND			
			LEFT	THRU	RIGHT	PEDS	LEFT	THRU	RIGHT	PEDS	LEFT	THRU	RIGHT	PEDS	LEFT	THRU	RIGHT	PEDS
7:00 AM	to	7:15 AM	11	130	26	1	94	72	7	0	21	48	71	0	37	147	19	0
7:15 AM	to	7:30 AM	8	186	54	0	319	99	19	0	15	47	72	0	93	150	8	0
7:30 AM	to	7:45 AM	11	165	58	0	400	129	31	0	14	60	89	0	102	211	2	0
7:45 AM	to	8:00 AM	14	186	94	0	454	163	32	0	16	92	107	0	93	160	8	0
8:00 AM	to	8:15 AM	12	184	96	2	415	133	17	0	20	59	81	0	94	194	15	0
8:15 AM	to	8:30 AM	6	163	101	0	343	137	22	0	18	91	101	0	72	167	10	0
8:30 AM	to	8:45 AM	15	154	116	0	317	113	14	0	31	82	105	0	44	166	2	0
8:45 AM	to	9:00 AM	8	124	80	1	367	167	20	0	22	84	103	0	42	205	8	0
			85	***1292***	***625***	***4***	***2709***	***1013***	***162***	***0***	***157***	***563***	***729***	***0***	***577***	***1400***	***72***	***0***
7:30 AM	***to***	***8:30 AM***	***43***	***698***	***349***	***2***	***1612***	***562***	***102***	***0***	***68***	***302***	***378***	***0***	***361***	***732***	***35***	***0***
	PHF		*0.77*	*0.94*	*0.86*		*0.89*	*0.86*	*0.80*		*0.85*	*0.82*	*0.88*		*0.88*	*0.87*	*0.58*	
	HV VOLUME		*1*	*6*	*1*		*25*	*20*	*6*		*5*	*8*	*13*		*3*	*6*	*5*	
	%HV		*2.3%*	*0.9%*	*0.3%*		*1.6%*	*3.6%*	*5.9%*		*7.4%*	*2.6%*	*3.4%*		*0.8%*	*0.8%*	*14.3%*	
4:00 PM	to	4:15 PM	6	141	18	0	95	183	85	0	57	159	241	0	43	44	9	0
4:15 PM	to	4:30 PM	6	144	21	0	83	163	130	0	46	158	218	0	55	66	15	0
4:30 PM	to	4:45 PM	6	175	32	0	129	210	189	0	38	142	138	0	72	54	8	0
4:45 PM	to	5:00 PM	16	201	13	0	110	214	156	0	40	148	159	0	74	78	9	0
5:00 PM	to	5:15 PM	9	222	24	0	99	203	158	0	40	186	173	0	67	65	13	0
5:15 PM	to	5:30 PM	11	261	15	0	148	294	208	0	28	148	178	0	117	104	20	0
5:30 PM	to	5:45 PM	9	235	12	0	117	190	131	0	38	179	186	0	80	92	20	0
5:45 PM	to	6:00 PM	19	246	16	1	95	171	111	0	36	189	177	0	89	95	20	1
			82	***1625***	***151***	***1***	***876***	***1628***	***1168***	***0***	***323***	***1309***	***1470***	***0***	***597***	***598***	***114***	***1***
5:00 PM	***to***	***6:00 PM***	***48***	***964***	***67***	***1***	***459***	***858***	***608***	***0***	***142***	***702***	***714***	***0***	***353***	***356***	***73***	***1***
	PHF		*0.63*	*0.92*	*0.70*		*0.78*	*0.73*	*0.73*		*0.89*	*0.93*	*0.96*		*0.75*	*0.86*	*0.91*	
	HV VOLUME		*1*	*16*	*1*		*4*	*14*	*8*		*1*	*1*	*3*		*3*	*3*	*0*	
	%HV		*2.1%*	*1.7%*	*1.5%*		*0.9%*	*1.6%*	*1.3%*		*0.7%*	*0.1%*	*0.4%*		*0.8%*	*0.8%*	*0.0%*	

ATR count summary

CR 510 EASTBOUND APPROACHING PARK AVENUE

AUTOMATED TRAFFIC RECORDER (ATR) COUNTS PERFORMED THURSDAY, JUNE 11, 2015 THROUGH WEDNESDAY, JUNE 17, 2015

IH ENGINEERS, P.C.

EASTBOUND TRAFFIC VOLUMES (APPROACHING THE INTERSECTION)

	CLASS	1 BIKES	2 CARS & TRAILERS	3 2 AXLE LONG	4 BUSES	5 2 AXLE 6 TIRE	6 3 AXLE SINGLE	7 4 AXLE SINGLE	8 <5 AXLE DOUBLE	9 5 AXLE DOUBLE	10 6+ AXLE DOUBLE	11 <6 AXLE MULTI	12 6 AXLE MULTI	13 6+ AXLE MULTI	14 UNCLASS-IFIED	*TOTAL*
4/28/2016	12:00 AM	6	21	0	0	0	0	0	0	0	0	0	0	0	0	*27*
THURSDAY	1:00 AM	1	7	0	0	0	0	0	0	0	0	0	0	0	0	*8*
	2:00 AM	0	8	0	0	0	0	0	0	0	0	0	0	0	0	*8*
	3:00 AM	1	10	0	0	0	0	0	0	0	0	0	0	0	0	*11*
	4:00 AM	2	16	0	0	0	0	0	0	0	0	0	0	0	0	*18*
	5:00 AM	17	60	0	0	0	0	0	0	0	0	0	0	0	0	*77*
	6:00 AM	40	232	4	1	1	5	1	0	0	0	0	0	0	7	*291*
	7:00 AM	43	711	16	1	6	8	1	1	0	4	0	0	1	39	*831*
	8:00 AM	50	836	11	2	1	9	1	0	3	4	0	0	2	47	*966*
	9:00 AM	37	540	10	1	6	5	1	0	0	0	0	0	0	20	*620*
	10:00 AM	29	396	8	0	4	4	1	0	1	0	0	0	1	8	*452*
	11:00 AM	20	390	10	0	6	4	0	1	0	1	0	1	0	9	*442*
	12:00 PM	46	418	6	1	1	2	2	0	2	1	0	1	0	12	*492*
	1:00 PM	27	389	7	0	4	6	0	0	0	1	0	0	0	12	*446*
	2:00 PM	29	431	10	0	6	8	0	0	0	0	0	0	0	9	*493*
	3:00 PM	51	530	12	0	6	2	1	0	0	0	0	0	1	15	*618*
	4:00 PM	62	627	13	2	5	6	0	0	2	2	0	1	0	46	*766*
	5:00 PM	58	763	12	1	1	7	1	1	2	2	0	1	0	42	*891*
	6:00 PM	33	483	5	1	1	7	0	0	0	1	0	0	0	9	*540*
	7:00 PM	43	328	1	0	0	3	1	0	0	0	0	0	0	0	*376*
	8:00 PM	36	198	1	0	0	1	1	0	1	0	0	0	0	0	*238*
	9:00 PM	23	137	0	0	0	0	0	0	0	1	0	0	0	0	*161*
	10:00 PM	12	97	1	0	0	0	0	0	0	0	0	0	0	0	*110*
	11:00 PM	30	94	0	0	0	0	0	0	0	0	0	0	0	1	*125*
4/29/2016	12:00 AM	9	31	0	0	0	0	0	0	1	0	0	0	0	0	*41*
FRIDAY	1:00 AM	7	16	0	0	0	0	0	0	0	0	0	0	0	0	*23*
	2:00 AM	3	7	0	0	0	0	0	0	0	0	0	0	0	0	*10*
	3:00 AM	4	4	0	0	0	0	0	1	1	0	0	0	0	0	*10*
	4:00 AM	4	14	0	0	0	0	0	0	0	0	0	0	0	0	*18*
	5:00 AM	21	56	0	0	0	2	0	0	0	0	0	0	0	0	*79*
	6:00 AM	42	204	5	1	0	3	0	0	0	1	0	0	0	4	*260*
	7:00 AM	61	576	13	0	2	9	0	0	1	0	0	0	3	19	*684*
	8:00 AM	51	773	8	1	9	14	1	1	2	2	0	0	0	26	*888*
	9:00 AM	47	493	3	0	3	5	0	0	2	1	0	0	0	13	*567*
	10:00 AM	26	395	6	0	4	3	0	1	2	2	0	0	0	11	*450*
	11:00 AM	30	394	6	0	4	5	0	0	2	1	0	1	0	6	*449*
	12:00 PM	41	415	6	0	3	5	1	0	0	0	0	0	0	7	*478*
	1:00 PM	33	430	6	0	2	3	0	0	2	1	0	0	0	8	*485*
	2:00 PM	38	377	7	0	1	2	2	1	1	2	0	0	0	5	*436*
	3:00 PM	52	477	7	1	2	5	1	0	0	0	0	1	0	16	*562*
	4:00 PM	50	615	9	1	4	7	0	1	2	1	0	0	0	19	*709*
	5:00 PM	39	746	8	2	0	4	0	0	2	0	0	1	0	21	*823*
	6:00 PM	37	398	0	0	2	4	0	0	1	1	0	0	0	8	*451*
	7:00 PM	32	247	0	0	0	5	0	0	0	1	0	0	0	10	*295*
	8:00 PM	27	163	0	0	0	1	0	0	0	1	0	0	0	2	*194*
	9:00 PM	24	140	0	0	0	0	0	0	0	0	0	0	0	2	*166*
	10:00 PM	12	131	2	0	0	1	0	0	1	0	0	0	0	1	*148*
	11:00 PM	28	108	0	0	1	0	0	0	0	0	0	0	0	1	*138*

CR 510 EASTBOUND APPROACHING PARK AVENUE
AUTOMATED TRAFFIC RECORDER (ATR) COUNTS PERFORMED THURSDAY, JUNE 11, 2015 THROUGH WEDNESDAY, JUNE 17, 2015
IH ENGINEERS, P.C.

EASTBOUND TRAFFIC VOLUMES (APPROACHING THE INTERSECTION)

	CLASS	1 BIKES	2 CARS & TRAILERS	3 2 AXLE LONG	4 BUSES	5 2 AXLE 6 TIRE	6 3 AXLE SINGLE	7 4 AXLE SINGLE	8 <5 AXLE DOUBLE	9 5 AXLE DOUBLE	10 6+ AXLE DOUBLE	11 <6 AXLE MULTI	12 6 AXLE MULTI	13 6+ AXLE MULTI	14 UNCLASS-IFIED	*TOTAL*
4/30/2016	12:00 AM	13	48	0	0	2	0	0	0	0	0	0	0	0	0	*63*
SATURDAY	1:00 AM	8	29	0	0	1	0	0	0	1	0	0	0	0	0	*39*
	2:00 AM	4	8	0	0	0	0	0	0	0	0	0	0	0	0	*12*
	3:00 AM	2	15	0	0	0	0	0	0	0	0	0	0	0	0	*17*
	4:00 AM	3	8	0	0	0	0	0	0	0	0	0	0	0	0	*11*
	5:00 AM	3	20	0	0	2	0	0	0	0	0	0	0	0	0	*25*
	6:00 AM	13	68	0	0	0	1	0	0	0	0	0	0	0	0	*82*
	7:00 AM	18	205	3	0	0	6	0	0	0	0	0	0	0	4	*236*
	8:00 AM	37	234	8	0	1	2	0	0	1	1	1	0	0	4	*289*
	9:00 AM	39	295	7	1	2	5	2	0	0	1	0	0	1	5	*358*
	10:00 AM	28	343	0	0	0	2	0	1	0	1	0	0	0	6	*381*
	11:00 AM	36	370	4	0	1	5	0	0	0	0	0	0	0	7	*423*
	12:00 PM	36	374	3	0	3	4	1	0	0	0	0	0	0	7	*428*
	1:00 PM	49	360	2	0	3	2	0	0	1	1	0	0	0	3	*421*
	2:00 PM	28	344	1	1	0	5	0	1	0	1	0	0	0	6	*387*
	3:00 PM	43	346	1	0	3	4	0	0	0	2	0	0	0	8	*407*
	4:00 PM	25	278	3	0	0	1	1	0	0	0	0	1	0	7	*316*
	5:00 PM	20	291	0	0	0	3	0	0	0	0	0	0	0	1	*315*
	6:00 PM	38	229	0	0	1	1	0	0	0	0	0	0	0	4	*273*
	7:00 PM	33	209	0	0	0	0	0	0	0	0	0	0	0	0	*242*
	8:00 PM	22	199	2	0	0	1	0	0	0	0	0	0	0	0	*224*
	9:00 PM	13	134	0	0	0	2	0	0	0	0	0	0	0	2	*151*
	10:00 PM	15	133	0	0	1	0	0	0	0	0	0	0	0	0	*149*
	11:00 PM	27	139	1	0	0	0	0	0	0	0	0	0	0	0	*167*
5/1/2016	12:00 AM	2	55	1	0	1	1	0	0	0	0	0	0	0	0	*60*
SUNDAY	1:00 AM	13	43	0	0	0	0	0	0	0	0	0	0	0	0	*56*
	2:00 AM	17	28	0	0	0	0	0	0	0	0	0	0	0	0	*45*
	3:00 AM	3	5	0	0	0	0	0	0	0	0	0	0	0	0	*8*
	4:00 AM	2	10	0	0	0	0	0	0	1	0	0	0	0	0	*13*
	5:00 AM	7	12	0	0	0	0	0	0	0	0	0	0	0	0	*19*
	6:00 AM	13	53	1	0	0	0	0	0	0	0	0	0	0	1	*68*
	7:00 AM	29	110	0	0	1	0	0	0	0	0	0	0	0	0	*140*
	8:00 AM	16	147	1	0	0	1	0	0	0	0	0	0	0	1	*166*
	9:00 AM	17	201	1	0	0	2	0	0	0	1	0	0	0	3	*225*
	10:00 AM	26	254	3	0	0	0	1	0	0	0	0	0	0	5	*289*
	11:00 AM	27	280	1	0	0	2	0	0	0	1	0	0	0	5	*316*
	12:00 PM	24	338	2	0	0	2	0	0	0	0	0	0	0	4	*370*
	1:00 PM	21	275	2	1	1	2	0	0	0	0	0	0	0	3	*305*
	2:00 PM	23	297	1	0	0	1	1	0	0	1	0	0	0	6	*330*
	3:00 PM	22	320	1	0	0	3	1	0	1	0	0	0	0	5	*353*
	4:00 PM	19	246	0	0	0	0	0	0	0	0	0	0	0	3	*268*
	5:00 PM	22	256	1	0	1	2	0	0	0	0	0	0	0	1	*283*
	6:00 PM	26	186	0	0	0	0	0	0	0	0	0	0	0	2	*214*
	7:00 PM	21	136	0	0	1	1	0	0	0	0	0	0	0	1	*160*
	8:00 PM	13	120	1	0	1	0	0	0	0	0	0	0	0	0	*135*
	9:00 PM	13	87	1	0	0	0	0	0	0	0	0	0	0	2	*103*
	10:00 PM	16	62	1	0	0	0	0	0	0	0	0	0	0	0	*79*
	11:00 PM	13	58	0	0	0	0	0	0	0	0	0	0	0	1	*72*

CR 510 EASTBOUND APPROACHING PARK AVENUE

AUTOMATED TRAFFIC RECORDER (ATR) COUNTS PERFORMED THURSDAY, JUNE 11, 2015 THROUGH WEDNESDAY, JUNE 17, 2015

IH ENGINEERS, P.C.

EASTBOUND TRAFFIC VOLUMES (APPROACHING THE INTERSECTION)

	CLASS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
		BIKES	CARS & TRAILERS	2 AXLE LONG	BUSES	2 AXLE 6 TIRE	3 AXLE SINGLE	4 AXLE SINGLE	<5 AXLE DOUBLE	5 AXLE DOUBLE	6+ AXLE DOUBLE	<6 AXLE MULTI	6 AXLE MULTI	6+ AXLE MULTI	UNCLASS-IFIED	*TOTAL*
5/2/2016	12:00 AM	4	14	0	0	0	0	0	0	0	0	0	0	0	0	*18*
MONDAY	1:00 AM	5	6	0	0	0	0	0	0	0	0	0	0	0	0	*11*
	2:00 AM	3	2	0	0	0	0	0	0	0	0	0	0	0	0	*5*
	3:00 AM	3	4	0	0	0	1	0	0	0	0	0	0	0	0	*8*
	4:00 AM	7	18	0	0	0	0	0	0	0	0	0	0	0	0	*25*
	5:00 AM	17	65	1	0	0	0	0	0	1	0	0	0	0	0	*84*
	6:00 AM	34	231	4	0	0	3	1	0	2	0	0	0	0	4	*279*
	7:00 AM	66	635	6	2	5	9	2	0	0	1	0	0	0	20	*746*
	8:00 AM	47	817	13	1	1	8	0	0	3	4	1	0	0	49	*944*
	9:00 AM	56	572	3	1	5	4	1	0	1	1	0	0	1	10	*655*
	10:00 AM	27	376	12	0	2	4	0	0	1	1	0	0	0	5	*428*
	11:00 AM	31	335	7	0	5	1	0	0	0	0	0	0	0	6	*385*
	12:00 PM	28	338	3	0	3	2	0	1	0	0	0	0	0	6	*381*
	1:00 PM	36	425	7	0	2	6	0	0	0	0	0	0	0	9	*485*
	2:00 PM	36	408	5	0	2	8	0	1	0	0	0	0	0	6	*466*
	3:00 PM	43	466	4	1	2	3	0	1	1	3	0	1	0	9	*534*
	4:00 PM	67	652	9	0	3	9	1	0	1	1	0	0	0	22	*765*
	5:00 PM	64	718	6	1	2	8	3	0	0	2	0	0	0	32	*836*
	6:00 PM	46	441	1	0	1	8	1	0	1	1	0	0	0	12	*512*
	7:00 PM	49	265	1	0	1	2	1	0	0	0	0	0	0	8	*327*
	8:00 PM	40	160	0	1	1	0	0	0	0	1	0	0	0	2	*205*
	9:00 PM	19	133	0	0	0	0	0	0	0	0	0	0	0	0	*152*
	10:00 PM	11	55	0	0	0	0	0	0	0	0	0	0	0	1	*67*
	11:00 PM	26	68	0	0	0	1	0	0	0	0	0	0	0	0	*95*
5/3/2016	12:00 AM	2	30	0	0	0	0	0	0	0	0	0	0	0	0	*32*
TUESDAY	1:00 AM	1	12	0	0	0	0	0	0	0	0	0	0	0	0	*13*
	2:00 AM	2	4	0	0	0	0	0	0	1	0	0	0	0	0	*7*
	3:00 AM	1	6	0	0	0	0	0	0	0	0	0	0	0	0	*7*
	4:00 AM	4	16	1	0	0	0	0	0	0	0	0	0	0	0	*21*
	5:00 AM	13	68	0	0	0	0	0	0	0	0	0	0	0	0	*81*
	6:00 AM	31	253	1	1	1	5	0	0	0	0	0	0	0	0	*292*
	7:00 AM	45	655	9	1	1	10	0	1	3	0	0	0	0	32	*757*
	8:00 AM	41	863	11	1	2	11	1	1	1	0	0	0	1	38	*971*
	9:00 AM	42	649	3	4	3	7	1	0	2	1	0	0	0	24	*736*
	10:00 AM	32	334	4	0	2	5	0	1	1	0	0	0	0	7	*386*
	11:00 AM	34	389	3	0	2	3	0	1	0	1	0	0	0	7	*440*
	12:00 PM	39	379	6	0	1	2	0	0	0	2	0	0	1	10	*440*
	1:00 PM	33	390	7	0	5	7	0	0	0	1	0	1	0	6	*450*
	2:00 PM	31	363	9	0	3	5	0	0	0	0	0	0	0	4	*415*
	3:00 PM	45	471	7	0	1	2	1	0	0	2	0	0	0	9	*538*
	4:00 PM	70	650	5	1	9	4	1	0	0	2	0	0	0	17	*759*
	5:00 PM	46	763	7	0	4	11	2	0	2	1	1	0	0	46	*883*
	6:00 PM	42	514	2	0	0	2	0	0	0	3	0	0	0	13	*576*
	7:00 PM	41	309	0	0	0	2	0	0	0	0	0	0	0	7	*359*
	8:00 PM	28	194	1	0	0	0	1	0	0	0	0	0	0	0	*224*
	9:00 PM	22	144	0	0	0	0	0	0	0	0	0	0	0	0	*166*
	10:00 PM	10	69	0	0	1	0	0	0	0	0	0	0	0	1	*81*
	11:00 PM	11	83	0	0	0	0	0	0	0	0	0	0	0	3	*97*

CR 510 EASTBOUND APPROACHING PARK AVENUE
AUTOMATED TRAFFIC RECORDER (ATR) COUNTS PERFORMED THURSDAY, JUNE 11, 2015 THROUGH WEDNESDAY, JUNE 17, 2015
IH ENGINEERS, P.C.

EASTBOUND TRAFFIC VOLUMES (APPROACHING THE INTERSECTION)

	CLASS	1 BIKES	2 CARS & TRAILERS	3 2 AXLE LONG	4 BUSES	5 2 AXLE 6 TIRE	6 3 AXLE SINGLE	7 4 AXLE SINGLE	8 <5 AXLE DOUBLE	9 5 AXLE DOUBLE	10 6+ AXLE DOUBLE	11 <6 AXLE MULTI	12 6 AXLE MULTI	13 6+ AXLE MULTI	14 UNCLASS-IFIED	*TOTAL*
5/4/2016	12:00 AM	6	23	0	0	0	0	0	0	0	0	0	0	0	0	*29*
WEDNESDAY	1:00 AM	4	7	1	0	0	0	0	0	0	0	0	0	0	0	*12*
	2:00 AM	2	5	0	0	0	0	0	0	0	0	0	0	0	0	*7*
	3:00 AM	1	10	0	0	2	0	0	0	0	0	0	0	0	0	*13*
	4:00 AM	7	13	0	0	0	0	0	0	0	0	0	0	0	0	*20*
	5:00 AM	13	61	0	0	0	1	0	0	0	1	0	0	0	0	*76*
	6:00 AM	30	255	0	1	1	4	0	0	2	1	0	0	0	2	*296*
	7:00 AM	54	687	5	0	0	13	2	1	1	0	0	0	1	18	*782*
	8:00 AM	58	752	13	3	4	11	1	1	4	0	0	0	0	131	*978*
	9:00 AM	41	571	7	3	2	11	4	0	3	1	0	0	0	27	*670*
	10:00 AM	33	364	7	0	4	2	1	0	0	0	0	0	0	3	*414*
	11:00 AM	25	377	6	0	4	1	0	0	0	0	0	0	0	4	*417*
	12:00 PM	38	412	7	0	3	5	1	0	1	0	0	0	0	6	*473*
	1:00 PM	30	392	5	0	3	2	0	0	1	0	0	1	0	6	*440*
	2:00 PM	39	402	5	0	1	4	1	1	0	0	0	0	0	7	*460*
	3:00 PM	40	481	10	0	2	7	1	0	0	0	0	0	0	5	*546*
	4:00 PM	45	643	4	2	4	5	2	0	2	0	0	0	0	20	*727*
	5:00 PM	45	710	6	0	2	9	2	0	3	1	0	0	0	49	*827*
	6:00 PM	49	498	3	0	0	5	0	0	0	0	0	0	0	8	*563*
	7:00 PM	50	268	1	0	0	1	1	0	0	0	0	0	0	2	*323*
	8:00 PM	29	198	0	0	0	1	0	0	0	0	0	0	0	1	*229*
	9:00 PM	27	136	0	0	0	1	0	0	0	0	0	0	0	0	*164*
	10:00 PM	14	63	1	0	0	0	0	0	0	0	0	0	0	1	*79*
	11:00 PM	22	75	0	0	0	0	0	0	0	0	0	0	0	0	*97*
THU-WED		*4505*	*45405*	*505*	*43*	*213*	*452*	*56*	*20*	*74*	*73*	*3*	*11*	*13*	*1277*	*52650*
DAILY																
	THU	696	7722	127	10	48	77	11	3	11	17	0	4	5	276	*9007*
	FRI	718	7210	86	6	37	78	5	5	20	14	0	3	3	179	*8364*
	SAT	553	4679	35	2	20	44	4	2	3	7	1	1	1	64	*5416*
	SUN	405	3579	18	1	6	17	3	0	2	3	0	0	0	43	*4077*
	MON	765	7204	82	7	35	77	10	3	11	15	1	1	1	201	*8413*
	TUE	666	7608	76	8	35	76	7	4	10	13	1	1	2	224	*8731*
	WED	702	7403	81	9	32	83	16	3	17	4	0	1	1	290	*8642*
THU-WED		*4505*	*45405*	*505*	*43*	*213*	*452*	*56*	*20*	*74*	*73*	*3*	*11*	*13*	*1277*	*52650*
PCT OF TOTAL		8.77%	88.38%	0.98%	0.08%	0.41%	0.88%	0.11%	0.04%	0.14%	0.14%	0.01%	0.02%	0.03%	---	*100.00%*
REDIST. UNCLASSIFIED		112	1129	13	1	5	11	1	0	2	2	0	0	0	0	1277
REVISED TOTAL		*4617*	*46534*	*518*	*44*	*218*	*463*	*57*	*20*	*76*	*75*	*3*	*11*	*13*	*0*	*52650*
PCT. PER CLASS		8.77%	88.38%	0.98%	0.08%	0.41%	0.88%	0.11%	0.04%	0.14%	0.14%	0.01%	0.02%	0.03%	0.00%	
CLASS SUMMARIES			98.1%		0.08%		1.4%			0.3%			0%		---	
			PASS. CARS		BUS		SINGLE UNIT TRUCK			DOUBLE TRUCK			TRIPLE TRUCK		---	

AVERAGE DAILY TRAFFIC VOLUMES	7-DAY AVERAGE	7521	VPD
	MON-FRI AVERAGE	8631	VPD
	SAT-SUN AVERAGE	4747	VPD
	TUE-WED-THU AVERAGE	8793	VPD

CR 510 WESTBOUND APPROACHING PARK AVENUE
AUTOMATED TRAFFIC RECORDER (ATR) COUNTS PERFORMED THURSDAY, JUNE 11, 2015 THROUGH WEDNESDAY, JUNE 17, 2015
IH ENGINEERS, P.C.

WESTBOUND TRAFFIC VOLUMES (APPROACHING THE INTERSECTION)

	CLASS	1 BIKES	2 CARS & TRAILERS	3 2 AXLE LONG	4 BUSES	5 2 AXLE 6 TIRE	6 3 AXLE SINGLE	7 4 AXLE SINGLE	8 <5 AXLE DOUBLE	9 5 AXLE DOUBLE	10 6+ AXLE DOUBLE	11 <6 AXLE MULTI	12 6 AXLE MULTI	13 6+ AXLE MULTI	14 UNCLASS-IFIED	*TOTAL*
4/22/2016	12:00 AM	0	44	0	0	1	0	0	0	0	0	0	0	0	0	*45*
FRIDAY	1:00 AM	0	22	1	1	0	0	0	0	0	0	0	0	0	0	*24*
	2:00 AM	0	18	3	0	0	0	0	0	0	0	0	0	0	0	*21*
	3:00 AM	0	10	4	0	2	0	0	0	0	0	0	0	0	0	*16*
	4:00 AM	0	32	5	0	0	0	0	1	0	0	0	0	0	1	*39*
	5:00 AM	0	124	9	1	5	0	0	0	1	0	0	0	0	0	*140*
	6:00 AM	0	535	46	2	13	1	0	1	1	0	0	0	0	10	*609*
	7:00 AM	7	968	56	8	7	0	1	5	1	1	0	0	0	26	*1080*
	8:00 AM	16	924	46	3	11	3	0	3	0	0	1	1	0	128	*1136*
	9:00 AM	5	769	46	7	9	1	0	1	0	0	0	0	0	34	*872*
	10:00 AM	0	554	57	3	8	5	0	4	0	0	0	0	0	15	*646*
	11:00 AM	1	623	52	1	9	2	0	1	0	0	0	0	0	9	*698*
	12:00 PM	1	659	55	2	11	2	0	3	1	0	1	0	0	14	*749*
	1:00 PM	1	769	39	1	6	0	0	1	0	0	0	0	0	15	*832*
	2:00 PM	1	805	63	4	13	1	0	1	0	0	0	0	0	15	*903*
	3:00 PM	9	1052	100	2	20	2	1	2	0	0	0	0	0	18	*1206*
	4:00 PM	6	1460	97	2	15	1	0	3	0	0	0	0	0	54	*1638*
	5:00 PM	2	1454	79	0	12	2	1	2	0	0	0	1	0	130	*1683*
	6:00 PM	2	958	44	4	12	1	0	2	0	0	0	0	0	19	*1042*
	7:00 PM	1	528	27	0	9	0	0	0	0	0	0	0	0	3	*568*
	8:00 PM	0	332	13	1	2	0	0	1	0	0	0	0	0	3	*352*
	9:00 PM	2	288	14	0	0	0	0	0	0	0	0	0	0	5	*309*
	10:00 PM	1	266	8	1	1	0	0	0	0	0	0	0	0	1	*278*
	11:00 PM	0	156	9	0	0	0	0	0	0	0	0	0	0	1	*166*
4/23/2016	12:00 AM	0	80	5	1	1	0	0	0	0	0	0	0	0	0	*87*
SATURDAY	1:00 AM	0	36	1	0	2	0	0	0	0	0	0	0	0	2	*41*
	2:00 AM	0	20	1	0	2	0	0	0	0	0	0	0	0	0	*23*
	3:00 AM	0	13	1	0	0	0	0	0	0	0	0	0	0	0	*14*
	4:00 AM	0	19	4	0	2	1	0	1	0	0	0	0	0	0	*27*
	5:00 AM	0	50	2	0	2	0	0	0	0	0	0	0	0	0	*54*
	6:00 AM	1	206	15	0	3	1	0	1	0	0	0	0	0	4	*231*
	7:00 AM	0	196	28	0	5	1	0	1	0	0	0	0	0	0	*231*
	8:00 AM	0	328	31	2	6	1	0	1	0	0	0	0	0	5	*374*
	9:00 AM	0	399	27	4	6	0	0	2	0	0	0	0	0	10	*448*
	10:00 AM	1	489	31	1	11	1	0	0	0	0	0	0	0	7	*541*
	11:00 AM	6	487	44	2	9	1	0	1	0	0	0	0	0	6	*556*
	12:00 PM	0	571	42	0	8	2	0	1	0	0	0	0	0	8	*632*
	1:00 PM	0	569	35	1	6	0	0	2	0	0	0	0	0	10	*623*
	2:00 PM	5	603	39	0	7	0	0	0	0	0	0	0	0	8	*662*
	3:00 PM	1	578	32	3	6	2	0	2	0	0	0	0	0	13	*637*
	4:00 PM	3	597	24	1	9	1	0	1	0	0	0	0	0	14	*650*
	5:00 PM	1	560	29	3	8	0	0	1	0	0	0	0	0	3	*605*
	6:00 PM	0	482	24	1	4	0	0	0	0	0	0	0	0	4	*515*
	7:00 PM	2	412	26	0	2	1	0	0	0	0	0	0	0	3	*446*
	8:00 PM	2	303	11	0	3	0	0	0	0	0	0	0	0	4	*323*
	9:00 PM	1	252	21	1	4	0	0	0	0	0	0	0	0	4	*283*
	10:00 PM	2	254	15	0	1	0	0	0	0	0	0	0	0	0	*272*
	11:00 PM	2	153	5	1	5	0	0	0	0	0	0	0	0	2	*168*

CR 510 WESTBOUND APPROACHING PARK AVENUE
AUTOMATED TRAFFIC RECORDER (ATR) COUNTS PERFORMED THURSDAY, JUNE 11, 2015 THROUGH WEDNESDAY, JUNE 17, 2015
IH ENGINEERS, P.C.
WESTBOUND TRAFFIC VOLUMES (APPROACHING THE INTERSECTION)

	CLASS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
			CARS &	2 AXLE		2 AXLE	3 AXLE	4 AXLE	<5 AXLE	5 AXLE	6+ AXLE	<6 AXLE	6 AXLE	6+ AXLE	UNCLASS-	
		BIKES	TRAILERS	LONG	BUSES	6 TIRE	SINGLE	SINGLE	DOUBLE	DOUBLE	DOUBLE	MULTI	MULTI	MULTI	IFIED	*TOTAL*
4/24/2016	12:00 AM	1	74	1	0	1	0	0	0	0	0	0	0	0	0	*77*
SUNDAY	1:00 AM	0	55	3	0	1	0	0	0	0	0	0	0	0	0	*59*
	2:00 AM	0	21	3	0	1	0	0	0	0	0	0	0	0	0	*25*
	3:00 AM	0	20	1	0	0	0	0	0	0	0	0	0	0	0	*21*
	4:00 AM	0	11	1	0	0	0	0	1	0	0	0	0	0	0	*13*
	5:00 AM	0	45	3	0	0	0	0	0	0	0	0	0	0	0	*48*
	6:00 AM	0	179	4	0	2	0	0	0	0	0	0	0	0	1	*186*
	7:00 AM	0	145	9	0	1	0	0	1	0	0	0	0	0	0	*156*
	8:00 AM	2	214	12	0	2	0	0	0	0	0	0	0	0	1	*231*
	9:00 AM	0	251	12	1	1	0	0	0	0	0	0	0	0	0	*265*
	10:00 AM	14	389	21	2	5	0	0	0	0	0	0	0	0	4	*435*
	11:00 AM	5	482	13	0	4	0	0	2	0	0	0	0	0	0	*506*
	12:00 PM	1	507	12	1	3	0	0	1	0	0	0	0	0	6	*531*
	1:00 PM	4	587	30	2	5	1	0	0	0	0	0	0	0	2	*631*
	2:00 PM	5	575	23	0	4	0	0	0	0	0	0	0	0	11	*618*
	3:00 PM	5	507	11	1	3	0	0	1	0	0	0	0	0	5	*533*
	4:00 PM	4	518	14	0	5	0	0	0	0	0	1	0	0	0	*542*
	5:00 PM	3	473	21	1	2	1	0	0	0	0	0	0	0	2	*503*
	6:00 PM	1	443	13	1	3	1	0	1	0	0	0	0	0	0	*463*
	7:00 PM	1	387	14	0	1	0	0	0	0	0	0	0	0	0	*403*
	8:00 PM	2	285	14	1	1	0	0	0	0	0	0	0	0	0	*303*
	9:00 PM	0	186	12	2	0	0	0	1	0	0	0	0	0	1	*202*
	10:00 PM	0	176	5	1	0	0	0	1	0	0	0	0	0	0	*183*
	11:00 PM	3	84	6	0	1	0	0	0	0	0	0	0	0	0	*94*
4/25/2016	12:00 AM	0	32	1	0	1	0	0	0	0	0	0	0	0	0	*34*
MONDAY	1:00 AM	0	13	1	0	1	0	0	0	0	0	0	0	0	0	*15*
	2:00 AM	0	11	1	0	0	0	0	0	0	0	0	0	0	0	*12*
	3:00 AM	0	7	0	0	1	0	0	0	0	0	0	0	0	0	*8*
	4:00 AM	0	27	5	0	1	0	0	0	1	0	0	0	0	0	*34*
	5:00 AM	0	133	12	0	3	2	0	1	0	0	0	0	0	1	*152*
	6:00 AM	2	570	48	4	8	1	0	4	0	0	0	0	0	16	*653*
	7:00 AM	20	1005	51	5	12	0	1	5	1	1	0	0	0	32	*1133*
	8:00 AM	23	734	31	5	9	6	0	1	2	1	0	0	0	173	*985*
	9:00 AM	9	811	53	3	7	3	0	1	1	0	0	0	0	45	*933*
	10:00 AM	2	560	57	2	13	4	1	1	1	0	0	0	0	10	*651*
	11:00 AM	5	589	53	4	9	3	0	4	1	0	0	0	0	8	*676*
	12:00 PM	4	724	56	1	9	3	0	3	1	1	0	0	1	14	*817*
	1:00 PM	2	734	46	6	14	2	0	7	1	0	0	0	0	17	*829*
	2:00 PM	1	761	62	3	20	2	1	1	0	0	0	0	0	14	*865*
	3:00 PM	6	841	70	2	19	2	0	3	0	1	0	0	0	15	*959*
	4:00 PM	8	1153	85	1	17	2	1	1	0	1	0	0	1	35	*1305*
	5:00 PM	6	1531	96	3	11	2	0	6	1	0	1	0	0	93	*1750*
	6:00 PM	7	1036	58	4	4	1	1	1	1	0	0	0	0	22	*1135*
	7:00 PM	1	587	19	0	6	0	0	0	0	0	0	0	0	7	*620*
	8:00 PM	2	433	16	1	3	0	1	1	0	0	0	0	0	3	*460*
	9:00 PM	0	226	12	0	0	0	0	0	0	0	0	0	0	1	*239*
	10:00 PM	1	189	8	2	0	0	0	0	0	0	0	0	0	2	*202*
	11:00 PM	0	75	4	1	0	0	0	0	0	0	0	0	0	1	*81*

CR 510 WESTBOUND APPROACHING PARK AVENUE
AUTOMATED TRAFFIC RECORDER (ATR) COUNTS PERFORMED THURSDAY, JUNE 11, 2015 THROUGH WEDNESDAY, JUNE 17, 2015
IH ENGINEERS, P.C.
WESTBOUND TRAFFIC VOLUMES (APPROACHING THE INTERSECTION)

	CLASS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
		BIKES	CARS & TRAILERS	2 AXLE LONG	BUSES	2 AXLE 6 TIRE	3 AXLE SINGLE	4 AXLE SINGLE	<5 AXLE DOUBLE	5 AXLE DOUBLE	6+ AXLE DOUBLE	<6 AXLE MULTI	6 AXLE MULTI	6+ AXLE MULTI	UNCLASS-IFIED	*TOTAL*
4/26/2016	12:00 AM	0	33	3	0	0	0	0	0	0	0	0	0	0	0	*36*
TUESDAY	1:00 AM	0	20	4	1	0	0	0	0	0	0	0	0	0	0	*25*
	2:00 AM	0	10	2	0	0	0	0	0	0	0	0	0	0	0	*12*
	3:00 AM	1	7	1	0	2	1	0	0	0	0	0	0	0	0	*12*
	4:00 AM	0	30	7	0	1	1	0	1	0	0	0	0	0	1	*41*
	5:00 AM	0	129	10	0	4	1	0	0	0	0	0	0	0	2	*146*
	6:00 AM	0	562	48	1	8	3	0	2	0	0	0	0	0	12	*636*
	7:00 AM	7	909	44	5	11	2	0	7	0	1	1	0	1	58	*1046*
	8:00 AM	24	464	34	6	2	5	0	4	0	0	0	0	2	239	*780*
	9:00 AM	12	484	31	2	4	4	1	0	0	1	0	0	1	127	*667*
	10:00 AM	5	595	50	3	13	6	0	3	0	0	0	0	0	16	*691*
	11:00 AM	3	605	58	1	14	4	0	2	0	1	0	0	0	10	*698*
	12:00 PM	1	709	50	4	9	5	0	5	0	1	0	0	1	12	*797*
	1:00 PM	8	813	57	2	16	2	1	2	1	1	0	0	0	17	*920*
	2:00 PM	5	755	57	5	11	6	0	3	0	1	0	0	0	23	*866*
	3:00 PM	9	1192	114	3	17	3	0	3	1	0	0	0	1	60	*1403*
	4:00 PM	17	1578	171	4	23	5	0	7	1	0	2	0	0	130	*1938*
	5:00 PM	17	1602	91	6	18	6	0	3	0	2	0	0	0	178	*1923*
	6:00 PM	16	1495	84	6	9	3	1	2	1	0	1	0	1	153	*1772*
	7:00 PM	1	839	44	0	9	0	0	1	0	0	0	0	0	19	*913*
	8:00 PM	0	469	22	1	7	0	0	1	0	0	0	0	0	2	*502*
	9:00 PM	0	305	15	0	1	0	0	0	0	0	0	0	0	0	*321*
	10:00 PM	0	185	8	0	1	0	0	0	0	0	0	0	0	0	*194*
	11:00 PM	1	88	7	0	0	0	0	0	0	0	0	0	0	0	*96*
4/27/2016	12:00 AM	0	37	2	1	0	0	0	0	0	0	0	0	0	0	*40*
WEDNESDAY	1:00 AM	0	14	2	0	0	0	0	0	0	0	0	0	0	0	*16*
	2:00 AM	0	12	2	1	0	1	0	0	0	0	0	0	0	0	*16*
	3:00 AM	0	7	1	0	1	0	0	0	0	0	0	0	0	0	*9*
	4:00 AM	0	26	2	0	2	0	0	0	0	0	0	0	0	0	*30*
	5:00 AM	0	119	13	0	8	0	0	1	0	0	0	0	0	1	*142*
	6:00 AM	4	574	47	2	8	0	0	2	0	0	1	0	0	6	*644*
	7:00 AM	10	763	65	4	9	5	0	2	0	2	0	0	0	106	*966*
	8:00 AM	25	405	29	1	10	5	1	2	0	2	2	0	0	259	*741*
	9:00 AM	5	658	41	4	10	2	1	5	0	0	0	0	0	84	*810*
	10:00 AM	2	543	52	2	16	0	1	4	1	1	0	0	0	10	*632*
	11:00 AM	3	606	58	5	16	4	0	0	0	0	1	0	0	15	*708*
	12:00 PM	3	747	53	3	17	2	0	0	0	1	0	0	0	15	*841*
	1:00 PM	4	767	47	2	10	6	0	2	0	0	0	0	0	13	*851*
	2:00 PM	1	797	53	7	10	2	0	4	1	1	0	0	0	22	*898*
	3:00 PM	4	889	73	3	13	0	1	2	0	1	0	0	0	17	*1003*
	4:00 PM	3	1370	104	4	16	2	1	6	2	0	0	1	1	50	*1560*
	5:00 PM	12	1548	115	3	16	5	0	1	0	0	0	0	0	131	*1831*
	6:00 PM	7	1192	62	3	17	2	0	0	0	2	1	0	0	52	*1338*
	7:00 PM	0	618	34	1	7	0	0	0	0	0	0	0	0	8	*668*
	8:00 PM	1	412	22	1	1	0	0	0	0	0	0	0	0	1	*438*
	9:00 PM	0	326	13	0	1	0	0	0	0	0	0	0	0	5	*345*
	10:00 PM	0	242	11	1	0	0	0	0	0	0	0	0	0	1	*255*
	11:00 PM	0	100	9	0	1	0	0	0	0	0	0	0	0	0	*110*

CR 510 WESTBOUND APPROACHING PARK AVENUE
AUTOMATED TRAFFIC RECORDER (ATR) COUNTS PERFORMED THURSDAY, JUNE 11, 2015 THROUGH WEDNESDAY, JUNE 17, 2015
IH ENGINEERS, P.C.

WESTBOUND TRAFFIC VOLUMES (APPROACHING THE INTERSECTION)

	CLASS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
		BIKES	CARS & TRAILERS	2 AXLE LONG	BUSES	2 AXLE 6 TIRE	3 AXLE SINGLE	4 AXLE SINGLE	<5 AXLE DOUBLE	5 AXLE DOUBLE	6+ AXLE DOUBLE	<6 AXLE MULTI	6 AXLE MULTI	6+ AXLE MULTI	UNCLASS-IFIED	*TOTAL*
4/28/2016	12:00 AM	1	31	2	1	1	0	0	0	0	0	0	0	0	0	*36*
THURSDAY	1:00 AM	0	16	2	0	0	0	0	0	0	0	0	0	0	0	*18*
	2:00 AM	0	8	2	0	0	0	0	0	0	0	0	0	0	0	*10*
	3:00 AM	0	12	1	0	1	1	0	0	0	0	0	0	0	0	*15*
	4:00 AM	0	26	6	0	1	0	0	1	0	0	0	0	0	1	*35*
	5:00 AM	0	125	12	0	5	1	0	2	0	0	0	0	0	3	*148*
	6:00 AM	0	578	43	1	6	2	1	1	0	0	0	0	0	16	*648*
	7:00 AM	6	1018	62	6	10	2	1	2	0	2	0	0	0	39	*1148*
	8:00 AM	23	477	31	2	10	11	0	3	1	1	0	0	0	235	*794*
	9:00 AM	9	577	39	4	11	4	0	2	1	0	0	0	0	126	*773*
	10:00 AM	3	546	60	6	18	1	1	2	0	0	0	0	0	11	*648*
	11:00 AM	1	587	53	5	17	0	0	1	1	0	0	0	0	12	*677*
	12:00 PM	6	809	68	2	12	1	0	5	1	0	0	0	0	21	*925*
	1:00 PM	8	808	51	0	12	2	0	4	1	0	0	0	0	21	*907*
	2:00 PM	7	845	46	4	13	3	0	2	0	0	0	0	0	24	*944*
	3:00 PM	8	970	98	2	29	1	0	1	0	1	0	0	1	20	*1131*
	4:00 PM	10	1450	91	1	16	1	1	4	0	0	0	0	0	52	*1626*
	5:00 PM	13	1458	84	5	10	6	0	3	0	0	1	0	0	109	*1689*
	6:00 PM	0	1058	50	3	7	1	0	2	0	0	0	0	0	28	*1149*
	7:00 PM	1	575	35	0	4	1	0	0	0	0	0	0	0	9	*625*
	8:00 PM	0	424	20	2	2	0	0	0	0	0	0	0	0	7	*455*
	9:00 PM	0	302	14	0	6	1	0	0	0	0	0	0	0	0	*323*
	10:00 PM	0	228	8	1	0	0	0	0	0	0	0	0	0	0	*237*
	11:00 PM	1	121	5	2	0	1	0	0	0	0	0	0	0	0	*130*
TOTAL FRI-THU		*540*	*80102*	*5274*	*269*	*1052*	*202*	*21*	*206*	*28*	*28*	*14*	*3*	*11*	*3739*	*91489*
DAILY																
	FRI	55	13350	873	43	166	21	3	31	4	1	2	2	0	501	*15052*
	SAT	27	7657	493	21	112	12	0	14	0	0	0	0	0	107	*8443*
	SUN	51	6614	258	13	46	3	0	9	0	0	1	0	0	33	*7028*
	MON	99	12782	845	47	168	33	6	40	11	5	1	0	2	509	*14548*
	TUE	127	13878	1012	50	180	57	3	46	4	8	4	0	7	1059	*16435*
	WED	84	12772	910	48	189	36	5	31	4	10	5	1	1	796	*14892*
	THU	97	13049	883	47	191	40	4	35	5	4	1	0	1	734	*15091*
TOTAL FRI-THU		*540*	*80102*	*5274*	*269*	*1052*	*202*	*21*	*206*	*28*	*28*	*14*	*3*	*11*	*3739*	*91489*
PCT OF TOTAL		0.62%	91.28%	6.01%	0.31%	1.20%	0.23%	0.02%	0.23%	0.03%	0.03%	0.02%	0.00%	0.01%	---	*100.00%*
REDIST. UNCLASSIFIED		23	3413	225	11	45	9	1	9	1	1	1	0	0	0	3739
REVISED TOTAL		*563*	*83515*	*5499*	*280*	*1097*	*211*	*22*	*215*	*29*	*29*	*15*	*3*	*11*	*0*	*91489*
PCT. PER CLASS		0.62%	91.28%	6.01%	0.31%	1.20%	0.23%	0.02%	0.23%	0.03%	0.03%	0.02%	0.00%	0.01%	0.00%	
CLASS SUMMARIES			97.9%		0.31%		1.5%			0.3%			0%		---	
			PASS. CARS		BUS		SINGLE UNIT TRUCK			DOUBLE TRUCK			TRIPLE TRUCK		---	

AVERAGE DAILY TRAFFIC VOLUMES	7-DAY AVERAGE	13070	VPD
	MON-FRI AVERAGE	13983	VPD
	SAT-SUN AVERAGE	10788	VPD
	TUE-WED-THU AVERAGE	15012	VPD

CR 623 (PARK AVE) NORTHBOUND APPROACHING CR 510 (COLUMBIA TURNPIKE)
AUTOMATED TRAFFIC RECORDER (ATR) COUNTS PERFORMED THURSDAY, JUNE 11, 2015 THROUGH WEDNESDAY, JUNE 17, 2015
IH ENGINEERS, P.C.
NORTHBOUND TRAFFIC VOLUMES (APPROACHING THE INTERSECTION)

	CLASS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
		BIKES	CARS & TRAILERS	2 AXLE LONG	BUSES	2 AXLE 6 TIRE	3 AXLE SINGLE	4 AXLE SINGLE	<5 AXLE DOUBLE	5 AXLE DOUBLE	6+ AXLE DOUBLE	<6 AXLE MULTI	6 AXLE MULTI	6+ AXLE MULTI	UNCLASS-IFIED	*TOTAL*
4/22/2016	12:00 AM	0	23	16	0	2	0	0	0	0	0	0	0	0	0	*41*
FRIDAY	1:00 AM	0	16	12	0	2	0	0	0	0	0	0	0	0	0	*30*
	2:00 AM	0	10	4	0	3	0	0	0	0	0	0	0	0	0	*17*
	3:00 AM	0	14	10	0	4	0	0	0	0	0	0	0	0	0	*28*
	4:00 AM	0	35	23	1	8	1	0	0	0	0	0	0	0	0	*68*
	5:00 AM	0	93	73	2	16	1	0	5	3	0	0	0	0	1	*194*
	6:00 AM	5	289	170	9	32	2	0	19	3	3	0	0	0	6	*538*
	7:00 AM	3	342	231	5	34	1	1	37	1	2	1	1	0	16	*675*
	8:00 AM	2	236	196	4	47	3	1	19	1	3	0	1	0	11	*524*
	9:00 AM	1	229	176	9	42	7	1	15	2	2	0	0	0	8	*492*
	10:00 AM	3	320	254	5	55	1	1	22	0	5	0	0	0	15	*681*
	11:00 AM	9	396	309	6	43	1	1	45	2	4	0	0	0	39	*855*
	12:00 PM	2	382	267	3	35	1	1	23	2	5	0	1	0	22	*744*
	1:00 PM	5	496	304	7	60	5	1	39	0	2	1	0	1	53	*974*
	2:00 PM	6	602	361	9	77	4	2	47	0	6	1	0	0	129	*1244*
	3:00 PM	21	290	189	6	17	6	4	52	1	18	3	2	4	325	*938*
	4:00 PM	7	427	223	2	20	5	2	51	0	10	2	0	2	195	*946*
	5:00 PM	3	449	251	0	32	0	0	37	0	2	0	0	0	33	*807*
	6:00 PM	2	268	157	1	20	1	0	12	0	0	0	0	0	6	*467*
	7:00 PM	0	200	112	1	15	0	0	6	0	0	0	0	0	5	*339*
	8:00 PM	0	149	92	1	8	1	0	2	0	0	0	0	0	1	*254*
	9:00 PM	0	151	74	0	3	0	0	2	0	1	0	0	0	0	*231*
	10:00 PM	0	108	57	1	3	0	0	2	0	0	0	0	0	0	*171*
	11:00 PM	0	58	26	1	0	0	0	0	0	0	0	0	0	0	*85*
4/23/2016	12:00 AM	0	33	11	0	2	0	0	0	0	0	0	0	0	0	*46*
SATURDAY	1:00 AM	0	23	9	0	2	0	0	0	0	0	0	0	0	0	*34*
	2:00 AM	0	4	1	0	0	0	0	0	0	0	0	0	0	0	*5*
	3:00 AM	0	12	8	0	1	0	0	0	0	0	0	0	0	0	*21*
	4:00 AM	0	19	15	0	3	0	0	0	0	0	0	0	0	0	*37*
	5:00 AM	1	38	24	0	7	1	0	1	0	0	0	0	0	0	*72*
	6:00 AM	2	86	61	4	18	2	1	0	0	0	0	0	0	1	*175*
	7:00 AM	0	162	109	0	23	2	0	2	0	0	0	0	0	3	*301*
	8:00 AM	1	198	134	2	26	2	1	14	0	1	0	0	0	2	*381*
	9:00 AM	1	260	169	6	34	3	2	10	1	1	0	0	0	5	*492*
	10:00 AM	0	282	188	5	33	1	0	11	1	0	0	0	0	8	*529*
	11:00 AM	2	281	218	2	41	1	0	18	0	1	0	0	0	12	*576*
	12:00 PM	3	270	248	2	23	4	0	17	0	2	0	0	0	15	*584*
	1:00 PM	2	265	223	5	23	0	0	11	0	0	0	0	0	5	*534*
	2:00 PM	4	282	198	2	16	0	0	15	0	1	0	1	0	7	*526*
	3:00 PM	1	270	204	1	17	0	2	16	0	1	0	0	0	12	*524*
	4:00 PM	4	240	209	1	16	1	0	12	0	3	0	0	0	12	*498*
	5:00 PM	3	223	142	1	16	0	0	16	1	1	0	0	0	4	*407*
	6:00 PM	3	214	131	3	13	0	1	5	0	0	0	0	0	7	*377*
	7:00 PM	4	176	91	0	5	0	0	3	0	0	0	0	0	2	*281*
	8:00 PM	1	120	81	0	8	0	0	3	0	0	0	0	0	3	*216*
	9:00 PM	0	124	70	0	3	0	0	1	0	0	0	0	0	1	*199*
	10:00 PM	0	140	64	0	2	0	0	3	0	0	0	0	0	0	*209*
	11:00 PM	0	56	28	3	4	0	0	1	0	0	0	0	0	0	*92*

CR 623 (PARK AVE) NORTHBOUND APPROACHING CR 510 (COLUMBIA TURNPIKE)
AUTOMATED TRAFFIC RECORDER (ATR) COUNTS PERFORMED THURSDAY, JUNE 11, 2015 THROUGH WEDNESDAY, JUNE 17, 2015
IH ENGINEERS, P.C.
NORTHBOUND TRAFFIC VOLUMES (APPROACHING THE INTERSECTION)

	CLASS	1 BIKES	2 CARS & TRAILERS	3 2 AXLE LONG	4 BUSES	5 2 AXLE 6 TIRE	6 3 AXLE SINGLE	7 4 AXLE SINGLE	8 <5 AXLE DOUBLE	9 5 AXLE DOUBLE	10 6+ AXLE DOUBLE	11 <6 AXLE MULTI	12 6 AXLE MULTI	13 6+ AXLE MULTI	14 UNCLASS-IFIED	*TOTAL*
4/24/2016	12:00 AM	0	62	21	0	5	0	0	0	0	0	0	0	0	0	*88*
SUNDAY	1:00 AM	0	20	12	0	1	0	0	0	0	0	0	0	0	0	*33*
	2:00 AM	0	5	8	0	0	0	0	0	0	0	0	0	0	0	*13*
	3:00 AM	0	8	3	0	1	0	0	0	0	0	0	0	0	0	*12*
	4:00 AM	0	21	6	0	3	0	0	0	0	0	0	0	0	0	*30*
	5:00 AM	0	28	15	0	4	0	0	0	0	0	0	0	0	0	*47*
	6:00 AM	0	77	41	0	5	0	0	1	0	0	0	0	0	0	*124*
	7:00 AM	0	130	88	0	9	0	0	3	0	0	0	0	0	6	*236*
	8:00 AM	2	189	133	0	17	0	0	6	0	0	0	0	0	2	*349*
	9:00 AM	0	218	140	0	15	1	0	12	0	0	0	0	0	5	*391*
	10:00 AM	5	242	182	0	16	0	0	11	0	0	0	0	0	9	*465*
	11:00 AM	1	225	177	0	13	1	1	7	0	0	0	0	0	4	*429*
	12:00 PM	1	223	187	0	10	0	0	11	1	0	0	0	0	6	*439*
	1:00 PM	6	291	203	1	14	1	0	9	0	0	0	1	0	2	*528*
	2:00 PM	2	253	175	2	7	0	1	11	0	0	0	0	0	6	*457*
	3:00 PM	1	226	168	0	11	0	0	6	0	0	0	0	0	3	*415*
	4:00 PM	2	226	153	0	11	0	0	7	0	0	0	0	0	1	*400*
	5:00 PM	4	214	120	0	11	0	0	3	0	0	0	0	0	4	*356*
	6:00 PM	3	168	102	0	14	1	0	2	0	0	0	0	0	2	*292*
	7:00 PM	1	133	74	0	8	0	0	2	0	0	1	0	0	1	*220*
	8:00 PM	1	113	52	0	6	0	0	1	0	0	0	0	0	1	*174*
	9:00 PM	3	70	24	0	10	0	0	1	0	0	0	0	0	1	*109*
	10:00 PM	0	50	16	0	2	0	0	0	0	0	0	0	0	0	*68*
	11:00 PM	0	25	14	0	1	0	0	0	0	0	0	0	0	0	*40*
4/25/2016	12:00 AM	1	12	6	0	0	0	0	0	0	0	0	0	0	0	*19*
MONDAY	1:00 AM	0	7	1	0	1	0	0	0	0	0	0	0	0	0	*9*
	2:00 AM	0	4	6	0	3	0	0	0	0	0	0	0	0	0	*13*
	3:00 AM	0	15	7	1	2	0	0	0	0	0	0	0	0	0	*25*
	4:00 AM	0	31	32	1	3	0	0	0	2	0	0	0	0	0	*69*
	5:00 AM	2	127	71	6	17	2	0	1	1	0	0	0	0	4	*231*
	6:00 AM	1	280	185	7	35	7	1	26	1	1	0	0	0	14	*558*
	7:00 AM	5	327	201	7	19	1	1	48	1	4	1	0	0	32	*647*
	8:00 AM	1	230	180	12	55	2	0	26	2	1	0	0	0	11	*520*
	9:00 AM	3	216	178	7	47	6	1	15	1	1	0	0	0	8	*483*
	10:00 AM	1	299	253	10	52	1	2	27	1	1	0	0	0	14	*661*
	11:00 AM	1	417	315	6	46	0	1	31	1	1	0	0	0	26	*845*
	12:00 PM	3	368	268	8	55	5	0	22	0	3	1	0	0	19	*752*
	1:00 PM	2	413	278	11	66	2	0	34	0	4	0	0	1	21	*832*
	2:00 PM	8	528	329	7	70	4	2	57	0	5	1	1	1	75	*1088*
	3:00 PM	17	462	286	2	31	8	0	61	0	12	4	2	0	236	*1121*
	4:00 PM	21	285	169	4	11	12	2	48	0	9	0	4	1	311	*877*
	5:00 PM	7	573	302	6	35	1	4	58	1	7	1	0	1	93	*1089*
	6:00 PM	1	393	253	0	27	1	2	30	0	4	0	0	0	8	*719*
	7:00 PM	0	303	158	0	16	0	1	17	0	1	0	0	0	7	*503*
	8:00 PM	0	165	92	0	7	1	1	3	0	0	0	0	0	5	*274*
	9:00 PM	0	110	51	1	2	0	0	1	0	0	0	1	0	3	*169*
	10:00 PM	0	79	26	0	3	0	0	1	0	0	0	0	0	0	*109*
	11:00 PM	0	32	7	0	1	0	0	0	0	0	0	0	0	1	*41*

CR 623 (PARK AVE) NORTHBOUND APPROACHING CR 510 (COLUMBIA TURNPIKE)

AUTOMATED TRAFFIC RECORDER (ATR) COUNTS PERFORMED THURSDAY, JUNE 11, 2015 THROUGH WEDNESDAY, JUNE 17, 2015

IH ENGINEERS, P.C.

NORTHBOUND TRAFFIC VOLUMES (APPROACHING THE INTERSECTION)

	CLASS	1 BIKES	2 CARS & TRAILERS	3 2 AXLE LONG	4 BUSES	5 2 AXLE 6 TIRE	6 3 AXLE SINGLE	7 4 AXLE SINGLE	8 <5 AXLE DOUBLE	9 5 AXLE DOUBLE	10 6+ AXLE DOUBLE	11 <6 AXLE MULTI	12 6 AXLE MULTI	13 6+ AXLE MULTI	14 UNCLASS-IFIED	*TOTAL*
4/26/2016	12:00 AM	0	22	19	0	2	0	0	0	0	0	0	0	0	0	*43*
TUESDAY	1:00 AM	0	7	1	0	2	0	0	0	0	0	0	0	0	0	*10*
	2:00 AM	0	5	6	1	1	0	0	0	0	0	0	0	0	0	*13*
	3:00 AM	0	13	6	1	3	0	0	0	0	0	0	0	0	0	*23*
	4:00 AM	1	35	26	4	6	0	0	0	0	0	0	0	0	0	*72*
	5:00 AM	0	123	67	4	20	0	0	4	0	0	0	0	0	0	*218*
	6:00 AM	1	298	152	4	38	1	2	29	0	4	0	1	0	14	*544*
	7:00 AM	0	351	203	6	36	0	0	31	0	6	0	0	0	26	*659*
	8:00 AM	0	288	155	11	58	5	0	11	1	2	0	0	0	14	*545*
	9:00 AM	1	212	195	8	55	3	0	7	1	2	0	0	0	11	*495*
	10:00 AM	3	337	239	9	53	2	0	26	2	1	0	0	0	23	*695*
	11:00 AM	2	422	295	6	45	3	0	31	0	3	1	1	0	25	*834*
	12:00 PM	2	353	294	7	39	5	0	42	1	5	0	0	0	20	*768*
	1:00 PM	4	376	309	9	48	8	2	41	1	5	1	0	0	32	*836*
	2:00 PM	6	529	334	6	73	6	1	45	1	4	0	0	0	135	*1140*
	3:00 PM	25	327	210	5	21	12	5	68	0	11	2	3	1	331	*1021*
	4:00 PM	28	284	162	2	11	5	3	46	1	12	6	1	0	331	*892*
	5:00 PM	10	427	254	1	20	3	4	53	1	7	2	4	2	187	*975*
	6:00 PM	2	466	266	1	31	0	2	29	0	2	0	0	0	18	*817*
	7:00 PM	4	301	142	0	11	0	0	3	0	0	0	0	0	6	*467*
	8:00 PM	0	233	97	0	9	0	0	9	0	0	0	0	0	3	*351*
	9:00 PM	0	141	74	0	14	0	0	7	0	0	0	0	0	1	*237*
	10:00 PM	0	71	39	1	4	0	0	1	0	0	0	0	0	0	*116*
	11:00 PM	1	44	14	0	1	1	0	0	0	0	0	0	0	0	*61*
4/27/2016	12:00 AM	0	28	12	0	2	0	0	0	0	0	0	0	0	0	*42*
WEDNESDAY	1:00 AM	0	14	1	0	3	0	0	0	0	0	0	0	0	0	*18*
	2:00 AM	0	4	3	0	3	0	0	0	0	0	0	0	0	0	*10*
	3:00 AM	0	9	12	1	3	0	0	0	0	0	0	0	0	0	*25*
	4:00 AM	0	43	21	2	5	1	0	0	0	0	0	0	0	0	*72*
	5:00 AM	0	120	72	2	14	0	0	5	0	0	0	0	0	2	*215*
	6:00 AM	3	299	188	6	37	1	1	29	0	3	0	0	0	13	*580*
	7:00 AM	1	345	213	9	48	3	2	41	1	3	0	2	0	16	*684*
	8:00 AM	2	288	211	11	53	4	1	29	2	0	0	0	0	16	*617*
	9:00 AM	2	262	209	7	57	3	1	15	1	1	0	1	0	10	*569*
	10:00 AM	1	356	264	2	59	0	1	18	1	3	0	0	0	16	*721*
	11:00 AM	4	412	269	6	61	3	1	39	1	5	1	0	1	25	*828*
	12:00 PM	3	353	286	12	41	3	4	33	1	1	0	0	0	22	*759*
	1:00 PM	5	385	315	3	62	1	2	42	2	2	2	1	0	37	*859*
	2:00 PM	7	530	372	9	69	6	1	79	0	7	1	1	0	96	*1178*
	3:00 PM	13	403	254	5	35	5	1	66	2	13	0	3	2	288	*1090*
	4:00 PM	37	351	191	3	15	11	1	41	0	11	1	3	2	301	*968*
	5:00 PM	17	558	275	2	28	5	1	24	1	3	1	0	0	162	*1077*
	6:00 PM	6	546	248	1	16	0	1	11	0	2	0	0	0	14	*845*
	7:00 PM	2	325	174	0	15	0	0	4	0	0	0	0	0	2	*522*
	8:00 PM	1	220	111	1	8	0	0	0	0	0	0	0	0	1	*342*
	9:00 PM	1	168	69	0	5	0	0	1	0	0	0	0	0	2	*246*
	10:00 PM	1	73	27	0	5	1	0	0	0	0	0	0	0	0	*107*
	11:00 PM	0	39	20	0	1	0	0	0	0	0	0	0	0	0	*60*
TOTAL FRI-THU		*403*	*30050*	*19367*	*377*	*2958*	*215*	*79*	*2153*	*51*	*246*	*35*	*36*	*19*	*4105*	*60094*

CR 623 (PARK AVE) NORTHBOUND APPROACHING CR 510 (COLUMBIA TURNPIKE)
AUTOMATED TRAFFIC RECORDER (ATR) COUNTS PERFORMED THURSDAY, JUNE 11, 2015 THROUGH WEDNESDAY, JUNE 17, 2015
IH ENGINEERS, P.C.
NORTHBOUND TRAFFIC VOLUMES (APPROACHING THE INTERSECTION)

CLASS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
	BIKES	CARS & TRAILERS	2 AXLE LONG	BUSES	2 AXLE 6 TIRE	3 AXLE SINGLE	4 AXLE SINGLE	<5 AXLE DOUBLE	5 AXLE DOUBLE	6+ AXLE DOUBLE	<6 AXLE MULTI	6 AXLE MULTI	6+ AXLE MULTI	UNCLASS-IFIED	*TOTAL*
DAILY															
FRI	69	5583	3587	73	578	40	15	435	15	63	8	5	7	865	*11343*
SAT	32	3778	2636	37	336	17	7	159	3	11	0	1	0	99	*7116*
SUN	32	3217	2114	3	194	4	2	93	1	0	1	1	0	53	*5715*
MON	74	5676	3654	96	604	53	18	506	11	54	8	8	4	888	*11654*
TUE	90	5665	3559	86	601	54	19	483	9	64	12	10	3	1177	*11832*
WED	106	6131	3817	82	645	47	18	477	12	54	6	11	5	1023	*12434*
TOTAL FRI-THU	*403*	*30050*	*19367*	*377*	*2958*	*215*	*79*	*2153*	*51*	*246*	*35*	*36*	*19*	*4105*	*60094*
PCT OF TOTAL	0.72%	53.67%	34.59%	0.67%	5.28%	0.38%	0.14%	3.85%	0.09%	0.44%	0.06%	0.06%	0.03%	---	*100.00%*
REDIST. UNCLASSIFIED	30	2203	1420	28	217	16	6	158	4	18	3	3	1	0	*4105*
REVISED TOTAL	*433*	*32253*	*20787*	*405*	*3175*	*231*	*85*	*2311*	*55*	*264*	*38*	*39*	*20*	*0*	*60094*
PCT. PER CLASS	0.72%	53.67%	34.59%	0.67%	5.28%	0.38%	0.14%	3.85%	0.09%	0.44%	0.06%	0.06%	0.03%	0.00%	
CLASS SUMMARIES		89.0%		0.67%		5.8%			4.4%			0%		---	
		PASS. CARS		BUS		SINGLE UNIT TRUCK			DOUBLE TRUCK			TRIPLE TRUCK		---	

AVERAGE DAILY TRAFFIC VOLUMES			
	7-DAY AVERAGE	10016	VPD
	MON-FRI AVERAGE	10681	VPD
	SAT-SUN AVERAGE	8685	VPD
	TUE-WED-THU AVERAGE	11889	VPD

CR 623 (PARK AVE) SOUTHBOUND APPROACHING CR 510 (COLUMBIA TURNPIKE)
AUTOMATED TRAFFIC RECORDER (ATR) COUNTS PERFORMED THURSDAY, JUNE 11, 2015 THROUGH WEDNESDAY, JUNE 17, 2015
IH ENGINEERS, P.C.
SOUTHBOUND TRAFFIC VOLUMES (APPROACHING THE INTERSECTION)

	CLASS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
			CARS &	2 AXLE		2 AXLE	3 AXLE	4 AXLE	<5 AXLE	5 AXLE	6+ AXLE	<6 AXLE	6 AXLE	6+ AXLE	UNCLASS-	
		BIKES	TRAILERS	LONG	BUSES	6 TIRE	SINGLE	SINGLE	DOUBLE	DOUBLE	DOUBLE	MULTI	MULTI	MULTI	IFIED	*TOTAL*
4/22/2016	12:00 AM	0	7	0	0	0	0	0	0	0	0	0	0	0	0	*7*
FRIDAY	1:00 AM	0	4	0	0	0	0	0	0	0	0	0	0	0	0	*4*
	2:00 AM	0	3	0	0	0	0	0	0	0	0	0	0	0	0	*3*
	3:00 AM	0	13	3	0	0	0	0	0	0	0	0	0	0	0	*16*
	4:00 AM	0	52	6	0	0	2	0	0	0	0	0	0	0	0	*60*
	5:00 AM	0	200	25	3	8	1	0	0	0	0	0	0	0	0	*237*
	6:00 AM	17	663	49	5	15	1	0	2	1	0	0	0	0	23	*776*
	7:00 AM	8	804	40	3	13	4	1	3	0	1	1	0	0	48	*926*
	8:00 AM	3	368	47	3	20	2	0	2	0	0	0	0	0	7	*452*
	9:00 AM	1	248	35	1	10	0	0	2	0	0	0	0	0	2	*299*
	10:00 AM	2	250	38	1	6	2	0	2	1	0	0	0	0	2	*304*
	11:00 AM	0	332	30	6	7	1	0	2	0	0	0	0	0	4	*382*
	12:00 PM	0	284	27	0	6	0	0	0	1	0	0	0	0	1	*319*
	1:00 PM	4	241	23	2	10	2	0	2	0	1	0	0	0	2	*287*
	2:00 PM	3	354	34	5	7	1	0	3	0	0	0	1	0	3	*411*
	3:00 PM	4	506	43	2	13	0	0	3	0	0	0	0	0	5	*576*
	4:00 PM	0	653	46	0	5	1	0	1	0	0	0	0	0	2	*708*
	5:00 PM	2	358	12	0	2	0	0	1	0	0	0	0	0	2	*377*
	6:00 PM	0	207	14	0	6	1	0	0	0	0	0	0	0	0	*228*
	7:00 PM	0	149	8	0	0	0	0	0	0	0	0	0	0	1	*158*
	8:00 PM	1	86	5	0	0	0	0	0	0	0	0	0	0	0	*92*
	9:00 PM	0	64	5	0	1	0	0	0	0	0	0	0	0	0	*70*
	10:00 PM	0	54	3	0	0	0	0	0	0	0	0	0	0	0	*57*
	11:00 PM	0	22	0	0	0	0	0	0	0	0	0	0	0	0	*22*
4/23/2016	12:00 AM	0	8	0	0	1	0	0	0	0	0	0	0	0	0	*9*
SATURDAY	1:00 AM	0	5	0	0	0	0	0	0	0	0	0	0	0	0	*5*
	2:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*0*
	3:00 AM	0	8	1	0	0	0	0	0	0	0	0	0	0	0	*9*
	4:00 AM	0	20	1	0	1	0	0	0	0	0	0	0	0	0	*22*
	5:00 AM	0	36	2	0	2	0	0	0	0	0	0	0	0	0	*40*
	6:00 AM	0	87	17	0	2	0	0	0	0	0	0	0	0	1	*107*
	7:00 AM	0	191	21	1	3	0	0	0	0	0	0	0	0	4	*220*
	8:00 AM	0	226	25	2	7	0	0	0	0	0	0	0	0	5	*265*
	9:00 AM	0	237	21	2	6	0	0	0	0	0	0	0	0	0	*266*
	10:00 AM	0	234	33	0	5	0	0	1	0	0	0	0	0	0	*273*
	11:00 AM	0	260	25	0	1	0	0	0	0	0	0	0	0	1	*287*
	12:00 PM	0	278	22	0	4	0	0	1	0	0	0	0	0	2	*307*
	1:00 PM	0	282	24	1	4	0	0	0	0	0	0	0	0	0	*311*
	2:00 PM	0	276	27	0	2	0	0	1	0	0	0	0	0	1	*307*
	3:00 PM	1	216	17	0	3	0	0	0	0	0	0	0	0	2	*239*
	4:00 PM	1	181	10	0	4	0	0	2	0	0	0	0	0	1	*199*
	5:00 PM	1	196	11	0	6	0	0	0	0	0	0	0	0	0	*214*
	6:00 PM	2	139	9	0	2	0	0	0	0	0	0	0	0	0	*152*
	7:00 PM	1	107	8	0	2	0	0	0	0	0	0	0	0	0	*118*
	8:00 PM	0	100	1	0	1	0	0	0	0	0	0	0	0	1	*103*
	9:00 PM	0	50	4	0	0	0	0	0	0	0	0	0	0	0	*54*
	10:00 PM	0	39	3	0	0	0	0	0	0	0	0	0	0	0	*42*
	11:00 PM	0	18	1	0	0	0	0	0	0	0	0	0	0	0	*19*

CR 623 (PARK AVE) SOUTHBOUND APPROACHING CR 510 (COLUMBIA TURNPIKE)
AUTOMATED TRAFFIC RECORDER (ATR) COUNTS PERFORMED THURSDAY, JUNE 11, 2015 THROUGH WEDNESDAY, JUNE 17, 2015
IH ENGINEERS, P.C.

SOUTHBOUND TRAFFIC VOLUMES (APPROACHING THE INTERSECTION)

	CLASS	1 BIKES	2 CARS & TRAILERS	3 2 AXLE LONG	4 BUSES	5 2 AXLE 6 TIRE	6 3 AXLE SINGLE	7 4 AXLE SINGLE	8 <5 AXLE DOUBLE	9 5 AXLE DOUBLE	10 6+ AXLE DOUBLE	11 <6 AXLE MULTI	12 6 AXLE MULTI	13 6+ AXLE MULTI	14 UNCLASS-IFIED	TOTAL
4/24/2016	12:00 AM	0	16	1	0	0	0	0	0	0	0	0	0	0	0	*17*
SUNDAY	1:00 AM	0	9	0	0	0	0	0	0	0	0	0	0	0	0	*9*
	2:00 AM	0	5	0	0	0	0	0	0	0	0	0	0	0	0	*5*
	3:00 AM	0	1	3	0	0	0	0	0	0	0	0	0	0	0	*4*
	4:00 AM	0	13	1	0	0	0	0	0	0	0	0	0	0	0	*14*
	5:00 AM	0	35	3	0	1	0	0	0	0	0	0	0	0	0	*39*
	6:00 AM	0	63	7	0	0	0	0	1	0	0	0	0	0	1	*72*
	7:00 AM	0	127	10	0	5	0	0	0	0	0	0	0	0	0	*142*
	8:00 AM	0	142	11	0	0	0	1	0	0	0	0	0	0	2	*156*
	9:00 AM	2	185	10	0	2	0	0	0	0	0	0	0	0	3	*202*
	10:00 AM	2	202	17	0	4	1	0	0	0	0	0	0	0	1	*227*
	11:00 AM	2	234	19	0	2	0	0	1	0	0	0	0	0	1	*259*
	12:00 PM	0	223	8	0	2	0	0	0	0	0	0	0	0	1	*234*
	1:00 PM	2	239	15	0	2	0	0	0	0	0	0	0	0	0	*258*
	2:00 PM	3	188	9	0	3	0	0	0	0	0	0	0	0	1	*204*
	3:00 PM	2	210	11	0	0	0	0	0	0	0	0	0	0	0	*223*
	4:00 PM	3	165	6	0	2	0	0	0	0	0	0	0	0	1	*177*
	5:00 PM	1	137	10	0	1	0	0	0	0	0	0	0	0	0	*149*
	6:00 PM	3	122	5	0	1	0	0	0	0	0	0	0	0	1	*132*
	7:00 PM	1	85	11	0	0	0	0	0	0	0	0	0	0	0	*97*
	8:00 PM	0	53	1	0	0	0	0	0	0	0	0	0	0	0	*54*
	9:00 PM	0	20	5	0	0	0	0	0	0	0	0	0	0	0	*25*
	10:00 PM	0	20	2	0	0	0	0	0	0	0	0	0	0	0	*22*
	11:00 PM	0	9	0	0	0	0	0	0	0	0	0	0	0	0	*9*
4/25/2016	12:00 AM	0	7	0	0	0	0	0	0	0	0	0	0	0	0	*7*
MONDAY	1:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	*1*
	2:00 AM	0	3	0	0	0	0	0	0	0	0	0	0	0	0	*3*
	3:00 AM	0	12	1	0	0	0	0	0	0	0	0	0	0	0	*13*
	4:00 AM	0	45	8	1	0	0	0	1	0	0	0	0	0	1	*56*
	5:00 AM	0	210	29	4	9	0	0	3	0	0	0	0	0	3	*258*
	6:00 AM	14	602	47	6	14	1	0	3	1	2	0	0	0	64	*754*
	7:00 AM	19	718	34	4	12	1	1	2	0	0	0	0	0	88	*879*
	8:00 AM	11	386	40	4	11	1	0	3	0	1	0	0	0	46	*503*
	9:00 AM	0	230	23	3	12	0	0	4	0	0	0	0	0	3	*275*
	10:00 AM	1	260	33	2	7	1	0	4	0	0	0	0	0	3	*311*
	11:00 AM	1	291	28	1	3	2	0	0	2	0	0	0	0	3	*331*
	12:00 PM	1	281	24	2	8	3	0	1	0	0	0	0	0	3	*323*
	1:00 PM	0	255	26	2	9	3	0	0	0	0	0	0	0	2	*297*
	2:00 PM	1	303	47	5	12	0	0	1	0	0	0	0	0	0	*369*
	3:00 PM	2	422	34	4	10	0	0	2	0	0	0	0	0	6	*480*
	4:00 PM	11	723	34	0	3	0	1	4	0	0	0	0	0	11	*787*
	5:00 PM	0	404	26	1	3	1	0	3	0	0	0	0	0	3	*441*
	6:00 PM	1	202	14	0	3	0	0	1	0	0	0	0	0	2	*223*
	7:00 PM	1	107	11	0	2	0	0	1	0	0	0	0	0	1	*123*
	8:00 PM	0	66	3	0	0	0	0	0	0	0	0	0	0	2	*71*
	9:00 PM	0	32	5	0	0	0	0	0	0	0	0	0	0	0	*37*
	10:00 PM	0	28	1	0	1	0	0	0	0	0	0	0	0	0	*30*
	11:00 PM	0	9	0	0	0	0	0	0	0	0	0	0	0	0	*9*

CR 623 (PARK AVE) SOUTHBOUND APPROACHING CR 510 (COLUMBIA TURNPIKE)

AUTOMATED TRAFFIC RECORDER (ATR) COUNTS PERFORMED THURSDAY, JUNE 11, 2015 THROUGH WEDNESDAY, JUNE 17, 2015

IH ENGINEERS, P.C.

SOUTHBOUND TRAFFIC VOLUMES (APPROACHING THE INTERSECTION)

	CLASS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
		BIKES	CARS & TRAILERS	2 AXLE LONG	BUSES	2 AXLE 6 TIRE	3 AXLE SINGLE	4 AXLE SINGLE	<5 AXLE DOUBLE	5 AXLE DOUBLE	6+ AXLE DOUBLE	<6 AXLE MULTI	6 AXLE MULTI	6+ AXLE MULTI	UNCLASS-IFIED	*TOTAL*
4/26/2016	12:00 AM	0	8	0	0	0	0	0	0	0	0	0	0	0	0	*8*
TUESDAY	1:00 AM	0	4	0	0	0	0	0	0	0	0	0	0	0	0	*4*
	2:00 AM	1	1	0	0	1	0	0	0	0	0	0	0	0	1	*4*
	3:00 AM	0	16	2	0	0	0	0	0	0	0	0	0	0	0	*18*
	4:00 AM	0	63	7	0	1	1	0	0	0	0	0	0	0	0	*72*
	5:00 AM	0	218	24	1	9	0	0	1	0	0	0	0	0	3	*256*
	6:00 AM	13	699	56	4	17	1	0	6	1	2	1	0	0	26	*826*
	7:00 AM	14	882	43	2	18	4	1	3	1	0	0	0	0	58	*1026*
	8:00 AM	5	511	50	0	20	1	1	1	0	0	0	0	0	14	*603*
	9:00 AM	1	221	24	2	11	2	0	1	0	0	0	0	0	1	*263*
	10:00 AM	0	263	30	0	9	1	0	3	1	0	0	0	0	0	*307*
	11:00 AM	0	294	27	0	8	1	0	0	0	0	0	0	0	0	*330*
	12:00 PM	0	259	35	1	8	0	1	0	0	1	0	0	0	4	*309*
	1:00 PM	3	279	23	2	14	1	0	1	0	0	0	0	0	11	*334*
	2:00 PM	2	418	46	6	15	0	0	0	1	0	0	1	0	4	*493*
	3:00 PM	3	744	62	4	14	2	0	3	0	0	0	0	0	16	*848*
	4:00 PM	15	791	39	1	10	5	0	4	0	0	1	0	0	92	*958*
	5:00 PM	6	683	38	0	6	1	0	2	0	1	0	0	0	12	*749*
	6:00 PM	3	350	23	0	4	2	0	0	0	0	0	0	0	2	*384*
	7:00 PM	0	198	11	0	2	0	0	0	0	0	0	0	0	2	*213*
	8:00 PM	0	78	5	0	0	0	0	0	0	0	0	0	0	0	*83*
	9:00 PM	0	40	3	0	1	0	0	0	0	0	0	0	0	0	*44*
	10:00 PM	1	24	1	0	1	0	0	0	0	0	0	0	0	0	*27*
	11:00 PM	0	9	0	0	0	0	0	0	0	0	0	0	0	0	*9*
4/27/2016	12:00 AM	0	6	0	0	0	0	0	0	0	0	0	0	0	0	*6*
WEDNESDAY	1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*0*
	2:00 AM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	*2*
	3:00 AM	0	16	3	0	0	1	0	0	0	0	0	0	0	0	*20*
	4:00 AM	0	51	8	0	1	0	0	1	1	0	0	0	0	0	*62*
	5:00 AM	0	211	26	2	10	0	0	1	1	0	0	0	0	2	*253*
	6:00 AM	9	705	51	3	15	0	0	1	0	0	0	0	0	32	*816*
	7:00 AM	21	590	28	6	9	6	1	1	0	1	1	0	1	142	*807*
	8:00 AM	10	388	33	1	14	2	0	3	0	0	1	0	0	60	*512*
	9:00 AM	0	235	38	1	9	0	0	3	0	0	0	0	0	0	*286*
	10:00 AM	5	253	32	1	12	1	0	2	1	0	0	0	0	16	*323*
	11:00 AM	3	303	31	1	7	0	1	3	0	0	0	0	0	3	*352*
	12:00 PM	0	263	31	0	6	0	0	3	0	1	0	0	0	3	*307*
	1:00 PM	0	265	23	3	10	1	0	3	0	0	0	0	0	1	*306*
	2:00 PM	0	350	42	4	5	0	0	1	0	1	0	0	0	2	*405*
	3:00 PM	2	447	37	2	10	1	0	3	0	0	0	0	0	2	*504*
	4:00 PM	2	719	42	0	2	0	0	3	0	0	0	0	0	2	*770*
	5:00 PM	1	432	26	0	6	1	0	0	0	0	0	0	0	2	*468*
	6:00 PM	2	230	15	0	3	1	0	0	0	0	0	0	0	1	*252*
	7:00 PM	0	122	4	0	0	0	0	0	0	0	0	0	0	0	*126*
	8:00 PM	0	83	5	0	1	0	1	0	0	0	0	0	0	0	*90*
	9:00 PM	0	41	2	0	1	0	0	0	0	0	0	0	0	0	*44*
	10:00 PM	1	27	3	0	0	0	0	0	0	0	0	0	0	0	*31*
	11:00 PM	0	5	0	0	0	0	0	0	0	0	0	0	0	0	*5*

CR 623 (PARK AVE) SOUTHBOUND APPROACHING CR 510 (COLUMBIA TURNPIKE)
AUTOMATED TRAFFIC RECORDER (ATR) COUNTS PERFORMED THURSDAY, JUNE 11, 2015 THROUGH WEDNESDAY, JUNE 17, 2015
IH ENGINEERS, P.C.
SOUTHBOUND TRAFFIC VOLUMES (APPROACHING THE INTERSECTION)

	CLASS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
		BIKES	CARS & TRAILERS	2 AXLE LONG	BUSES	2 AXLE 6 TIRE	3 AXLE SINGLE	4 AXLE SINGLE	<5 AXLE DOUBLE	5 AXLE DOUBLE	6+ AXLE DOUBLE	<6 AXLE MULTI	6 AXLE MULTI	6+ AXLE MULTI	UNCLASS-IFIED	*TOTAL*
4/28/2016	12:00 AM	0	6	0	0	0	0	0	0	0	0	0	0	0	0	*6*
THURSDAY	1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*0*
	2:00 AM	0	3	0	0	0	0	0	0	0	0	0	0	0	0	*3*
	3:00 AM	0	13	2	0	0	0	0	0	0	0	0	0	0	0	*15*
	4:00 AM	0	59	9	0	0	0	0	0	0	0	0	0	0	1	*69*
	5:00 AM	0	219	21	2	7	0	0	3	0	0	0	0	0	2	*254*
	6:00 AM	13	710	52	3	15	5	1	1	0	1	0	0	0	48	*849*
	7:00 AM	23	859	54	4	18	1	2	1	1	0	1	0	0	84	*1048*
	8:00 AM	3	455	37	2	22	1	1	2	1	0	0	0	0	1	*525*
	9:00 AM	0	231	40	3	11	1	0	4	0	0	0	0	0	3	*293*
	10:00 AM	3	284	29	2	12	1	0	1	0	0	0	0	0	2	*334*
	11:00 AM	0	336	44	0	8	0	0	0	0	0	0	0	0	1	*389*
	12:00 PM	3	327	24	1	5	0	0	2	0	0	0	0	0	6	*368*
	1:00 PM	2	286	22	3	16	1	0	4	0	0	0	0	0	0	*334*
	2:00 PM	3	316	32	3	8	0	0	0	0	0	0	0	0	2	*364*
	3:00 PM	1	510	32	1	7	0	0	2	0	2	0	0	0	3	*558*
	4:00 PM	1	710	42	3	4	1	0	0	0	0	0	0	0	10	*771*
	5:00 PM	0	418	23	2	3	0	0	1	0	0	0	0	0	1	*448*
	6:00 PM	0	228	17	0	5	0	0	0	0	0	0	0	0	0	*250*
	7:00 PM	0	139	8	0	2	0	0	0	0	0	0	0	0	0	*149*
	8:00 PM	0	66	3	0	1	0	0	0	0	0	0	0	0	1	*71*
	9:00 PM	0	38	1	0	0	0	0	0	0	0	0	0	0	0	*39*
	10:00 PM	0	26	0	0	0	0	0	0	0	0	0	0	0	0	*26*
	11:00 PM	0	12	1	0	0	0	0	0	0	0	0	0	0	0	*13*
TOTAL FRI-THU		*310*	*36264*	*2931*	*152*	*763*	*79*	*14*	*137*	*15*	*15*	*6*	*2*	*1*	*1052*	*41741*
DAILY																
	FRI	45	5922	493	31	129	18	1	23	3	2	1	1	0	102	*6771*
	SAT	6	3194	283	6	56	0	0	5	0	0	0	0	0	18	*3568*
	SUN	21	2503	165	0	25	1	1	2	0	0	0	0	0	12	*2730*
	MON	63	5597	468	39	119	13	2	33	3	3	0	0	0	241	*6581*
	TUE	67	7053	549	23	169	22	3	25	4	4	2	1	0	246	*8168*
	WED	56	5744	480	24	121	14	3	28	3	3	2	0	1	268	*6747*
	THU	52	6251	493	29	144	11	4	21	2	3	1	0	0	165	*7176*
TOTAL FRI-THU		*310*	*36264*	*2931*	*152*	*763*	*79*	*14*	*137*	*15*	*15*	*6*	*2*	*1*	*1052*	*41741*
PCT OF TOTAL		0.76%	89.12%	7.20%	0.37%	1.88%	0.19%	0.03%	0.34%	0.04%	0.04%	0.01%	0.00%	0.00%	---	*100.00%*
REDIST. UNCLASSIFIED		8	938	76	4	20	2	0	4	0	0	0	0	0	0	1052
REVISED TOTAL		*318*	*37202*	*3007*	*156*	*783*	*81*	*14*	*141*	*15*	*15*	*6*	*2*	*1*	*0*	*41741*
PCT. PER CLASS		0.76%	89.12%	7.20%	0.37%	1.88%	0.19%	0.03%	0.34%	0.04%	0.04%	0.01%	0.00%	0.00%	0.00%	
CLASS SUMMARIES			97.1%		0.37%		2.1%			0.4%			0%		---	
			PASS. CARS		BUS		SINGLE UNIT TRUCK			DOUBLE TRUCK			TRIPLE TRUCK		---	

AVERAGE DAILY TRAFFIC VOLUMES			
	7-DAY AVERAGE	5963	VPD
	MON-FRI AVERAGE	6486	VPD
	SAT-SUN AVERAGE	4656	VPD
	TUE-WED-THU AVERAGE	6898	VPD

NJ ROUTE 24 EASTBOUND RAMP TO CR 510 WESTBOUND
AUTOMATED TRAFFIC RECORDER (ATR) COUNTS PERFORMED THURSDAY, JUNE 11, 2015 THROUGH WEDNESDAY, JUNE 17, 2015
IH ENGINEERS, P.C.

WESTBOUND TRAFFIC VOLUMES (APPROACHING THE INTERSECTION)

	CLASS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
		BIKES	CARS & TRAILERS	2 AXLE LONG	BUSES	2 AXLE 6 TIRE	3 AXLE SINGLE	4 AXLE SINGLE	<5 AXLE DOUBLE	5 AXLE DOUBLE	6+ AXLE DOUBLE	<6 AXLE MULTI	6 AXLE MULTI	6+ AXLE MULTI	UNCLASS-IFIED	*TOTAL*
4/22/2016	12:00 AM	0	16	4	0	2	0	0	0	0	0	0	0	0	0	*22*
FRIDAY	1:00 AM	0	13	2	0	1	0	0	0	0	0	0	0	0	0	*16*
	2:00 AM	0	9	0	0	0	0	0	0	1	0	0	0	0	0	*10*
	3:00 AM	0	2	1	1	0	0	0	0	0	0	0	0	0	0	*4*
	4:00 AM	0	9	4	0	0	0	0	1	0	0	0	0	0	0	*14*
	5:00 AM	1	62	20	1	10	1	0	0	0	0	0	0	0	0	*95*
	6:00 AM	4	236	74	1	22	1	0	2	2	1	0	0	0	8	*351*
	7:00 AM	2	290	48	3	18	2	0	4	0	0	0	0	0	11	*378*
	8:00 AM	6	228	41	4	5	2	0	0	2	0	0	0	0	138	*426*
	9:00 AM	3	300	48	5	20	1	0	1	0	0	0	0	0	24	*402*
	10:00 AM	2	190	46	2	8	2	0	0	1	0	0	0	0	4	*255*
	11:00 AM	1	200	53	1	14	1	0	1	0	0	0	0	0	7	*278*
	12:00 PM	3	170	45	5	12	4	1	2	0	0	0	0	0	8	*250*
	1:00 PM	2	171	54	3	7	3	0	0	0	0	0	0	0	5	*245*
	2:00 PM	1	183	38	3	10	3	0	2	1	0	0	0	0	7	*248*
	3:00 PM	2	177	35	1	12	1	3	1	0	0	0	0	0	9	*241*
	4:00 PM	0	173	40	0	3	0	0	0	0	0	0	0	0	14	*230*
	5:00 PM	0	191	27	0	5	0	0	0	1	0	0	0	0	29	*253*
	6:00 PM	0	176	36	1	6	0	0	0	0	0	0	0	0	13	*232*
	7:00 PM	1	147	23	1	0	1	0	0	0	0	0	0	0	1	*174*
	8:00 PM	2	107	21	0	8	0	0	0	0	0	0	0	0	1	*139*
	9:00 PM	0	86	23	0	1	0	0	0	0	0	0	0	0	0	*110*
	10:00 PM	0	85	17	0	6	0	0	0	0	0	0	0	0	0	*108*
	11:00 PM	0	67	15	0	2	0	0	0	0	0	0	0	0	0	*84*
4/23/2016	12:00 AM	1	31	3	0	0	1	0	0	0	0	0	0	0	0	*36*
SATURDAY	1:00 AM	0	18	0	0	0	0	0	0	0	0	0	0	0	0	*18*
	2:00 AM	0	11	1	1	0	0	0	0	0	0	0	0	0	0	*13*
	3:00 AM	0	4	1	0	1	0	0	0	0	0	0	0	0	0	*6*
	4:00 AM	0	7	2	0	1	0	0	0	0	0	0	0	0	0	*10*
	5:00 AM	0	26	6	1	3	0	0	0	0	0	0	0	0	0	*36*
	6:00 AM	1	55	18	1	8	1	0	0	0	0	0	0	0	0	*84*
	7:00 AM	1	99	21	1	8	2	0	1	0	0	0	0	0	0	*133*
	8:00 AM	0	202	33	4	15	1	1	1	1	0	0	0	0	6	*264*
	9:00 AM	0	185	39	2	9	2	0	3	1	0	0	0	0	1	*242*
	10:00 AM	1	164	43	2	6	2	0	0	0	0	0	0	0	4	*222*
	11:00 AM	0	187	47	2	10	3	0	0	0	0	0	0	0	2	*251*
	12:00 PM	0	225	51	0	10	1	0	4	0	0	0	0	0	7	*298*
	1:00 PM	1	217	61	1	6	2	0	0	0	0	0	0	0	3	*291*
	2:00 PM	0	189	52	3	7	0	0	1	1	0	0	0	0	4	*257*
	3:00 PM	1	209	43	0	5	0	0	1	0	0	0	0	0	5	*264*
	4:00 PM	2	199	53	0	4	2	0	1	0	0	0	0	0	4	*265*
	5:00 PM	3	182	35	0	6	1	0	0	0	0	0	0	0	1	*228*
	6:00 PM	2	116	26	0	4	0	0	0	0	0	0	0	0	4	*152*
	7:00 PM	1	137	27	1	1	0	0	0	0	0	0	0	0	2	*169*
	8:00 PM	0	110	26	0	2	0	0	0	0	0	0	0	0	1	*139*
	9:00 PM	0	91	24	0	3	0	0	0	0	0	0	0	0	0	*118*
	10:00 PM	0	97	17	0	0	0	0	0	0	0	0	0	0	1	*115*
	11:00 PM	0	58	6	1	3	0	0	0	0	0	0	0	0	0	*68*

NJ ROUTE 24 EASTBOUND RAMP TO CR 510 WESTBOUND

AUTOMATED TRAFFIC RECORDER (ATR) COUNTS PERFORMED THURSDAY, JUNE 11, 2015 THROUGH WEDNESDAY, JUNE 17, 2015

IH ENGINEERS, P.C.

WESTBOUND TRAFFIC VOLUMES (APPROACHING THE INTERSECTION)

	CLASS	1 BIKES	2 CARS & TRAILERS	3 2 AXLE LONG	4 BUSES	5 2 AXLE 6 TIRE	6 3 AXLE SINGLE	7 4 AXLE SINGLE	8 <5 AXLE DOUBLE	9 5 AXLE DOUBLE	10 6+ AXLE DOUBLE	11 <6 AXLE MULTI	12 6 AXLE MULTI	13 6+ AXLE MULTI	14 UNCLASS-IFIED	TOTAL
4/24/2016	12:00 AM	0	37	5	0	0	0	0	0	0	0	0	0	0	0	*42*
SUNDAY	1:00 AM	0	22	5	0	0	0	0	0	0	0	0	0	0	0	*27*
	2:00 AM	0	16	2	0	0	0	0	0	0	0	0	0	0	0	*18*
	3:00 AM	0	6	1	0	0	0	0	0	0	0	0	0	0	0	*7*
	4:00 AM	0	6	0	0	0	0	0	0	0	0	0	0	0	0	*6*
	5:00 AM	0	18	3	0	1	0	0	0	0	0	0	0	0	0	*22*
	6:00 AM	0	33	3	0	3	0	0	0	0	0	0	0	0	0	*39*
	7:00 AM	0	55	10	0	2	0	0	0	0	0	0	0	0	0	*67*
	8:00 AM	1	115	22	0	5	0	0	0	0	0	0	0	0	0	*143*
	9:00 AM	0	134	34	2	6	0	0	0	0	0	0	0	0	2	*178*
	10:00 AM	0	135	23	0	8	0	0	0	0	0	0	0	0	1	*167*
	11:00 AM	4	157	38	0	10	0	0	0	1	0	0	0	0	1	*211*
	12:00 PM	1	183	42	0	5	0	0	0	0	0	0	0	0	1	*232*
	1:00 PM	0	184	39	0	7	0	0	0	0	0	0	0	0	7	*237*
	2:00 PM	1	204	37	0	5	0	0	1	0	0	0	0	0	4	*252*
	3:00 PM	5	177	38	0	6	0	0	0	0	0	0	0	0	0	*226*
	4:00 PM	1	173	40	0	8	0	0	0	0	0	0	0	0	1	*223*
	5:00 PM	3	148	44	0	7	0	0	0	0	0	0	0	0	0	*202*
	6:00 PM	0	128	24	0	4	0	0	0	0	0	0	0	0	1	*157*
	7:00 PM	2	106	22	0	4	1	0	0	0	0	0	0	0	1	*136*
	8:00 PM	2	103	23	0	3	0	0	0	0	0	0	0	0	1	*132*
	9:00 PM	0	58	15	1	1	0	0	0	1	0	0	0	0	0	*76*
	10:00 PM	1	42	7	0	2	0	0	1	0	0	0	0	0	1	*54*
	11:00 PM	0	24	3	1	2	0	0	0	0	0	0	0	0	0	*30*
4/25/2016	12:00 AM	0	12	2	0	0	0	0	0	0	0	0	0	0	0	*14*
MONDAY	1:00 AM	0	4	1	0	0	0	0	0	0	0	0	0	0	0	*5*
	2:00 AM	0	7	0	0	0	0	0	0	0	0	0	0	0	0	*7*
	3:00 AM	1	4	0	1	0	2	0	0	0	0	0	0	0	0	*8*
	4:00 AM	0	18	4	0	0	1	0	0	1	0	0	0	0	0	*24*
	5:00 AM	1	83	23	2	8	0	0	0	0	0	0	0	0	0	*117*
	6:00 AM	1	251	82	2	23	9	0	1	0	0	0	0	0	5	*374*
	7:00 AM	0	319	66	2	10	1	0	3	0	0	0	0	0	25	*426*
	8:00 AM	5	153	30	0	2	0	0	2	1	0	0	0	0	175	*368*
	9:00 AM	3	314	52	4	20	3	0	0	1	0	0	0	0	44	*441*
	10:00 AM	2	213	54	2	10	3	0	3	0	0	0	0	0	10	*297*
	11:00 AM	0	192	56	0	16	0	0	1	1	0	0	0	0	13	*279*
	12:00 PM	2	179	42	3	16	2	0	0	0	0	0	0	0	8	*252*
	1:00 PM	1	164	34	2	7	1	0	0	0	0	0	0	0	5	*214*
	2:00 PM	0	200	38	3	11	0	0	0	0	0	0	0	0	5	*257*
	3:00 PM	1	203	55	1	5	1	0	1	0	0	0	0	0	11	*278*
	4:00 PM	1	170	47	1	4	0	0	1	0	0	0	0	0	23	*247*
	5:00 PM	0	169	50	1	1	0	0	0	0	0	0	0	0	15	*236*
	6:00 PM	1	202	46	0	3	1	0	0	0	0	0	0	0	12	*265*
	7:00 PM	0	145	29	0	6	0	0	0	0	0	0	0	0	11	*191*
	8:00 PM	0	102	27	0	7	0	0	0	0	0	0	0	0	2	*138*
	9:00 PM	0	82	18	0	1	0	0	0	0	0	0	0	0	1	*102*
	10:00 PM	1	57	7	0	1	1	0	0	0	0	0	0	0	0	*67*
	11:00 PM	0	32	3	0	0	0	0	0	0	0	0	0	0	0	*35*

NJ ROUTE 24 EASTBOUND RAMP TO CR 510 WESTBOUND
AUTOMATED TRAFFIC RECORDER (ATR) COUNTS PERFORMED THURSDAY, JUNE 11, 2015 THROUGH WEDNESDAY, JUNE 17, 2015
IH ENGINEERS, P.C.
WESTBOUND TRAFFIC VOLUMES (APPROACHING THE INTERSECTION)

	CLASS	1 BIKES	2 CARS & TRAILERS	3 2 AXLE LONG	4 BUSES	5 2 AXLE 6 TIRE	6 3 AXLE SINGLE	7 4 AXLE SINGLE	8 <5 AXLE DOUBLE	9 5 AXLE DOUBLE	10 6+ AXLE DOUBLE	11 <6 AXLE MULTI	12 6 AXLE MULTI	13 6+ AXLE MULTI	14 UNCLASS- IFIED	*TOTAL*
4/26/2016	12:00 AM	0	9	6	0	1	0	0	0	0	0	0	0	0	0	*16*
TUESDAY	1:00 AM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	*2*
	2:00 AM	0	2	0	2	0	0	0	0	0	0	0	0	0	0	*4*
	3:00 AM	1	5	2	0	1	0	0	0	0	0	0	0	0	1	*10*
	4:00 AM	0	22	5	2	3	1	0	1	0	0	0	0	0	0	*34*
	5:00 AM	0	85	26	1	8	2	0	0	0	0	0	0	0	0	*122*
	6:00 AM	0	261	76	1	20	6	0	1	0	0	0	0	0	5	*370*
	7:00 AM	6	285	58	4	16	3	0	2	1	0	0	0	0	57	*432*
	8:00 AM	3	44	7	0	2	0	0	2	0	0	1	0	0	162	*221*
	9:00 AM	6	172	41	1	5	1	1	1	0	0	0	0	0	191	*419*
	10:00 AM	1	221	46	2	16	3	0	1	0	0	0	0	0	3	*293*
	11:00 AM	0	207	50	0	9	1	0	1	2	0	0	0	0	9	*279*
	12:00 PM	1	177	50	5	9	2	0	0	0	0	0	0	0	8	*252*
	1:00 PM	2	168	39	3	12	4	0	2	1	0	0	0	0	7	*238*
	2:00 PM	1	191	36	1	9	2	0	2	1	0	0	0	0	13	*256*
	3:00 PM	1	113	32	2	3	1	0	0	0	0	0	0	0	16	*168*
	4:00 PM	1	54	16	1	1	1	0	0	0	0	0	0	0	5	*79*
	5:00 PM	0	64	10	0	0	0	0	0	0	0	0	0	0	7	*81*
	6:00 PM	0	86	17	1	1	0	0	0	0	0	0	0	0	5	*110*
	7:00 PM	0	89	21	0	1	0	0	1	0	0	0	0	0	2	*114*
	8:00 PM	0	75	17	0	5	0	0	0	0	0	0	0	0	0	*97*
	9:00 PM	0	108	20	0	3	0	0	0	0	0	0	0	0	0	*131*
	10:00 PM	0	52	7	0	0	0	0	0	0	0	0	0	0	0	*59*
	11:00 PM	0	29	5	0	2	0	0	0	0	0	0	0	0	0	*36*
4/27/2016	12:00 AM	0	16	0	0	0	0	0	0	0	0	0	0	0	0	*16*
WEDNESDAY	1:00 AM	0	7	0	0	0	0	0	0	0	0	0	0	0	0	*7*
	2:00 AM	0	2	0	1	1	0	0	0	0	0	0	0	0	0	*4*
	3:00 AM	0	2	0	1	0	0	0	0	0	0	0	0	0	0	*3*
	4:00 AM	0	17	6	1	1	0	0	0	0	0	0	0	0	0	*25*
	5:00 AM	0	71	23	1	6	0	0	0	0	0	0	0	0	0	*101*
	6:00 AM	2	249	84	0	23	6	1	1	0	0	0	0	0	5	*371*
	7:00 AM	3	317	50	3	15	0	0	5	1	0	0	0	0	74	*468*
	8:00 AM	4	38	11	0	2	0	0	0	0	0	0	1	0	186	*242*
	9:00 AM	3	240	55	2	10	2	0	0	0	0	0	0	0	107	*419*
	10:00 AM	2	215	56	2	15	2	0	2	0	0	0	0	0	14	*308*
	11:00 AM	1	203	54	3	9	1	0	2	1	0	0	0	0	4	*278*
	12:00 PM	0	196	54	0	18	0	0	1	1	0	0	0	0	9	*279*
	1:00 PM	2	200	40	4	7	3	0	1	0	0	0	0	0	0	*257*
	2:00 PM	1	179	52	4	11	2	0	1	0	0	0	0	0	7	*257*
	3:00 PM	1	194	45	2	12	1	0	1	0	0	0	0	0	8	*264*
	4:00 PM	2	201	39	1	4	2	0	0	0	0	0	0	0	24	*273*
	5:00 PM	0	202	34	1	5	0	0	1	0	0	0	0	0	21	*264*
	6:00 PM	3	224	35	0	4	0	0	0	0	0	0	0	0	19	*285*
	7:00 PM	0	138	26	0	3	0	0	1	0	0	0	0	0	3	*171*
	8:00 PM	0	116	28	0	4	0	0	0	0	0	0	0	0	3	*151*
	9:00 PM	1	133	22	0	0	0	0	0	0	0	0	0	0	2	*158*
	10:00 PM	1	61	9	0	3	1	0	0	0	0	0	0	0	1	*76*
	11:00 PM	1	35	10	0	0	1	0	0	0	0	0	0	0	0	*47*

NJ ROUTE 24 EASTBOUND RAMP TO CR 510 WESTBOUND
AUTOMATED TRAFFIC RECORDER (ATR) COUNTS PERFORMED THURSDAY, JUNE 11, 2015 THROUGH WEDNESDAY, JUNE 17, 2015
IH ENGINEERS, P.C.
WESTBOUND TRAFFIC VOLUMES (APPROACHING THE INTERSECTION)

	CLASS	1 BIKES	2 CARS & TRAILERS	3 2 AXLE LONG	4 BUSES	5 2 AXLE 6 TIRE	6 3 AXLE SINGLE	7 4 AXLE SINGLE	8 <5 AXLE DOUBLE	9 5 AXLE DOUBLE	10 6+ AXLE DOUBLE	11 <6 AXLE MULTI	12 6 AXLE MULTI	13 6+ AXLE MULTI	14 UNCLASS-IFIED	*TOTAL*
4/28/2016	12:00 AM	0	20	2	0	1	0	0	0	0	0	0	0	0	0	*23*
THURSDAY	1:00 AM	0	11	4	0	0	0	0	0	0	0	0	0	0	0	*15*
	2:00 AM	0	3	1	2	0	0	0	0	0	0	0	0	0	0	*6*
	3:00 AM	0	2	1	0	0	0	0	0	0	0	0	0	0	0	*3*
	4:00 AM	0	13	3	1	1	1	0	0	0	0	0	0	0	0	*19*
	5:00 AM	2	71	26	2	14	1	0	1	0	0	0	0	0	0	*117*
	6:00 AM	2	240	77	3	19	2	0	0	0	0	0	0	0	12	*355*
	7:00 AM	2	334	57	4	25	2	0	0	0	1	0	0	0	60	*485*
	8:00 AM	4	83	19	1	3	0	0	2	0	0	1	0	0	198	*311*
	9:00 AM	7	205	40	5	8	2	0	2	0	0	0	0	0	121	*390*
	10:00 AM	2	235	52	5	16	3	0	0	1	0	0	0	0	7	*321*
	11:00 AM	2	199	43	3	16	2	0	1	1	0	0	0	0	7	*274*
	12:00 PM	2	196	48	0	13	1	0	4	0	0	0	0	0	15	*279*
	1:00 PM	0	166	47	2	14	2	1	2	1	0	0	0	0	11	*246*
	2:00 PM	0	201	48	2	14	0	0	2	0	0	0	0	0	9	*276*
	3:00 PM	0	210	42	0	9	1	0	0	0	0	0	0	0	18	*280*
	4:00 PM	0	175	31	0	9	0	0	4	0	0	0	0	0	21	*240*
	5:00 PM	0	231	45	0	5	0	0	1	0	0	0	0	0	12	*294*
	6:00 PM	1	200	45	1	6	1	0	0	0	0	0	0	0	11	*265*
	7:00 PM	0	158	33	0	4	0	0	0	0	0	0	0	0	0	*195*
	8:00 PM	1	95	18	1	3	1	0	0	0	0	0	0	0	2	*121*
	9:00 PM	0	91	22	0	0	0	0	0	0	0	0	0	0	2	*115*
	10:00 PM	0	48	8	2	3	0	0	0	0	0	0	0	0	0	*61*
	11:00 PM	0	44	5	0	0	0	0	0	0	0	0	0	0	0	*49*
TOTAL FRI-THU		*160*	*20654*	*4633*	*166*	*987*	*133*	*8*	*89*	*28*	*2*	*2*	*1*	*0*	*2194*	*29057*
DAILY																
	FRI	30	3288	715	32	172	22	4	14	8	1	0	0	0	279	*4565*
	SAT	14	2819	635	20	112	18	1	12	3	0	0	0	0	45	*3679*
	SUN	21	2264	480	4	89	1	0	2	2	0	0	0	0	21	*2884*
	MON	20	3275	766	24	151	25	0	12	4	0	0	0	0	365	*4642*
	TUE	23	2521	587	26	127	27	1	14	5	0	1	0	0	491	*3823*
	WED	27	3256	733	26	153	21	1	16	3	0	0	1	0	487	*4724*
	THU	25	3231	717	34	183	19	1	19	3	1	1	0	0	506	*4740*
TOTAL FRI-THU		*160*	*20654*	*4633*	*166*	*987*	*133*	*8*	*89*	*28*	*2*	*2*	*1*	*0*	*2194*	*29057*
PCT OF TOTAL		0.60%	76.89%	17.25%	0.62%	3.67%	0.50%	0.03%	0.33%	0.10%	0.01%	0.01%	0.00%	0.00%	---	*100.00%*
REDIST. UNCLASSIFIED		13	1687	378	14	81	11	1	7	2	0	0	0	0	0	*2194*
REVISED TOTAL		*173*	*22341*	*5011*	*180*	*1068*	*144*	*9*	*96*	*30*	*2*	*2*	*1*	*0*	*0*	*29057*
PCT. PER CLASS		0.60%	76.89%	17.25%	0.62%	3.67%	0.50%	0.03%	0.33%	0.10%	0.01%	0.01%	0.00%	0.00%	0.00%	
CLASS SUMMARIES			94.7%		0.62%		4.2%			0.4%			0%		---	
			PASS. CARS		BUS		SINGLE UNIT TRUCK			DOUBLE TRUCK			TRIPLE TRUCK		---	

AVERAGE DAILY TRAFFIC VOLUMES	7-DAY AVERAGE	4151	VPD
	MON-FRI AVERAGE	4499	VPD
	SAT-SUN AVERAGE	3282	VPD
	TUE-WED-THU AVERAGE	4429	VPD

NJ ROUTE 24 EASTBOUND RAMP TO CR 510 EASTBOUND
AUTOMATED TRAFFIC RECORDER (ATR) COUNTS PERFORMED THURSDAY, JUNE 11, 2015 THROUGH WEDNESDAY, JUNE 17, 2015
IH ENGINEERS, P.C.

	CLASS	1 BIKES	2 CARS & TRAILERS	3 2 AXLE LONG	4 BUSES	5 2 AXLE 6 TIRE	6 3 AXLE SINGLE	7 4 AXLE SINGLE	8 <5 AXLE DOUBLE	9 5 AXLE DOUBLE	10 6+ AXLE DOUBLE	11 <6 AXLE MULTI	12 6 AXLE MULTI	13 6+ AXLE MULTI	14 UNCLASS-IFIED	*TOTAL*
5/10/2016	12:00 AM	0	3	2	0	0	0	0	0	0	0	0	0	0	0	*5*
TUESDAY	1:00 AM	0	1	5	0	0	0	0	0	0	0	0	0	0	0	*6*
	2:00 AM	0	2	3	0	0	0	0	0	0	0	0	0	0	0	*5*
	3:00 AM	0	31	3	0	0	0	0	0	0	0	0	0	0	0	*34*
	4:00 AM	0	97	16	0	3	0	0	0	0	0	0	0	0	0	*116*
	5:00 AM	0	230	50	2	17	0	0	0	1	0	0	0	0	0	*300*
	6:00 AM	1	380	66	5	19	2	2	2	1	0	0	0	0	0	*478*
	7:00 AM	1	520	97	1	14	2	0	4	0	0	0	0	0	1	*640*
	8:00 AM	0	384	72	3	27	3	0	2	0	0	0	0	0	0	*491*
	9:00 AM	1	208	67	1	12	2	0	3	0	0	0	0	0	0	*294*
	10:00 AM	0	202	57	2	11	0	3	1	1	0	0	0	0	0	*277*
	11:00 AM	1	198	50	1	16	2	1	0	0	0	0	0	0	0	*269*
	12:00 PM	1	230	50	2	13	1	0	0	1	0	0	0	0	0	*298*
	1:00 PM	0	235	61	2	12	2	0	1	1	0	0	0	0	0	*314*
	2:00 PM	1	217	50	1	6	1	0	3	0	0	0	0	0	0	*279*
	3:00 PM	1	266	64	3	7	0	0	2	0	0	0	0	0	0	*343*
	4:00 PM	1	302	63	0	6	0	0	3	0	0	0	0	0	0	*375*
	5:00 PM	1	193	56	1	5	0	0	0	0	0	0	0	0	0	*256*
	6:00 PM	0	167	36	0	6	0	0	1	0	1	0	0	0	0	*211*
	7:00 PM	1	114	22	0	3	0	0	0	1	0	0	0	0	0	*141*
	8:00 PM	1	67	16	0	3	0	1	1	0	0	0	0	0	0	*89*
	9:00 PM	0	36	9	0	0	0	0	0	0	0	0	0	0	0	*45*
	10:00 PM	0	18	2	0	2	0	0	0	0	0	0	0	0	0	*22*
	11:00 PM	0	9	0	0	0	0	0	0	0	0	0	0	0	0	*9*
5/11/2016	12:00 AM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	*2*
WEDNESDAY	1:00 AM	0	2	1	0	0	0	0	0	0	0	0	0	0	0	*3*
	2:00 AM	0	7	2	0	1	0	0	0	0	0	0	0	0	0	*10*
	3:00 AM	1	31	5	1	1	1	0	0	0	0	0	0	0	0	*40*
	4:00 AM	1	104	18	1	4	0	0	0	0	0	0	0	0	0	*128*
	5:00 AM	0	206	36	0	15	1	0	0	1	0	0	0	0	0	*259*
	6:00 AM	0	395	90	10	19	2	0	5	0	0	0	0	0	0	*521*
	7:00 AM	2	536	81	1	16	2	0	1	2	0	0	0	0	0	*641*
	8:00 AM	1	404	90	0	17	3	0	5	1	0	0	0	0	0	*521*
	9:00 AM	3	245	68	4	20	0	0	1	0	0	0	0	0	2	*343*
	10:00 AM	1	230	63	1	11	2	0	1	1	1	0	0	0	0	*311*
	11:00 AM	0	214	62	1	19	1	2	1	1	0	0	0	0	0	*301*
	12:00 PM	3	216	58	2	14	2	0	0	1	0	0	0	0	0	*296*
	1:00 PM	1	195	54	1	10	1	0	1	1	0	0	0	0	0	*264*
	2:00 PM	0	231	57	1	4	1	0	2	0	0	0	0	0	0	*296*
	3:00 PM	0	224	58	3	10	0	0	2	0	0	0	0	0	0	*297*
	4:00 PM	2	226	42	0	10	0	0	1	0	0	0	0	0	0	*281*
	5:00 PM	0	218	43	0	5	0	0	1	0	0	0	0	0	0	*267*
	6:00 PM	0	135	26	0	3	0	0	0	1	0	0	0	0	0	*165*
	7:00 PM	1	92	21	0	2	1	0	0	0	0	0	0	0	0	*117*
	8:00 PM	0	56	17	0	2	0	0	0	0	0	0	0	0	0	*75*
	9:00 PM	0	40	8	0	1	0	0	0	0	0	0	0	0	0	*49*
	10:00 PM	0	19	3	0	2	0	0	0	0	0	0	0	0	0	*24*
	11:00 PM	0	10	3	0	0	0	0	1	0	0	0	0	0	0	*14*

NJ ROUTE 24 EASTBOUND RAMP TO CR 510 EASTBOUND
AUTOMATED TRAFFIC RECORDER (ATR) COUNTS PERFORMED THURSDAY, JUNE 11, 2015 THROUGH WEDNESDAY, JUNE 17, 2015
IH ENGINEERS, P.C.

	CLASS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
			CARS &	2 AXLE		2 AXLE	3 AXLE	4 AXLE	<5 AXLE	5 AXLE	6+ AXLE	<6 AXLE	6 AXLE	6+ AXLE	UNCLASS-	
		BIKES	TRAILERS	LONG	BUSES	6 TIRE	SINGLE	SINGLE	DOUBLE	DOUBLE	DOUBLE	MULTI	MULTI	MULTI	IFIED	*TOTAL*
5/12/2016	12:00 AM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	*2*
THURSDAY	1:00 AM	0	5	2	0	0	0	0	0	0	0	0	0	0	0	*7*
	2:00 AM	1	6	1	0	0	1	0	0	0	0	0	0	0	0	*9*
	3:00 AM	1	20	4	0	0	1	0	0	0	0	0	0	0	0	*26*
	4:00 AM	0	96	20	0	3	1	0	0	0	0	0	0	0	0	*120*
	5:00 AM	0	215	47	2	19	0	0	0	0	0	0	0	0	1	*284*
	6:00 AM	2	367	84	6	12	3	0	3	0	0	0	0	0	0	*477*
	7:00 AM	1	439	89	2	17	0	1	4	1	0	0	0	0	0	*554*
	8:00 AM	2	382	87	1	16	2	2	1	2	0	0	0	0	0	*495*
	9:00 AM	1	253	59	4	18	4	0	0	0	0	0	0	0	0	*339*
	10:00 AM	3	234	63	3	15	1	2	1	0	0	0	0	0	0	*322*
	11:00 AM	0	227	54	0	15	0	1	0	0	0	0	0	0	0	*297*
	12:00 PM	0	235	57	2	10	0	0	3	0	0	0	0	0	0	*307*
	1:00 PM	0	189	50	1	13	1	0	3	0	0	0	0	0	1	*258*
	2:00 PM	3	285	75	1	10	0	0	0	0	0	0	0	0	0	*374*
	3:00 PM	0	250	50	3	10	0	0	1	0	0	0	0	0	1	*315*
	4:00 PM	0	240	59	1	4	0	0	0	0	0	0	0	0	1	*305*
	5:00 PM	0	206	39	2	5	0	0	1	0	1	0	0	0	0	*254*
	6:00 PM	1	129	26	0	2	1	0	0	1	0	0	0	0	0	*160*
	7:00 PM	1	84	18	0	3	0	0	0	0	0	0	0	0	0	*106*
	8:00 PM	2	78	15	0	1	0	0	0	0	0	0	0	0	0	*96*
	9:00 PM	0	43	8	1	1	0	0	0	0	0	0	0	0	0	*53*
	10:00 PM	1	23	3	0	2	1	0	0	0	0	0	0	0	0	*30*
	11:00 PM	0	10	0	0	0	0	0	1	1	0	0	0	0	0	*12*
5/13/2016	12:00 AM	0	5	0	0	0	0	0	0	0	0	0	0	0	0	*5*
FRIDAY	1:00 AM	0	4	2	0	0	0	0	0	0	0	0	0	0	0	*6*
	2:00 AM	0	3	1	0	0	0	0	0	0	0	0	0	0	0	*4*
	3:00 AM	0	29	5	0	0	0	0	0	1	0	0	0	0	0	*35*
	4:00 AM	0	93	19	1	4	2	0	1	0	0	0	0	0	0	*120*
	5:00 AM	2	180	32	0	16	2	0	3	0	0	0	0	0	0	*235*
	6:00 AM	0	383	83	7	15	1	0	1	2	0	0	0	0	0	*492*
	7:00 AM	0	489	70	5	20	1	0	1	2	0	0	0	0	0	*588*
	8:00 AM	2	359	68	1	17	4	0	2	0	0	0	0	0	0	*453*
	9:00 AM	1	245	61	3	15	0	1	1	2	0	0	0	0	0	*329*
	10:00 AM	1	208	59	3	7	2	0	0	0	0	0	0	0	0	*280*
	11:00 AM	0	234	66	4	22	0	0	1	1	0	0	0	0	0	*328*
	12:00 PM	0	204	53	0	12	0	0	2	1	0	0	0	0	0	*272*
	1:00 PM	0	200	57	1	14	0	0	1	0	0	0	0	0	0	*273*
	2:00 PM	0	219	69	6	10	0	0	1	1	0	0	0	0	0	*306*
	3:00 PM	2	217	51	0	3	0	0	3	0	0	0	0	0	0	*276*
	4:00 PM	0	211	33	0	4	0	0	2	0	0	0	0	0	0	*250*
	5:00 PM	0	145	24	0	2	0	0	0	0	0	0	0	0	0	*171*
	6:00 PM	1	108	35	0	4	1	0	0	1	0	0	0	0	0	*150*
	7:00 PM	0	64	24	0	1	0	0	0	0	0	0	0	0	0	*89*
	8:00 PM	0	62	12	0	1	0	0	0	0	0	0	0	0	0	*75*
	9:00 PM	0	60	15	0	3	0	0	1	0	0	0	0	0	0	*79*
	10:00 PM	0	29	7	0	0	0	0	0	0	0	0	0	0	0	*36*
	11:00 PM	0	18	4	0	0	0	0	0	0	0	0	0	0	0	*22*

NJ ROUTE 24 EASTBOUND RAMP TO CR 510 EASTBOUND
AUTOMATED TRAFFIC RECORDER (ATR) COUNTS PERFORMED THURSDAY, JUNE 11, 2015 THROUGH WEDNESDAY, JUNE 17, 2015
IH ENGINEERS, P.C.

	CLASS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
		BIKES	CARS & TRAILERS	2 AXLE LONG	BUSES	2 AXLE 6 TIRE	3 AXLE SINGLE	4 AXLE SINGLE	<5 AXLE DOUBLE	5 AXLE DOUBLE	6+ AXLE DOUBLE	<6 AXLE MULTI	6 AXLE MULTI	6+ AXLE MULTI	UNCLASS-IFIED	*TOTAL*
5/14/2016	12:00 AM	0	6	2	0	1	1	0	0	0	0	0	0	0	0	*10*
SATURDAY	1:00 AM	0	4	1	0	0	0	0	0	0	0	0	0	0	0	*5*
	2:00 AM	0	1	1	0	0	0	0	0	0	0	0	0	0	0	*2*
	3:00 AM	0	18	3	0	1	0	0	0	0	0	0	0	0	0	*22*
	4:00 AM	0	23	8	0	0	1	0	0	0	0	0	0	0	0	*32*
	5:00 AM	1	65	17	0	0	1	0	1	1	0	0	0	0	0	*86*
	6:00 AM	1	109	16	1	12	2	0	1	0	0	0	0	0	0	*142*
	7:00 AM	0	194	33	2	14	0	0	0	1	0	0	0	0	0	*244*
	8:00 AM	0	208	46	2	13	0	0	0	0	0	0	0	0	1	*270*
	9:00 AM	2	232	38	0	11	0	0	1	0	0	0	0	0	1	*285*
	10:00 AM	0	189	49	0	7	0	0	2	0	0	0	0	0	0	*247*
	11:00 AM	1	205	38	1	6	0	0	1	0	0	0	0	0	0	*252*
	12:00 PM	0	186	47	2	3	0	0	0	0	0	0	0	1	0	*239*
	1:00 PM	2	162	47	0	7	0	0	3	0	0	0	0	0	0	*221*
	2:00 PM	3	174	30	0	6	0	0	0	0	0	0	0	0	0	*213*
	3:00 PM	0	173	45	3	3	0	0	1	0	0	0	0	0	1	*226*
	4:00 PM	1	176	35	2	8	0	0	1	0	0	0	0	0	0	*223*
	5:00 PM	0	122	31	0	2	0	0	0	0	0	0	0	0	0	*155*
	6:00 PM	0	100	25	0	0	0	0	0	0	0	0	0	0	0	*125*
	7:00 PM	0	80	17	0	1	0	0	0	2	0	0	0	0	0	*100*
	8:00 PM	0	59	16	0	1	0	0	0	0	0	0	0	0	0	*76*
	9:00 PM	0	53	12	0	1	0	0	0	0	0	0	0	0	0	*66*
	10:00 PM	0	50	7	0	1	0	0	0	0	0	0	0	0	0	*58*
	11:00 PM	0	17	4	1	0	0	0	0	0	0	0	0	0	0	*22*
5/15/2016	12:00 AM	0	9	2	0	1	0	0	0	0	0	0	0	0	0	*12*
SUNDAY	1:00 AM	0	6	1	0	0	0	0	0	0	0	0	0	0	0	*7*
	2:00 AM	0	2	1	0	1	0	0	0	0	0	0	0	0	0	*4*
	3:00 AM	0	10	1	0	0	0	0	0	0	0	0	0	0	0	*11*
	4:00 AM	0	17	7	0	0	0	0	0	1	0	0	0	0	0	*25*
	5:00 AM	0	46	5	0	0	0	0	0	0	0	0	0	0	1	*52*
	6:00 AM	0	71	18	0	5	0	0	0	0	0	0	0	0	1	*95*
	7:00 AM	0	143	34	0	6	0	0	0	0	0	0	0	0	0	*183*
	8:00 AM	1	142	39	0	6	0	0	1	0	0	0	0	0	0	*189*
	9:00 AM	0	158	34	0	4	0	0	1	0	0	0	0	0	0	*197*
	10:00 AM	0	172	42	0	7	0	0	0	0	0	0	0	0	0	*221*
	11:00 AM	0	216	34	0	7	0	0	2	1	0	0	0	0	0	*260*
	12:00 PM	0	192	59	1	2	0	0	1	0	0	0	0	0	0	*255*
	1:00 PM	0	189	50	0	8	0	0	1	0	0	0	0	0	0	*248*
	2:00 PM	0	198	45	0	6	0	0	0	0	0	0	0	0	0	*249*
	3:00 PM	0	200	52	0	6	0	0	1	0	0	0	0	0	0	*259*
	4:00 PM	1	168	36	0	5	0	0	1	0	0	0	0	0	0	*211*
	5:00 PM	2	129	45	0	5	0	0	1	0	0	0	0	0	0	*182*
	6:00 PM	0	90	26	0	2	0	0	0	0	0	0	0	0	0	*118*
	7:00 PM	0	75	21	0	2	0	0	1	1	0	0	0	0	0	*100*
	8:00 PM	0	43	11	0	2	0	0	0	0	0	0	0	0	0	*56*
	9:00 PM	0	38	4	0	1	0	0	0	1	0	0	0	0	0	*44*
	10:00 PM	0	15	1	0	1	0	0	0	0	0	0	0	0	0	*17*
	11:00 PM	0	3	3	0	0	0	0	0	0	0	0	0	0	0	*6*

NJ ROUTE 24 EASTBOUND RAMP TO CR 510 EASTBOUND

AUTOMATED TRAFFIC RECORDER (ATR) COUNTS PERFORMED THURSDAY, JUNE 11, 2015 THROUGH WEDNESDAY, JUNE 17, 2015

IH ENGINEERS, P.C.

	CLASS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
		BIKES	CARS & TRAILERS	2 AXLE LONG	BUSES	2 AXLE 6 TIRE	3 AXLE SINGLE	4 AXLE SINGLE	<5 AXLE DOUBLE	5 AXLE DOUBLE	6+ AXLE DOUBLE	<6 AXLE MULTI	6 AXLE MULTI	6+ AXLE MULTI	UNCLASS-IFIED	*TOTAL*
5/16/2016	12:00 AM	0	4	1	0	1	0	0	0	0	0	0	0	0	0	*6*
MONDAY	1:00 AM	0	2	1	0	0	0	0	0	0	0	0	0	0	0	*3*
	2:00 AM	0	5	4	0	2	0	0	0	0	0	0	0	0	0	*11*
	3:00 AM	0	29	7	1	2	0	0	0	0	0	0	0	0	0	*39*
	4:00 AM	0	89	20	1	5	2	0	0	1	0	0	0	0	0	*118*
	5:00 AM	0	188	47	0	17	0	0	1	0	0	0	0	0	0	*253*
	6:00 AM	1	352	81	4	16	5	0	1	4	0	0	0	0	0	*464*
	7:00 AM	1	481	96	2	14	2	1	3	0	0	0	0	0	0	*600*
	8:00 AM	0	396	89	2	20	2	0	4	1	0	0	0	0	0	*514*
	9:00 AM	0	244	62	1	18	0	1	3	0	0	0	0	0	0	*329*
	10:00 AM	0	208	71	1	14	2	0	4	0	0	0	0	0	0	*300*
	11:00 AM	2	212	60	2	16	3	0	1	0	1	0	0	0	0	*297*
	12:00 PM	0	187	51	2	10	2	0	3	0	0	0	0	0	0	*255*
	1:00 PM	3	219	52	3	11	2	1	2	0	0	0	0	0	0	*293*
	2:00 PM	1	206	59	3	5	1	0	2	0	0	0	0	0	1	*278*
	3:00 PM	1	241	63	1	8	1	0	1	1	0	0	0	0	0	*317*
	4:00 PM	0	215	42	0	6	1	0	2	0	0	0	0	0	0	*266*
	5:00 PM	1	247	42	1	6	0	0	0	0	0	0	0	0	0	*297*
	6:00 PM	0	129	35	0	2	0	0	2	1	0	0	0	0	0	*169*
	7:00 PM	0	83	23	0	3	0	0	0	1	0	0	0	0	0	*110*
	8:00 PM	0	54	17	0	1	0	0	0	0	0	0	0	0	0	*72*
	9:00 PM	0	25	8	0	2	0	0	0	0	0	0	0	0	0	*35*
	10:00 PM	0	14	5	0	0	0	0	0	0	0	0	0	0	0	*19*
	11:00 PM	0	5	0	0	1	0	0	0	0	0	0	0	0	0	*6*
TOTAL TUE-MON		*80*	*24708*	*5658*	*149*	*1069*	*89*	*19*	*133*	*48*	*4*	*0*	*0*	*1*	*13*	*31971*
DAILY																
	TUE	11	4110	917	24	182	15	7	23	6	1	0	0	0	1	*5297*
	WED	16	4038	906	26	186	17	2	22	9	1	0	0	0	2	*5225*
	THU	19	4018	910	29	176	16	6	18	5	1	0	0	0	4	*5202*
	FRI	9	3769	850	31	170	13	1	20	11	0	0	0	0	0	*4874*
	SAT	11	2606	568	14	98	5	0	11	4	0	0	0	1	3	*3321*
	SUN	4	2332	571	1	77	0	0	10	4	0	0	0	0	2	*3001*
	MON	10	3835	936	24	180	23	3	29	9	1	0	0	0	1	*5051*
TOTAL TUE-MON		*80*	*24708*	*5658*	*149*	*1069*	*89*	*19*	*133*	*48*	*4*	*0*	*0*	*1*	*13*	*31971*
PCT OF TOTAL		0.25%	77.31%	17.70%	0.47%	3.35%	0.28%	0.06%	0.42%	0.15%	0.01%	0.00%	0.00%	0.00%	---	*100.00%*
REDIST. UNCLASSIFIED		0	10	2	0	0	0	0	0	0	0	0	0	0	0	*13*
REVISED TOTAL		*80*	*24718*	*5660*	*149*	*1069*	*89*	*19*	*133*	*48*	*4*	*0*	*0*	*1*	*0*	*31971*
PCT. PER CLASS		0.25%	77.31%	17.70%	0.47%	3.35%	0.28%	0.06%	0.42%	0.15%	0.01%	0.00%	0.00%	0.00%	0.00%	
CLASS SUMMARIES			95.3%		0.47%		3.7%			0.6%			0%		---	
			PASS. CARS		BUS		SINGLE UNIT TRUCK			DOUBLE TRUCK			TRIPLE TRUCK		---	

AVERAGE DAILY TRAFFIC VOLUMES	7-DAY AVERAGE	4567	VPD
	MON-FRI AVERAGE	5130	VPD
	SAT-SUN AVERAGE	3161	VPD
	TUE-WED-THU AVERAGE	5241	VPD

CR 510 EASTBOUND RAMP TO NJ ROUTE 24 EASTBOUND
AUTOMATED TRAFFIC RECORDER (ATR) COUNTS PERFORMED TUESDAY, MAY 10, 2016 TO MONDAY, MAY 16, 2016
IH ENGINEERS, P.C.

	CLASS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
		BIKES	CARS & TRAILERS	2 AXLE LONG	BUSES	2 AXLE 6 TIRE	3 AXLE SINGLE	4 AXLE SINGLE	<5 AXLE DOUBLE	5 AXLE DOUBLE	6+ AXLE DOUBLE	<6 AXLE MULTI	6 AXLE MULTI	6+ AXLE MULTI	UNCLASS-IFIED	*TOTAL*
5/10/2016	12:00 AM	0	7	18	0	1	0	0	0	0	0	0	0	0	0	*26*
TUESDAY	1:00 AM	0	9	11	0	1	0	0	0	0	0	0	0	0	0	*21*
	2:00 AM	0	3	2	0	2	0	0	0	0	0	0	0	0	0	*7*
	3:00 AM	0	0	4	0	1	0	0	0	0	0	0	0	0	0	*5*
	4:00 AM	0	1	5	1	0	0	0	0	0	0	0	0	0	0	*7*
	5:00 AM	0	11	34	0	4	0	0	0	0	0	0	0	0	2	*51*
	6:00 AM	0	39	68	0	9	0	0	1	0	0	0	0	0	0	*117*
	7:00 AM	1	119	214	2	17	1	0	4	0	1	0	0	0	2	*361*
	8:00 AM	0	96	195	3	18	0	1	3	0	0	0	0	0	0	*316*
	9:00 AM	0	63	133	5	15	2	0	2	0	0	0	0	0	0	*220*
	10:00 AM	0	49	100	2	17	0	0	0	0	0	0	0	0	0	*168*
	11:00 AM	0	67	152	2	24	1	0	1	0	0	0	0	0	0	*247*
	12:00 PM	0	75	144	3	27	0	0	2	1	0	0	0	0	0	*252*
	1:00 PM	0	78	164	2	22	0	0	1	0	0	0	0	0	0	*267*
	2:00 PM	0	90	211	2	23	0	0	5	0	0	0	0	0	0	*331*
	3:00 PM	1	185	264	2	34	0	1	7	0	0	0	0	0	0	*494*
	4:00 PM	0	215	384	5	34	1	0	10	0	0	0	0	0	0	*649*
	5:00 PM	0	243	382	0	14	0	0	9	0	0	0	0	0	0	*648*
	6:00 PM	0	168	290	0	15	0	0	2	0	0	0	0	0	0	*475*
	7:00 PM	0	98	180	1	12	0	0	0	0	0	0	0	0	0	*291*
	8:00 PM	0	66	126	0	6	0	0	0	0	0	0	0	0	0	*198*
	9:00 PM	0	54	87	1	1	0	0	1	0	0	0	0	0	0	*144*
	10:00 PM	0	40	38	1	2	0	0	0	0	0	0	0	0	0	*81*
	11:00 PM	0	39	54	0	1	0	0	0	0	0	0	0	0	0	*94*
5/11/2016	12:00 AM	0	9	16	0	0	0	0	0	0	0	0	0	0	0	*25*
WEDNESDAY	1:00 AM	0	8	2	0	0	0	0	0	0	0	0	0	0	0	*10*
	2:00 AM	0	4	1	0	0	0	0	0	0	0	0	0	0	0	*5*
	3:00 AM	0	3	1	0	0	0	0	0	0	0	0	0	0	0	*4*
	4:00 AM	0	3	5	1	1	0	0	0	0	0	0	0	0	0	*10*
	5:00 AM	0	17	29	1	4	0	0	0	0	0	0	0	0	0	*51*
	6:00 AM	0	32	71	5	16	0	0	2	0	0	0	0	0	0	*126*
	7:00 AM	1	104	198	2	16	1	0	4	1	1	0	0	0	0	*328*
	8:00 AM	0	108	186	3	17	0	0	3	0	0	0	0	0	0	*317*
	9:00 AM	1	62	122	2	16	1	0	2	0	0	0	0	0	0	*206*
	10:00 AM	0	62	124	1	19	1	0	0	0	0	0	0	0	1	*208*
	11:00 AM	0	58	159	1	19	0	0	1	0	0	0	0	0	0	*238*
	12:00 PM	0	78	132	4	24	1	0	2	0	0	0	0	0	0	*241*
	1:00 PM	0	69	152	3	25	0	0	3	1	0	0	0	0	0	*253*
	2:00 PM	0	102	218	2	29	0	0	3	0	0	0	0	0	0	*354*
	3:00 PM	0	180	271	1	35	0	0	3	0	1	0	0	0	0	*491*
	4:00 PM	0	209	383	4	22	1	0	11	0	0	0	0	0	0	*630*
	5:00 PM	1	284	453	2	26	0	0	8	0	0	0	0	0	0	*774*
	6:00 PM	0	207	298	0	14	0	0	3	1	0	0	0	0	0	*523*
	7:00 PM	1	97	154	0	10	0	0	1	0	0	0	0	0	0	*263*
	8:00 PM	0	92	106	0	5	0	0	2	0	0	0	0	0	0	*205*
	9:00 PM	0	48	76	0	2	0	0	2	0	0	0	0	0	0	*128*
	10:00 PM	1	17	46	0	1	0	0	0	0	0	0	0	0	0	*65*
	11:00 PM	1	38	56	0	2	0	0	0	0	0	0	0	0	0	*97*

CR 510 EASTBOUND RAMP TO NJ ROUTE 24 EASTBOUND
AUTOMATED TRAFFIC RECORDER (ATR) COUNTS PERFORMED TUESDAY, MAY 10, 2016 TO MONDAY, MAY 16, 2016
IH ENGINEERS, P.C.

	CLASS	1 BIKES	2 CARS & TRAILERS	3 2 AXLE LONG	4 BUSES	5 2 AXLE 6 TIRE	6 3 AXLE SINGLE	7 4 AXLE SINGLE	8 <5 AXLE DOUBLE	9 5 AXLE DOUBLE	10 6+ AXLE DOUBLE	11 <6 AXLE MULTI	12 6 AXLE MULTI	13 6+ AXLE MULTI	14 UNCLASS- IFIED	*TOTAL*
5/12/2016	12:00 AM	0	14	18	0	1	0	0	0	0	0	0	0	0	0	*33*
THURSDAY	1:00 AM	1	7	4	0	0	0	0	0	0	0	0	0	0	0	*12*
	2:00 AM	0	1	5	0	2	0	0	0	0	0	0	0	0	0	*8*
	3:00 AM	0	0	3	0	1	0	0	0	0	0	0	0	0	0	*4*
	4:00 AM	0	3	11	0	1	0	0	0	0	0	0	0	0	0	*15*
	5:00 AM	0	19	21	0	5	0	0	0	0	0	0	0	0	0	*45*
	6:00 AM	0	39	73	0	14	0	0	2	1	0	0	0	0	0	*129*
	7:00 AM	1	103	203	1	18	0	0	1	2	0	0	0	0	0	*329*
	8:00 AM	2	107	193	4	22	1	1	4	0	0	0	0	0	1	*335*
	9:00 AM	1	73	126	3	19	0	0	1	1	0	0	0	0	0	*224*
	10:00 AM	0	56	133	2	25	0	0	0	0	0	0	0	0	0	*216*
	11:00 AM	0	83	181	3	20	0	0	1	1	0	0	0	0	0	*289*
	12:00 PM	0	82	172	4	15	0	0	0	0	0	0	0	0	0	*273*
	1:00 PM	1	69	175	1	23	1	0	2	0	0	0	0	0	0	*272*
	2:00 PM	0	112	226	1	26	0	0	2	0	0	0	0	0	1	*368*
	3:00 PM	0	202	255	2	34	0	0	6	0	0	0	0	0	1	*500*
	4:00 PM	2	261	400	3	26	0	0	5	0	0	0	0	0	0	*697*
	5:00 PM	0	235	381	2	18	0	0	9	0	0	0	0	0	0	*645*
	6:00 PM	0	190	259	1	20	1	0	10	0	0	0	0	0	0	*481*
	7:00 PM	0	103	172	0	15	0	0	7	0	0	0	0	0	0	*297*
	8:00 PM	2	77	137	0	2	0	0	1	0	0	0	0	0	0	*219*
	9:00 PM	0	40	79	1	3	0	0	0	0	0	0	0	0	0	*123*
	10:00 PM	0	26	58	0	1	0	0	0	0	0	0	0	0	0	*85*
	11:00 PM	0	36	53	1	2	0	0	0	0	0	0	0	0	0	*92*
5/13/2016	12:00 AM	0	15	19	0	0	0	0	0	0	0	0	0	0	0	*34*
FRIDAY	1:00 AM	0	10	5	0	0	0	0	0	0	0	0	0	0	0	*15*
	2:00 AM	0	5	4	0	0	0	0	0	0	0	0	0	0	0	*9*
	3:00 AM	0	3	5	1	1	0	0	0	0	0	0	0	0	0	*10*
	4:00 AM	0	6	7	0	0	0	0	0	0	0	0	0	0	0	*13*
	5:00 AM	0	18	24	1	8	0	0	0	0	0	0	0	0	0	*51*
	6:00 AM	0	36	62	1	10	0	0	0	0	0	0	0	0	0	*109*
	7:00 AM	0	96	161	4	23	0	0	2	0	0	0	0	0	0	*286*
	8:00 AM	2	95	160	1	23	2	0	3	1	0	0	0	0	2	*289*
	9:00 AM	1	62	130	2	22	1	0	0	0	0	0	0	0	0	*218*
	10:00 AM	1	60	130	4	25	1	0	3	2	0	0	0	0	1	*227*
	11:00 AM	0	74	162	2	18	0	0	0	0	0	0	0	0	0	*256*
	12:00 PM	0	100	216	1	18	0	0	4	0	0	0	0	0	0	*339*
	1:00 PM	0	94	180	0	18	1	0	3	1	0	0	0	0	0	*297*
	2:00 PM	0	122	227	1	33	0	0	3	0	0	0	0	0	0	*386*
	3:00 PM	0	164	281	3	50	0	0	5	0	1	0	0	0	0	*504*
	4:00 PM	0	220	413	2	17	0	0	12	1	0	0	0	0	0	*665*
	5:00 PM	0	205	364	0	19	0	0	5	0	0	0	0	0	0	*593*
	6:00 PM	0	118	224	4	16	0	0	4	0	0	0	0	0	0	*366*
	7:00 PM	0	79	98	0	7	0	0	0	0	0	0	0	0	0	*184*
	8:00 PM	0	54	83	0	4	0	0	3	0	0	0	0	0	0	*144*
	9:00 PM	0	39	81	0	5	0	0	0	0	0	0	0	0	0	*125*
	10:00 PM	0	31	44	0	4	0	0	0	0	0	0	0	0	0	*79*
	11:00 PM	0	34	56	0	2	0	0	0	0	0	0	0	0	0	*92*

CR 510 EASTBOUND RAMP TO NJ ROUTE 24 EASTBOUND

AUTOMATED TRAFFIC RECORDER (ATR) COUNTS PERFORMED TUESDAY, MAY 10, 2016 TO MONDAY, MAY 16, 2016

IH ENGINEERS, P.C.

	CLASS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
		BIKES	CARS & TRAILERS	2 AXLE LONG	BUSES	2 AXLE 6 TIRE	3 AXLE SINGLE	4 AXLE SINGLE	<5 AXLE DOUBLE	5 AXLE DOUBLE	6+ AXLE DOUBLE	<6 AXLE MULTI	6 AXLE MULTI	6+ AXLE MULTI	UNCLASS-IFIED	*TOTAL*
5/14/2016	12:00 AM	0	17	14	0	0	0	0	0	0	0	0	0	0	0	*31*
SATURDAY	1:00 AM	0	16	8	0	1	0	0	1	0	0	0	0	0	0	*26*
	2:00 AM	0	2	2	0	0	0	0	0	0	0	0	0	0	0	*4*
	3:00 AM	0	4	4	0	0	0	0	0	0	0	0	0	0	0	*8*
	4:00 AM	0	3	8	2	0	0	0	0	0	0	0	0	0	0	*13*
	5:00 AM	0	11	15	0	1	0	0	0	0	0	0	0	0	0	*27*
	6:00 AM	0	17	26	0	8	0	0	0	0	0	0	0	0	0	*51*
	7:00 AM	1	34	51	0	5	0	0	1	0	0	0	0	0	1	*93*
	8:00 AM	0	35	67	2	7	0	0	1	0	0	0	0	0	0	*112*
	9:00 AM	1	45	98	0	8	1	0	2	0	0	0	0	0	0	*155*
	10:00 AM	0	60	108	2	12	0	0	2	0	0	0	0	0	0	*184*
	11:00 AM	3	72	128	0	12	0	0	0	0	0	0	0	0	0	*215*
	12:00 PM	0	116	239	0	16	0	0	1	0	0	0	0	0	0	*372*
	1:00 PM	1	86	196	1	22	0	0	1	1	0	0	0	0	0	*308*
	2:00 PM	0	81	166	1	18	0	0	1	0	0	0	0	0	1	*268*
	3:00 PM	0	70	117	0	14	0	0	2	0	0	0	0	0	0	*203*
	4:00 PM	0	58	114	1	10	0	0	0	0	0	0	0	0	0	*183*
	5:00 PM	0	65	129	6	11	0	0	1	0	0	0	0	0	0	*212*
	6:00 PM	0	39	69	4	3	0	0	0	0	0	0	0	0	0	*115*
	7:00 PM	0	29	82	1	3	0	0	0	0	0	0	0	0	0	*115*
	8:00 PM	0	28	63	0	3	0	0	0	0	0	0	0	0	0	*94*
	9:00 PM	0	29	47	0	5	0	0	0	0	0	0	0	0	0	*81*
	10:00 PM	0	33	56	1	1	0	0	0	0	0	0	0	0	0	*91*
	11:00 PM	0	37	50	0	3	0	0	0	0	0	0	0	0	0	*90*
5/15/2016	12:00 AM	0	15	19	0	1	0	0	0	0	0	0	0	0	0	*35*
SUNDAY	1:00 AM	0	8	15	1	1	0	0	0	0	0	0	0	0	0	*25*
	2:00 AM	0	3	6	1	0	0	0	0	0	0	0	0	0	0	*10*
	3:00 AM	0	8	5	0	0	0	0	0	0	0	0	0	0	0	*13*
	4:00 AM	0	6	10	0	1	0	0	0	0	0	0	0	0	0	*17*
	5:00 AM	0	4	3	0	1	0	0	0	0	0	0	0	0	0	*8*
	6:00 AM	0	8	11	0	4	0	0	0	0	0	0	0	0	0	*23*
	7:00 AM	0	32	34	0	3	0	0	0	0	0	0	0	0	0	*69*
	8:00 AM	0	28	68	0	1	0	0	0	0	0	0	0	0	0	*97*
	9:00 AM	0	40	63	0	3	0	0	0	0	0	0	0	0	0	*106*
	10:00 AM	0	55	77	0	2	0	0	0	0	0	0	0	0	0	*134*
	11:00 AM	0	60	125	0	6	0	0	1	0	0	0	0	0	0	*192*
	12:00 PM	0	57	121	1	5	0	0	0	0	0	0	0	0	0	*184*
	1:00 PM	0	54	108	0	8	0	0	0	0	0	0	0	0	0	*170*
	2:00 PM	0	42	113	0	4	0	0	0	0	0	0	0	0	0	*159*
	3:00 PM	0	56	109	0	5	0	0	0	0	0	0	0	0	0	*170*
	4:00 PM	0	39	78	0	3	0	0	0	0	0	0	0	0	0	*120*
	5:00 PM	0	39	78	0	3	0	0	0	0	0	0	0	0	0	*120*
	6:00 PM	0	42	69	0	3	0	0	0	0	0	0	0	0	0	*114*
	7:00 PM	0	30	50	0	0	0	0	0	0	0	0	0	0	0	*80*
	8:00 PM	0	13	51	0	2	0	0	0	0	0	0	0	0	0	*66*
	9:00 PM	0	20	38	0	0	0	0	0	0	0	0	0	0	0	*58*
	10:00 PM	0	15	27	0	1	0	0	0	0	0	0	0	0	0	*43*
	11:00 PM	0	22	33	0	1	0	0	1	0	0	0	0	0	0	*57*

CR 510 EASTBOUND RAMP TO NJ ROUTE 24 EASTBOUND
AUTOMATED TRAFFIC RECORDER (ATR) COUNTS PERFORMED TUESDAY, MAY 10, 2016 TO MONDAY, MAY 16, 2016
IH ENGINEERS, P.C.

	CLASS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
		BIKES	CARS & TRAILERS	2 AXLE LONG	BUSES	2 AXLE 6 TIRE	3 AXLE SINGLE	4 AXLE SINGLE	<5 AXLE DOUBLE	5 AXLE DOUBLE	6+ AXLE DOUBLE	<6 AXLE MULTI	6 AXLE MULTI	6+ AXLE MULTI	UNCLASS-IFIED	*TOTAL*
5/16/2016	12:00 AM	0	8	8	0	0	0	0	0	0	0	0	0	0	0	*16*
MONDAY	1:00 AM	0	3	6	0	0	0	0	0	0	0	0	0	0	0	*9*
	2:00 AM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	*2*
	3:00 AM	0	2	2	0	0	0	0	0	0	0	0	0	0	0	*4*
	4:00 AM	0	3	10	2	0	0	0	0	0	0	0	0	0	0	*15*
	5:00 AM	0	12	26	1	1	0	0	1	0	0	0	0	0	1	*42*
	6:00 AM	0	35	85	1	11	0	0	0	0	0	0	0	0	1	*133*
	7:00 AM	1	112	178	3	24	0	0	4	0	0	0	0	0	0	*322*
	8:00 AM	0	114	166	3	14	0	0	2	1	0	0	0	0	0	*300*
	9:00 AM	0	64	130	5	16	0	0	0	0	0	0	0	0	0	*215*
	10:00 AM	0	58	118	5	23	0	0	0	0	0	0	0	0	0	*204*
	11:00 AM	0	55	131	1	16	0	0	1	0	0	0	0	0	0	*204*
	12:00 PM	0	72	165	2	22	1	0	1	0	0	0	0	0	0	*263*
	1:00 PM	0	75	122	2	15	0	0	1	0	0	0	0	0	0	*215*
	2:00 PM	2	84	178	3	25	2	0	2	0	0	0	0	0	0	*296*
	3:00 PM	0	145	218	1	46	1	0	1	0	0	0	0	0	0	*412*
	4:00 PM	0	223	361	1	27	0	0	8	0	0	0	0	0	0	*620*
	5:00 PM	3	294	473	0	24	2	0	11	0	0	0	0	0	0	*807*
	6:00 PM	1	201	300	3	29	0	0	4	0	0	0	0	0	0	*538*
	7:00 PM	1	103	157	0	11	0	0	1	0	0	0	0	0	0	*273*
	8:00 PM	0	55	95	0	10	0	0	0	1	0	0	0	0	0	*161*
	9:00 PM	0	29	44	0	4	0	0	0	0	0	0	0	0	0	*77*
	10:00 PM	1	14	35	0	2	1	0	1	0	0	0	0	0	0	*54*
	11:00 PM	0	32	42	0	0	0	0	0	0	0	0	0	0	0	*74*
TOTAL TUE-MON		*37*	*10860*	*19212*	*177*	*1781*	*26*	*3*	*249*	*17*	*4*	*0*	*0*	*0*	*15*	*32381*
DAILY																
	TUE	2	1815	3260	32	300	5	2	48	1	1	0	0	0	4	*5470*
	WED	6	1891	3259	32	303	5	0	50	3	2	0	0	0	1	*5552*
	THU	10	1938	3338	29	313	3	1	51	5	0	0	0	0	3	*5691*
	FRI	4	1740	3136	27	323	5	0	47	5	1	0	0	0	3	*5291*
	SAT	6	987	1857	21	163	1	0	13	1	0	0	0	0	2	*3051*
	SUN	0	696	1311	3	58	0	0	2	0	0	0	0	0	0	*2070*
	MON	9	1793	3051	33	321	7	0	38	2	0	0	0	0	2	*5256*
TOTAL TUE-MON		*37*	*10860*	*19212*	*177*	*1781*	*26*	*3*	*249*	*17*	*4*	*0*	*0*	*0*	*15*	*32381*
PCT OF TOTAL		0.11%	33.55%	59.36%	0.55%	5.50%	0.08%	0.01%	0.77%	0.05%	0.01%	0.00%	0.00%	0.00%	---	*100.00%*
REDIST. UNCLASSIFIED		0	5	9	0	1	0	0	0	0	0	0	0	0	0	*15*
REVISED TOTAL		*37*	*10865*	*19221*	*177*	*1782*	*26*	*3*	*249*	*17*	*4*	*0*	*0*	*0*	*0*	*32381*
PCT. PER CLASS		0.11%	33.55%	59.36%	0.55%	5.50%	0.08%	0.01%	0.77%	0.05%	0.01%	0.00%	0.00%	0.00%	0.00%	
CLASS SUMMARIES			93.0%		0.55%		5.6%			0.8%			0%		---	
			PASS. CARS		BUS		SINGLE UNIT TRUCK			DOUBLE TRUCK			TRIPLE TRUCK		---	

AVERAGE DAILY TRAFFIC VOLUMES	7-DAY AVERAGE	4626	VPD
	MON-FRI AVERAGE	5452	VPD
	SAT-SUN AVERAGE	2561	VPD
	TUE-WED-THU AVERAGE	5571	VPD

CR 510 WESTBOUND RAMP TO NJ ROUTE 24 EASTBOUND
AUTOMATED TRAFFIC RECORDER (ATR) COUNTS PERFORMED TUESDAY, MAY 10, 2016 TO MONDAY, MAY 16, 2016
IH ENGINEERS, P.C.

	CLASS	1 BIKES	2 CARS & TRAILERS	3 2 AXLE LONG	4 BUSES	5 2 AXLE 6 TIRE	6 3 AXLE SINGLE	7 4 AXLE SINGLE	8 <5 AXLE DOUBLE	9 5 AXLE DOUBLE	10 6+ AXLE DOUBLE	11 <6 AXLE MULTI	12 6 AXLE MULTI	13 6+ AXLE MULTI	14 UNCLASS-IFIED	*TOTAL*
5/10/2016	12:00 AM	0	4	1	0	1	0	0	0	0	0	0	0	0	0	*6*
TUESDAY	1:00 AM	0	3	2	0	0	0	0	0	0	0	0	0	0	0	*5*
	2:00 AM	0	1	1	0	1	0	0	0	0	0	0	0	0	0	*3*
	3:00 AM	1	4	2	0	2	0	0	0	0	0	0	0	0	0	*9*
	4:00 AM	0	32	11	1	6	0	0	2	1	0	0	0	0	0	*53*
	5:00 AM	1	55	13	3	6	0	0	0	0	0	0	0	0	0	*78*
	6:00 AM	1	109	13	1	4	1	0	2	2	0	0	0	0	0	*133*
	7:00 AM	0	105	22	3	7	1	0	0	0	0	0	0	0	0	*138*
	8:00 AM	2	75	23	3	4	2	0	1	1	0	0	0	0	1	*112*
	9:00 AM	1	70	31	3	6	2	0	1	2	0	0	0	0	0	*116*
	10:00 AM	0	84	18	1	5	0	0	2	0	0	0	0	0	1	*111*
	11:00 AM	0	137	27	4	7	1	0	1	1	0	0	0	0	0	*178*
	12:00 PM	0	126	21	1	7	0	0	2	0	0	0	0	0	0	*157*
	1:00 PM	2	155	41	2	7	1	0	1	5	1	0	0	0	0	*215*
	2:00 PM	0	229	39	2	5	0	0	0	0	0	0	0	0	0	*275*
	3:00 PM	1	259	29	0	3	0	0	2	1	0	0	0	0	1	*296*
	4:00 PM	1	245	18	0	4	1	0	2	0	0	0	0	0	0	*271*
	5:00 PM	0	188	16	0	2	0	0	1	0	0	0	0	0	0	*207*
	6:00 PM	0	167	28	1	4	0	0	0	0	0	0	0	0	0	*200*
	7:00 PM	0	107	14	0	4	0	0	1	0	0	0	0	0	0	*126*
	8:00 PM	0	93	5	0	2	0	0	1	0	0	0	0	0	0	*101*
	9:00 PM	0	36	4	0	0	0	0	0	0	0	0	0	0	0	*40*
	10:00 PM	1	33	2	0	2	0	0	0	0	0	0	0	0	0	*38*
	11:00 PM	0	15	1	0	0	0	0	0	0	0	0	0	0	0	*16*
5/11/2016	12:00 AM	0	9	1	0	0	0	0	0	0	0	0	0	0	0	*10*
WEDNESDAY	1:00 AM	0	2	2	0	0	0	0	0	0	0	0	0	0	0	*4*
	2:00 AM	0	4	2	1	1	0	0	0	0	0	0	0	0	0	*8*
	3:00 AM	0	8	2	0	1	0	0	1	0	0	0	0	0	0	*12*
	4:00 AM	0	26	9	0	3	0	0	1	0	0	0	0	0	0	*39*
	5:00 AM	0	58	16	1	5	0	0	0	0	0	0	0	0	0	*80*
	6:00 AM	1	115	18	2	7	0	0	1	1	0	0	0	0	0	*145*
	7:00 AM	1	107	13	3	3	1	0	2	0	1	0	0	0	1	*132*
	8:00 AM	1	98	21	1	4	2	0	1	0	0	0	0	0	0	*128*
	9:00 AM	0	87	20	2	3	0	0	2	1	0	0	0	0	0	*115*
	10:00 AM	0	116	23	4	7	1	0	0	4	0	0	0	0	0	*155*
	11:00 AM	0	137	20	3	8	0	0	1	0	0	0	0	0	0	*169*
	12:00 PM	2	131	36	0	9	0	0	1	2	0	0	0	0	0	*181*
	1:00 PM	1	212	25	0	8	0	0	0	0	1	0	0	0	0	*247*
	2:00 PM	1	209	41	0	5	1	0	1	1	0	0	0	0	1	*260*
	3:00 PM	0	254	23	2	3	0	0	0	2	0	0	0	0	0	*284*
	4:00 PM	2	271	33	0	3	0	0	2	0	0	0	0	0	0	*311*
	5:00 PM	0	241	26	1	2	0	0	1	1	0	0	0	0	0	*272*
	6:00 PM	2	167	18	1	0	0	1	1	0	0	0	0	0	0	*190*
	7:00 PM	1	109	19	1	5	0	0	1	0	0	0	0	0	0	*136*
	8:00 PM	1	76	8	0	3	0	0	1	0	0	0	0	0	0	*89*
	9:00 PM	0	45	5	0	0	0	0	0	0	0	0	0	0	0	*50*
	10:00 PM	1	33	4	0	2	0	0	0	0	0	0	0	0	0	*40*
	11:00 PM	0	21	1	0	0	0	0	0	0	0	0	0	0	0	*22*

CR 510 WESTBOUND RAMP TO NJ ROUTE 24 EASTBOUND
AUTOMATED TRAFFIC RECORDER (ATR) COUNTS PERFORMED TUESDAY, MAY 10, 2016 TO MONDAY, MAY 16, 2016
IH ENGINEERS, P.C.

	CLASS	1 BIKES	2 CARS & TRAILERS	3 2 AXLE LONG	4 BUSES	5 2 AXLE 6 TIRE	6 3 AXLE SINGLE	7 4 AXLE SINGLE	8 <5 AXLE DOUBLE	9 5 AXLE DOUBLE	10 6+ AXLE DOUBLE	11 <6 AXLE MULTI	12 6 AXLE MULTI	13 6+ AXLE MULTI	14 UNCLASS-IFIED	*TOTAL*
5/12/2016	12:00 AM	0	6	3	0	0	0	0	0	0	0	0	0	0	0	*9*
THURSDAY	1:00 AM	0	3	0	0	0	0	0	0	0	0	0	0	0	0	*3*
	2:00 AM	0	4	4	0	1	0	0	0	0	0	0	0	0	0	*9*
	3:00 AM	0	3	3	0	3	0	0	1	0	0	0	0	0	0	*10*
	4:00 AM	0	24	10	0	5	1	0	1	0	0	0	0	0	0	*41*
	5:00 AM	0	53	10	3	3	0	0	0	0	0	0	0	0	0	*69*
	6:00 AM	0	101	14	0	8	0	0	0	2	0	0	0	0	0	*125*
	7:00 AM	0	122	32	3	6	2	0	0	0	0	0	0	0	0	*165*
	8:00 AM	0	73	16	2	7	0	1	1	1	0	0	0	0	1	*102*
	9:00 AM	1	86	29	1	9	1	0	1	3	0	0	0	0	0	*131*
	10:00 AM	1	118	30	0	5	0	1	2	2	0	0	0	0	0	*159*
	11:00 AM	0	132	34	3	9	0	0	0	0	0	0	0	0	0	*178*
	12:00 PM	3	130	22	0	15	1	1	0	2	0	0	0	0	0	*174*
	1:00 PM	0	167	36	3	7	1	0	1	1	0	0	0	0	0	*216*
	2:00 PM	0	231	29	0	5	0	0	1	0	1	0	0	0	0	*267*
	3:00 PM	3	279	30	0	2	0	0	0	1	0	0	0	0	0	*315*
	4:00 PM	4	166	15	1	2	0	0	0	0	0	0	0	0	0	*188*
	5:00 PM	1	199	28	0	4	0	0	1	0	0	0	0	0	0	*233*
	6:00 PM	1	170	20	0	1	0	0	0	0	0	0	0	0	0	*192*
	7:00 PM	0	99	8	0	1	0	0	1	0	0	0	0	0	0	*109*
	8:00 PM	5	96	13	0	3	0	0	1	0	0	0	0	0	0	*118*
	9:00 PM	2	51	7	0	0	0	0	0	0	0	0	0	0	0	*60*
	10:00 PM	4	27	0	0	2	0	0	0	0	0	0	0	0	0	*33*
	11:00 PM	0	17	3	0	0	0	0	0	0	0	0	0	0	0	*20*
5/13/2016	12:00 AM	0	2	4	0	0	0	0	0	0	0	0	0	0	0	*6*
FRIDAY	1:00 AM	0	3	1	0	0	0	0	0	0	0	0	0	0	1	*5*
	2:00 AM	0	4	0	0	1	0	0	0	0	0	0	0	0	0	*5*
	3:00 AM	0	9	3	0	2	0	0	1	0	0	0	0	0	0	*15*
	4:00 AM	0	26	11	0	6	0	0	1	1	0	0	0	0	0	*45*
	5:00 AM	0	51	10	3	3	1	0	0	1	0	0	0	0	0	*69*
	6:00 AM	0	105	10	0	5	0	0	0	0	1	0	0	0	0	*121*
	7:00 AM	0	101	23	0	8	1	0	0	0	0	0	0	0	0	*133*
	8:00 AM	0	84	24	1	5	1	0	0	0	0	0	0	0	0	*115*
	9:00 AM	0	100	14	0	9	0	0	1	3	0	0	0	0	1	*128*
	10:00 AM	0	105	16	1	3	0	0	0	0	0	0	0	0	0	*125*
	11:00 AM	0	134	22	5	9	0	0	2	1	0	0	0	0	0	*173*
	12:00 PM	0	157	33	5	12	1	0	1	0	0	0	0	0	0	*209*
	1:00 PM	0	159	26	1	7	0	0	2	1	0	0	0	0	0	*196*
	2:00 PM	0	183	29	0	5	0	0	0	0	0	0	0	0	0	*217*
	3:00 PM	0	214	22	1	1	0	0	1	2	0	0	0	0	2	*243*
	4:00 PM	0	192	11	0	2	0	0	0	1	0	0	0	0	5	*211*
	5:00 PM	0	106	5	0	1	0	0	0	0	0	0	0	0	59	*171*
	6:00 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	119	*120*
	7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	106	*106*
	8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	76	*76*
	9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	63	*63*
	10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	50	*50*
	11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	30	*30*

CR 510 WESTBOUND RAMP TO NJ ROUTE 24 EASTBOUND
AUTOMATED TRAFFIC RECORDER (ATR) COUNTS PERFORMED TUESDAY, MAY 10, 2016 TO MONDAY, MAY 16, 2016
IH ENGINEERS, P.C.

	CLASS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
		BIKES	CARS & TRAILERS	2 AXLE LONG	BUSES	2 AXLE 6 TIRE	3 AXLE SINGLE	4 AXLE SINGLE	<5 AXLE DOUBLE	5 AXLE DOUBLE	6+ AXLE DOUBLE	<6 AXLE MULTI	6 AXLE MULTI	6+ AXLE MULTI	UNCLASS-IFIED	*TOTAL*
5/14/2016	12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	10	*10*
SATURDAY	1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	*3*
	2:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	10	*10*
	3:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	8	*8*
	4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	9	*9*
	5:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	31	*31*
	6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	58	*58*
	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	83	*83*
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	87	*87*
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	106	*106*
	10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	149	*149*
	11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	162	*162*
	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	152	*152*
	1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	158	*158*
	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	166	*166*
	3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	181	*181*
	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	155	*155*
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	142	*142*
	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	86	*86*
	7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	60	*60*
	8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	56	*56*
	9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	65	*65*
	10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	56	*56*
	11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	30	*30*
5/15/2016	12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	15	*15*
SUNDAY	1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	*3*
	2:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	7	*7*
	3:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	7	*7*
	4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	10	*10*
	5:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	10	*10*
	6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	39	*39*
	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	37	*37*
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	62	*62*
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	111	*111*
	10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	122	*122*
	11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	142	*142*
	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	145	*145*
	1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	123	*123*
	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	126	*126*
	3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	123	*123*
	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	127	*127*
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	92	*92*
	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	89	*89*
	7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	66	*66*
	8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	48	*48*
	9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	41	*41*
	10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	24	*24*
	11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	18	*18*

CR 510 WESTBOUND RAMP TO NJ ROUTE 24 EASTBOUND
AUTOMATED TRAFFIC RECORDER (ATR) COUNTS PERFORMED TUESDAY, MAY 10, 2016 TO MONDAY, MAY 16, 2016
IH ENGINEERS, P.C.

	CLASS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
		BIKES	CARS & TRAILERS	2 AXLE LONG	BUSES	2 AXLE 6 TIRE	3 AXLE SINGLE	4 AXLE SINGLE	<5 AXLE DOUBLE	5 AXLE DOUBLE	6+ AXLE DOUBLE	<6 AXLE MULTI	6 AXLE MULTI	6+ AXLE MULTI	UNCLASS-IFIED	*TOTAL*
5/16/2016	12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	5	*5*
MONDAY	1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	6	*6*
	2:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	*4*
	3:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	10	*10*
	4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	35	*35*
	5:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	62	*62*
	6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	124	*124*
	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	133	*133*
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	80	*80*
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	115	*115*
	10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	132	*132*
	11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	169	*169*
	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	135	*135*
	1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	205	*205*
	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	257	*257*
	3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	272	*272*
	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	298	*298*
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	236	*236*
	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	174	*174*
	7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	126	*126*
	8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	80	*80*
	9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	51	*51*
	10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	33	*33*
	11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	14	*14*
TOTAL TUE-MON		*50*	*8960*	*1429*	*80*	*348*	*24*	*4*	*56*	*47*	*5*	*0*	*0*	*0*	*6884*	*17887*
DAILY																
	TUE	11	2332	382	25	89	9	0	19	13	1	0	0	0	3	*2884*
	WED	14	2536	386	22	82	5	1	17	12	2	0	0	0	2	*3079*
	THU	25	2357	396	16	98	6	3	11	12	1	0	0	0	1	*2926*
	FRI	0	1735	265	17	79	4	0	9	10	1	0	0	0	512	*2632*
	SAT	0	0	0	0	0	0	0	0	0	0	0	0	0	2023	*2023*
	SUN	0	0	0	0	0	0	0	0	0	0	0	0	0	1587	*1587*
	MON	0	0	0	0	0	0	0	0	0	0	0	0	0	2756	*2756*
TOTAL TUE-MON		*50*	*8960*	*1429*	*80*	*348*	*24*	*4*	*56*	*47*	*5*	*0*	*0*	*0*	*6884*	*17887*
PCT OF TOTAL		0.45%	81.43%	12.99%	0.73%	3.16%	0.22%	0.04%	0.51%	0.43%	0.05%	0.00%	0.00%	0.00%	---	*100.00%*
REDIST. UNCLASSIFIED		31	5606	894	50	218	15	3	35	29	3	0	0	0	0	*6884*
REVISED TOTAL		*81*	*14566*	*2323*	*130*	*566*	*39*	*7*	*91*	*76*	*8*	*0*	*0*	*0*	*0*	*17887*
PCT. PER CLASS		0.45%	81.43%	12.99%	0.73%	3.16%	0.22%	0.04%	0.51%	0.43%	0.05%	0.00%	0.00%	0.00%	0.00%	
CLASS SUMMARIES			94.9%		0.73%		3.4%			1.0%			0%		---	
			PASS. CARS		BUS		SINGLE UNIT TRUCK			DOUBLE TRUCK			TRIPLE TRUCK		---	

AVERAGE DAILY TRAFFIC VOLUMES	7-DAY AVERAGE	2555	VPD
	MON-FRI AVERAGE	2855	VPD
	SAT-SUN AVERAGE	1805	VPD
	TUE-WED-THU AVERAGE	2963	VPD

IH ENGINEERS, P.C.
www.ihengineers.com

Project Desc.: Columbia Turnpike
Date: 6/22/2016
Time: 8:00 AM - 9:00 AM
Performed by: NL, Imran, Colin

Columbia Turnpike (CR 510) and Park Avenue (CR 623)
Morris and Hanover Townships, Morris County, NJ
Car License Plates O-D Study

		510WB left turn onto Park SB	
Ramp from 24E to 510W		Lane 1	Lane 2
NJ	KYW	449	67F
NJ	XOG	GPM	FT1
NJ	PPS	0ZL	FYZ
NJ	JFD	QXN	GMW
NJ	KMW	PAE	B1J
NJ	PRY	AYP	347
NJ	9XY	GS5	0UV
MD ?	Z587	78N	CMB
NJ	FWY	FFB	CSC
NJ	56H	76L4	DYD
NJ	GOW	GGW	FFC
NJ	GHY	GCE	FF5
NJ	AZU	CVT	7200
NJ	445	G8W	AFC
NJ	EYH	GL0	CTB
NJ	FXS	DAG	EZE
MA	MAA	CUK	DYN
NJ	DWU	FDV	ANN
NJ	DAE	EXB	GMZ
NJ	ASE	EZV	EZL
NJ	ENG	FMF	GGU
NJ	DYN	CJP	1SE
NJ	FCB	Z55	62E
NJ	GGS	Z4X	GQL
NJ	ESJ	CFC	DSU
NJ	EM7	ENM	C25
NJ	DUE	CSK	BMP
NJ	67L	GRV	GHP
NJ	EGV	FYG	DVE
NJ	56B	26J	FRB
VA	609	ZGC	ZPG
NJ	CVT	EXS	92V
NJ	77T	DTV	43C
NJ	CUW	BPG	77T
NJ	CJP	ERB	CCN
NY	TAXI	0TC	MUSHY
NJ	23X	22V	EL5
NJ	GBF	GPS	GP1

		510WB left turn onto Park SB	
Ramp from 24E to 510W		Lane 1	Lane 2
NJ	Z55	FTB	ED8
NJ	DSF	BTU	FHW
NJ	FIN	BUD	DS47
NJ	80K	924	GSF
NJ	669K	EJT	DJN
NJ	FB	BUG	FLH
NJ	65T	5811	FYB
NJ	CSK	8755	71V
NJ	DCD	EKW	EUC
NJ	BXS	QZV	867
NJ	GRU	AEX	GCH
NJ	FYG	DZK	FDX
NJ	H10	Z0G	267
NJ	DAG	FAB	7UG
NJ	GCH	8726	GMZ
NJ	26Z	74T	CHK
NY	3606	BHN	1913
MA?	5689	EFX	GNW
NJ	FDC	B47	G6Z
NJ	DYC	BJE	64Z
NJ	55W	BJM	GEX
NJ	303K	CYB	6134
NJ	DSU	BAX	EVV
NJ	FGM	7FM	L291
NJ	DTU	CTX	FHS
NJ	DHG	DDZ	FAS
OH	4415	EWV	CYN
PA	59TZ	3TZ4	DYW
NY	8785	GWS	FMG
NJ	FXR	FWK	215
NJ	EJJ	639	EFF
NJ	GFG	CPJ	GFG
NJ	CZY	ELK	B9J
NJ	EKW	8170	9216
NJ	BXR	91B	564G
NJ	GFL	DTN	CXT
NJ	4G	2380	FLC
NJ	DZK	BHS	G7E
NJ	EUA	94G	EJJ
NJ	DRX	GSF	CDX
NJ	74T	GEZ	FWG
NJ	DHN	GLV	FWL
NJ	B47	FES	FGM
NJ	BJE	BTV	DEW
NJ	51M	EWY	FDC
NJ	48S	DAL	EFJ
NJ	FLS	2039	1616

		510WB left turn onto Park SB	
Ramp from 24E to 510W		Lane 1	Lane 2
NY	3868	24K9	FPS
NJ	BJM	EPK	51W
NY	833	ES0	F2S
NJ	FZC	BAE	53X
NJ	CKY	Z9N	
NJ	DOZ	4774	G8R
NY	6747	FGV	4DV
NJ	EXB	3556	DTD
NJ	76C	GCX	4556
NY	9315	GKW	AHZ
NJ	64Z	51B	50Z
NJ	GCL	EDM	H96
NJ	EWY	FSK	15F
NY	3124	Z6K	67W
NY	6775	7423	344
NJ	CWS	ENV	EFW
NJ	G39	BMA	FLP
NJ	ELK	DMT	ERB
PA	9113	CMR	64P
NJ	F5Z	HSS	ARV
NY	670ME	192	ERC
MD	6376	0CD	EPZ
MD	244	DTK	FZF
NY	4806	7S5	CCP
NJ	FRR	ENB	EAG
NJ	EWV	FDD	CH4
NJ	V49	GDZ	GCC
NJ	2039	BPM	FWA
NJ	FYV	FNY	D576
NJ	BAC	FPN	4260
NJ	79N	ERF	FBC
NY	4724	FVN	AHG
NJ	FXS	G0M	DMD
PA	N40	EPM	60U
NJ	DMZ	39V	EAC
VA	2489	FGZ	BL5
NJ	GOK	PYX	87K
NJ	91I	FYE	C6Z
NJ	FKB	1BTT	CDV
CT	G24	GMH	ANT
NJ	90Z	GTX	356A
NJ	FGV	GDK	GJ1A
NY	2423	FZF	CHS
NJ	ENV	GCM	34D
NJ	DYZ	AAJ	GAA
NJ	E50	EAK	CRP
NJ	GRR	FHR	C4W

		510WB left turn onto Park SB	
Ramp from 24E to 510W		Lane 1	Lane 2
NJ	FGT	2DJ	35X
NJ	WX8	BBC	6395
NJ	90E	GPX	DJW
NJ	H58	FYE	46M
NJ	DZN	S4T	AVJ
NJ	19Z	CUB	DPX
NJ	EGF	FJT	F56
NJ	17K	43V	DYR
NJ	FYU	FLP	FD1C
NY	4003	92Y	FPR
NJ	53V	EWT	AHE
NJ	BHU	FL0	GGA
NJ	FNV	9414	EZR
NY	1468	2873	DMB
NJ	GOZ	GRS	BR4
NY	2962	ZDJ	AMW
NJ	FOD	BBC	EGF
NJ	FPX	CMF	0GC
NJ	GEE	CFT	FZC
VT	522	CBN	6155
NJ	34W	48T	4WR
NJ	FVL	GFV	30A
NJ	GCX	DXA	FHY
NY	5398	CTJ	5160
NJ	EWV	48W	YHALEY
NJ	903Y	EV0	CMJ
NJ	22P	FCS	CHY
NJ	66L	CTG	FGL
NJ	DXK	GPA	53V
NJ	GFH	BST	7FF
NJ	BHS	GNL	CRB
NJ	DNH	DTS	CXJ
NJ	2OZ	7915	CWT
NJ	GEF	DSX	G0M
NJ	CZY	28S	FJU
NJ	G4F	G4L	ALT
NJ	56T	DMC	CLX
NJ	181T	FWS	EXG
NY	5914	SPP	GMJ
NJ	GDK	FXJ	F2Z
NJ	DMX	QWY	GEE
NJ	95B	4C3	7RH
NJ	35D	AXJ	GCZ
NJ	FJT	89S	PRV
NJ	GMH	EVW	EZE
NJ	EAX	CMY	CHC
NJ	GCH	FGH	CNC

		510WB left turn onto Park SB	
Ramp from 24E to 510W		Lane 1	Lane 2
NJ	EWT	DTC	GEU
NJ	G1X	DUP	EWS
NJ	49K	MS3	AYZ
NJ	AMP	DTE	FJP
NJ	ENY	16S	BSP
NY	2873	FJP	AGX
NJ	38U	EME	FPS
CT	2424	FJX	GAX
NJ	85T	DR4	EXJ
NJ	91S	DXF	DYX
NJ	EST	EUV	DYA
NJ	GAL	ALA	DRU
NJ	DMC	FDM	46Z
NJ	FXE	G2H	PWB
NJ	59P	Z6X	FVJ
NJ	GNL	AG0	FBU
NJ	DWV	FZL	ZDZ
NJ	BPK	EXM	CFX
NJ	CHT	CMT	EDU
NJ	FJP	EFJ	78Z
NJ	BUX	BT0	DWT
NJ	GGB	FSC	CDL
NJ	FHR	DTT	CDK
NJ	BPX	SGM	EDL
NJ	FDM	GDX	FVW
NY	9900	EWL	DLP
NJ	AXP	ACR	1VY
MD	9441	GAZ	Z0W
NJ	FJ7	CRJ	FGK
NJ	CTG	CEC	95K
NJ	DYX	BRX	CJB
NJ	49H	G5M	9CH
NJ	FYS	CXN	GFD
NY	1144	B4X	GBW
MD	165	EFG	G8W
NJ	BZV	GAS	FMD
NJ	70J	BZT	DCC
MA?	5274	AD0	49K
NJ	88C	FDC	EMJ
NJ	FYE	GHR	GFK
NJ	EMC	EJB	DSJ
NJ	DDN	148	EDV
NJ	AAJ	BMN	FCX
NJ	530	2JE	38J
NJ	48Y	46H	E69
NY	8874	EJS	G2H
NY	7235	EWN	FYM

Ramp from 24E to 510W		510WB left turn onto Park SB	
		Lane 1	Lane 2
NJ	CMF	DDG	ERP
NJ	366	FDH	7BP
NJ	GAX	EPP	AMR
NJ	AGD	KPZ	EST
NJ	30M	S4V	DBZ
CT	VH9	36K	FAE
NJ	CVB	FYF	587S
NJ	52C	FLP	GFB
NJ	DVE	DGC	45T
NY	3814	B2E	DHF
NJ	EVW	EGE	111
NJ	GDZ	FDJ	JDL
NJ	CMY	GFX	AHW
NJ	BTW	FGK	11M
NJ	EJ3	ABT	1519
MD	3150	GBK	CHT
PA	4856	GRP	FVP
NJ	DTT	30M	GT2
NJ	EGE	9TN	CCX
NJ	AVC	GFJ	DRN
NY	8057	F2Y	ERH
NJ	CEC	GSX	DEC
NJ	98Y	FSG	CBN
NJ	GEK	DXH	CHR
NJ	EZA	DMF	BFBS
NJ	FDJ	EPL	CUU
NJ	DZX		FTV
NY	5588		ERJ
PA	5736		567C
NJ	GBP		WBS
NJ	GEB		BSJ
NJ	30H		54Z
NJ	FHX		29D
NJ	CAX		53D
NJ	ENC		FJJ
NJ	EWJ		DGP
NJ	GFJ		FZE
NJ	FGK		EMD
NY	67BR		GNH
NJ	EUD		C0S
NJ	BAY		GBY
NJ	76W		BVW
NJ	FZY		PBU
NJ	11K		EYL
NJ	BCX		FBX
NJ	DHG		BWU
NJ	ECS		GAX

Ramp from 24E to 510W	
NJ	13Z
NJ	EPL
NJ	FPS
NJ	M53
NJ	DTE
NJ	GDY
NJ	EWL
NJ	BRM
NJ	AMG
NJ	DSF
NJ	ACR
NJ	GAZ
NY	8414
NJ	GRJ
NJ	ENP
NJ	EMD
VA	1817
CT	ZZL
NJ	GBA

510WB left turn onto Park SB

Lane 1	Lane 2
	6EB
	FYE
	ACB
	FAA
	37S
	CHX
	44X
	EJZ
	AVF
	GBE
	DPP
	3BJ
	73W
	E6X
	CHP
	CAE
	CEF
	70A
	ELB
	14L
	FPG
	FJJ
	D7F
	GNN
	UBN
	9GY
	87B
	PZX
	EMF
	GFB
	FZL
	FHX
	GCM
	FKT
	967
	AFJ
	DHG
	GDG
	MCP
	FPP
	9AJ
	ABW
	DBM
	DBT
	FAY
	DGM
	FDR

	510WB left turn onto Park SB	
Ramp from 24E to 510W	Lane 1	Lane 2
		DSF
		DPP
		FYN
		GEE
		4545
		EMD
		PU1
		7BK
		BUX
		FFR
		EWV
		EZW
		62W
		AU5
		9PC
		912
		EFA
		675
		FLW
		622
		FW
		EP5
		B5X
		FNW
		FJU
		PCP
		752
		CYX
		DLR
		G4E
		BSU
		FBA
		FWK
		GFJ
		DYC
		GLN
		B4H
		DRG
		EMZ

Total volume of ramp count: 291 cars
Total matched: 129 cars
Total %: 44%

*Based on observation, and difficulty in tracking high-volume two-lane left turn movement, assumed percentage increased to 90%.

IH ENGINEERS, P.C.
www.ihengineers.com

Project Desc.: Columbia Turnpike
Date: 6/22/2016
Time: 5:00 PM - 6:00 PM
Performed by: NL, Imran, Colin

Columbia Turnpike (CR 510) and Park Avenue (CR 623)
Morris and Hanover Townships, Morris County, NJ
Car License Plate O-D Study

		510WB left turn onto Park SB	
Ramp from 24E to 510W		Lane 1	Lane 2
MD	8834	GF5	GAE
NJ	97M	END	1GN
NJ	707	ZV1	S8M
NJ	71K	24D	B1Y
NJ	GEK	392	367Z
NJ	GLA	GRX	DTZ
NJ	8JM	EVE	ABZ
NJ	AEY	ASJ	GTD
NJ	69Y	DMB	EYE
NJ	DEN	ASF	BBN
PA	9473	FFX	641T
NJ	973	BVD	ELN
NJ	94N	DEZ	GY
NJ	FLW	S0N	BYM
NJ	FLS	GNC	93T
NJ	FRH	FVJ	GJU
NJ	FWY	EKE	FBJ
NJ	FPE	GMF	AZP
NJ	FNF	7D7	8514
NJ	DCY	71F	FZY
NJ	KLA	ASF	35MH
NJ	82N	GLA	V99
NJ	GAD	255	A2Y
NJ	DFB	BJM	9AA
NJ	GKV	DSM	FMZ
NJ	EVP	AEY	73W
NJ	EVN	DEN	GHE
PA	2855	DER	BTD
NJ	BVG	FMD	AUX
NJ	BXY	FLS	EVP
NJ	FPN	ENV	F7J
NJ	ELY	76K	BVG
NJ	53A	G23G	FPM
NJ	DKN	CNT	ELY
NJ	CHC	0CY	BLJ

			510WB left turn onto Park SB	
Ramp from 24E to 510W			Lane 1	Lane 2
NJ	DTF		GA0	72B
NJ	FPK		GXV	CHC
NJ	FRJ		G39	DTF
NJ	FEP		CJN	FPK
NJ	ERX		BXY	41T
NY	8549		FPN	ERX
NJ	EEH		CGZ	CJX
NJ	4380		S3A	EEH
NJ	28N		15C	FSS
NJ	F5S		CWW	BWU
NJ	23F		FRJ	23F
NJ	88B	^	91V	EYH
NJ	EZV	^	43BD	34Y
NJ	48R		DTC	DGZ
NJ	GRD	^	DEN	GTA
NJ	EZY		BZE	FMD
NY	1138		6ZV	FFB
NJ	947		ETT	GFZ
NJ	35S		GPJ	35S
NJ	EYD		46R	45
NJ	DYS	^	EZY	ESW
NJ	EZK		94S	EYD
NJ	DYE		CCR	D45
MD	8293	^	B4Z	7086
NJ	ALP		48V	ESN
NJ	ESJ		EZK	EYW
NJ	EYD		BJL	FRG
MD	467	^	FVR	52P
NJ	997F	^	ESJ	39T
NJ	FLS	^	ALP	ARE
NJ	G78		DUB	ESM
NJ	EZU		FCX	44
NJ	FEX		DN5	ETH
NJ	FVV		24F	GKA
NY	6428		ELF	2607
NJ	58F	^	C7B	PUT
NJ	C...M	^	G78	FSE
NJ	CXU		FJM	CMP
NJ	41S		FVK	ESK
NJ	93		JKN	EFJ
NJ	ERN	^	DEV	FCP
NJ	GCG	^	GBC	EDP
NJ	FFR	^	46M	DZX
NJ	FCL	^	47A	9C9

Ramp from 24E to 510W

NY	7262	^
NJ	79S	^
NJ	GLN	
NJ	80E	
NJ	CJD	
NJ	GAU	
NJ	ELF	
NJ	CFB	
NJ	C5S	
NJ	41W	^
NJ	3410	
NJ	FJW	
NJ	88R	
NJ	20P	
NJ	DEU	
NJ	DKR	
NJ	4GN	
NJ	..5	^
NJ	53P	
MD	14U	
NJ	58D	^
NJ	11W	^
NJ	C5Z	^
NJ	BYS	
MD	370	
NJ	DAH	
NJ	81M	
NJ	EAF	
NJ	DYV	
NJ	489	
NJ	GMO	^
NJ	CHD	
NJ	GXL	^
NJ	997	
MD	1470	
NJ	20V	
NJ	EHM	^
NJ	E74	
NJ	BHW	^
NJ	ALZ	
NJ	4552	^
NJ	GNF	^
NJ	EBB	
NJ	99P	

510WB left turn onto Park SB

Lane 1	Lane 2
G2T	CYX
879	DLP
FGG	57E
0AH	795
34D	GLN
EVN	CJ8
GGK	9BJ
GMD	4JM
99Z	DKS
2616	3410
BFW	DEE
ALZ	DMT
4552	FYL
GNF	253
99D	273
EB6	CVM
AES	FLR
EAF	7628
GGF	580
CVR	23L
GJP	3LY
CCV	11W
59X	16Z
83K	GCF
4DS	564X
DHF	95C
GLW	15P
EVL	80C
FGR	J1C
FWD	GMJ
BBJ	5251
CCS	GGW
FVA	CWM
BHK	GAZ
FKK	DDY
BXN	VRP
BTJ	GHC
DYL	EM1
57N	CEP
FPM	GEP
FLD	CCR
DGF	BYV
GAV	DMJ
ELV	46Z

Ramp from 24E to 510W

IN		^
NJ	YRP	^
NJ	GGF	^
NJ	47V	^
NJ	AES	^
NJ	GEF	^
NY	395C	^
NJ	CVR	^
NJ	GJR	^
NJ	59X	
NJ	ETB	
NJ	EWS	
NJ	CJD	^
NJ	ERG	
NJ	FYT	
NJ	FMF	^
NJ	GAF	^
NJ	GLW	^
NJ	EFM	^
NJ	FWD	^
NJ	BBJ	
NJ	EEA	
NJ	FVA	
NJ	GOK	
NJ	GGF	
NJ	BHK	
NJ	BXN	
NJ	AZV	
NJ	FFU	
NJ	EPD	^
NJ	BTJ	^
NJ	DYL	
NJ	57W	^
NJ	GHZ	^
NJ	21L	
NJ	ECD	
NJ	GAU	
NJ	EVR	
NJ	GEL	^
NJ	DVG	^
MD	51..	^
NJ	9SR	^
NJ	..7S	^
NJ	7WC	^

510WB left turn onto Park SB

Lane 1	Lane 2
EBH	FRP
DVG	DNJ
EUA	FYT
36R	591K
EZF	ETZ
AFG	EEA
ENJ	FBM
FBH	GGF
BLC	ERG
FAC	BMX
DLH	BLN
FSC	EP0
SSA	GR9
54J	GGL
ESK	GMZ
GTE	754
CYC	CCH
7936	EWD
FWY	EGP
CLF	EWR
GJR	EFS
DLS	GEJ
16R	EWP
F3V	92T
761	125
CED	FXP
J14	ZBC
36V	335
49E	DFA
FBB	11X
CPY	17E
DZX	ARJ
CKX	ESR
CYL	91K
EWR	DAH
FMF	FVR
76B	744
EUVR	EAX
GGW	CVZ
GRT	857H
	CSC
	DVX
	G0B
	69J

Ramp from 24E to 510W

NJ	AFG	
NJ	CWJ	
NJ	DFA	
NJ	GFE	^
MD	623	^
PA	9258	^
NJ	ERN	
NJ	FAC	^
NJ	DLH	
NJ	786U	^
NJ	99A	^
NJ	4600	^
NJ	DAH	
NJ	ESK	
NJ	41A	
NJ	EYZ	
NJ	PER	
NJ	AVE	
NJ	74U	
NJ	FWY	
NJ	52Z	
NJ	AWL	
NJ	O6J	
NJ	EAX	
NJ	52J	
NJ	CLF	
NJ	CVZ	
NJ	857H	
NJ	DLS	
NJ	16R	^
NJ	62H	^
NJ	CSL	
NJ	1488	
NJ	DVX	
NJ	CED	
NJ	31A	
NJ	60B	
NY	2416	^
NJ	47L	
NJ	FJG	^
NJ	CYL	
NJ	FWR	
NJ	ERD	^
NJ	FJB	

510WB left turn onto Park SB

Lane 1	Lane 2
	AJP
	EUP
	EJG
	FMJ
	95S
	ANT
	CUS
	FAV
	DHT
	GCN
	590
	8890
	GPJ
	G2N
	FVB
	DMC

510WB left turn onto Park SB

Ramp from 24E to 510W				Lane 1	Lane 2
NJ	FNF				
NJ	EGH				
NJ	FAV	^			
NJ	FBB				
PA	2176				
NJ	CXK				
NJ	59V				
NJ	FJC				
NJ	40W				
NJ	889D				
NJ	BNW				
NJ	GPJ				
NJ	RWT	^			
NJ	GHV				
NJ	CKY				
NJ	DZX				
NJ	ALR				
NJ	DMC	^			
NJ	GCH				
NJ	73T				
NJ	7934				
NJ	BJN				
NJ	DCU				
MA	613	^			
NY	7863	^			
NY	983	^			
NJ	91K				
TX	9979				
NJ	ERC				
NJ	EPC	^			
NJ	DKA	^			
NJ	NWY				
NJ	6PH	^			
NJ	34T				
NJ	38W				
NJ	CZG				
NY	6299				
NJ	FTZ				
NY	8899				
NJ	GFJ				
NJ	71W	^			
NY	9959	^			
NJ	CUW	^			
NJ	41P	^			

			510WB left turn onto Park SB	
Ramp from 24E to 510W			Lane 1	Lane 2
NJ	41N			
NJ	73U			
NJ	CZY	^		
NJ	FEW	^		
NJ	DLR	^		
NJ	DTN	^		
NJ	DZP	^		
NJ	DHP			
NJ	129B			
NJ	DTM	^		
NJ	1296			
NJ	BJC	^		
NJ	62U	^		
NJ	EEE	^		
NJ	71C			
NJ	CLE			
NJ	DDF			
NJ	FXR	^		
NJ	DMF			
NJ	79G	^		
NJ	DVR	^		

Total volume of ramp count: 275 cars
Total matched: 162 cars
Total %: 59 %

*Based on observation, and difficulty in tracking high-volume two-lane left turn movement, assumed percentage increased to 75%.

Excerpt from Langan traffic report for Honeywell site development

APPENDIX 7
TRAFFIC IMPACT STUDY
For

General Development Plan
101 Columbia Road
Morris Township
Morris County, New Jersey

Prepared For:

The Rockefeller Group
500 International Drive North
Suite 345
Mount Olive, NJ 07828

Prepared By:

Langan Engineering and Environmental Services, Inc.
989 Lenox Drive
Suite 124
Lawrenceville, NJ 08648
NJ Certificate of Authorization No: 24GA27996400

Karl A. Pehnke, P.E., PTOE
P.E. License # 36434

Alan W. Lothian, P.E.
P.E. License # 46658

2014-22-4-P-0

LANGAN

29 May 2014
130032902

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EXECUTIVE SUMMARY

The Rockefeller Group has retained Langan Engineering and Environmental Services to prepare a traffic impact study for the proposed development of 101 Columbia Road (aka Honeywell Campus), Morris Township, Morris County, New Jersey. The Honeywell campus is currently active and is developed with 1,156,182 sf of office and research / lab space. The development Plan envisions development of the property to provide 715,000 sf of office/ lab space, 235 residential townhomes, and 185,000 sf of existing office/ lab space that will be retained by Honeywell where approximately 105 Honeywell employees will continue to be employed. The campus is located in the southwest quadrant of the intersection of Columbia Turnpike with Park Avenue. Access to the property is currently provided by two signalized driveways on Columbia Road, a controlled access drive along Park Avenue, and a driveway from Kahn Road which connects with Madison Avenue at a signalized intersection.

The existing 147 acre campus is currently zoned OL-40/PUD which allows for the development of office, lab space, and residential homes. The proposed development provides a mix of uses that reduces the overall existing office/lab space to 900,000 sf and provides for a residential development of 235 homes. We estimated the number of trips the proposed redevelopment would generate based on data compiled for Land Use Code 710 (General Office Building), Land Use Code 760 (Research and Development Center), and Land Use Code 230 (Residential Condominium/Townhouse) by the Institute of Transportation Engineers (ITE) as contained in the Trip Generation, 9th edition. We estimated that the development will generate approximately 1088 trips (883 enter, 205 exit) during the weekday peak morning hour and 1065 trips (237 enter, 828 exit) during the weekday peak evening hour. It is noted that the existing zoning would permit development of the campus with up to 1,420,927 sf of office/ lab space which would generate significantly more peak hour traffic than the development program as proposed.

The property is also well situated to take advantage of public transit opportunities. Convent Station, located on the NJ Transit Morristown Line, provides train access to NYC and is located within one mile of the campus. Opportunities exist to provide shuttle service to and from the station for residents and employees within the campus. Based upon data published by the Institute of Transportation Engineers, this available transit opportunity coupled with the mixed use design could reduce the peak hour traffic generation of the campus from between 5% to 15%. This potential transit opportunity has not been factored into the analyses as contained herein.

Access to the campus is proposed to be provided via the two existing traffic signalized roadways from Columbia Road, via an access road from Park Avenue, and via the existing access on Kahn Road connecting to Madison Avenue. A new access road is also proposed connecting to Columbia Road providing access to the residential east area in the northeast quadrant of the campus. The proposed access points are expected to operate acceptably during peak traffic hours.

The proposed access, circulation, and pedestrian connections as depicted on Circulation Plan in the General Development Plan submission are logically developed and will provide safe and efficient access and on-site pedestrian and vehicular circulation.

Overall, the proposed development program is estimated to generate similar traffic as compared to the re-occupancy of the current development on the site with approximately 23 less vehicles entering the site, and 19 more exiting trips leaving the site for a net decrease of 4 vehicles during the weekday morning peak hour and approximately 86 additional entering trips and 27 less exiting trips for a net increase of 59 vehicles during the weekday evening peak hour. While several intersections surrounding the project site experience poor levels of service during the peak hours, given the distribution of traffic resulting from the multiple points of access, no intersection will be significantly impacted by the traffic generated during the peak hours as compared to re-occupancy of the existing site to full utilization.

MORRIS COUNTY IMPROVEMENTS

The County has identified the need for realigning the ramps for NJ Route 24 eastbound to directly intersect Park Avenue at a proposed signalized intersection approximately 650 feet south of Columbia Turnpike. The new ramp connection would intersect Park Avenue opposite an existing Honeywell driveway. The County concept (Concept Plan B-1) includes two exclusive left-turn lanes westbound, two through lanes southbound, and a through and shared through-right turn lane northbound. These improvements will help divert traffic from the intersection of Park Avenue and Columbia Turnpike, and will alleviate the weave condition that exists on Columbia Turnpike westbound between the NJ Route 24 southbound off ramp and the left turn lanes on Columbia Turnpike westbound to Park Avenue Southbound. While these improvements are not currently programmed or funded, the proposed access improvements and campus circulation have been designed to be consistent with this future improvement to the interchange. In addition, since the construction timeline for these improvements is indeterminate, we have prepared the traffic analyses herein both with these improvements and without these improvements. The prosed redevelopment of the campus does not require, or rely on the completion of these regional improvements.

IMPROVEMENTS IDENTIFIED IN THE FINAL REGIONAL TRAFFIC STUDY (PREPARED BY THE LOUIS BERGER GROUP)

The Louis Berger Group prepared a "Final Regional Traffic Study" for Morris County dated January 2010 that identified short-term and long-term improvements for key intersections as a result of the future redevelopment of the Former Exxon Research Facility Site. The improvements identified in the study have been modeled in the analyses documented herein. The short-term and long-term improvements identified by the report are as follows:

Madison Avenue & Old Glen Road/Kahn Road

Short-Term

- Modify signal timing to decrease overall intersection delay.

Long-Term

- Widen the northbound approach to provide an exclusive right-turn lane.
- Widen and restripe the eastbound and westbound approaches from two lanes to three lanes: provide a shared through/right-turn auxiliary lane. Restripe receiving lanes, followed by a right lane merge.
- Widen receiving lanes to two lanes, followed by a right lane merge.

Madison Avenue & Normandy Parkway

Short-Term

- Modify signal timing to decrease overall intersection delay.
- Modify phasing for the EB left turn lane to protected plus permitted.

Long-Term

- Provide additional through lane in the westbound direction: restripe the westbound right turn only lane to a shared through/right-turn lane.
- Cut back traffic islands.
- Install "Stop" sign on the southbound free right-turn lane.

IMPROVEMENTS IDENTIFIED AS A RESULT OF HONEYWELL REDEVELOPMENT

Based upon the analyses as documented herein, improvements are proposed to the Honeywell site driveways as a result of the future redevelopment. The improvements identified for the site access roads are as follows:

Columbia Road & East Honeywell Access Road

- Re-align the Access Road to align opposite Normandy Heights Road.
- Restripe the westbound approach to provide an exclusive left-turn lane.

- Restripe the eastbound approach and provide an exclusive left-turn lane to Normandy Heights Road.
- Install a new traffic signal.

Columbia Road & West Honeywell Access Road

- Update the existing traffic signal.

Columbia Road & Residential East Access Road

- Construct an access road from Columbia Road opposite Lohman Road
- Widen and Restripe Columbia Road to provide a separate left turn lane into the Residential East Access Road and into Lohman Road.
- Channelize the Residential East Access Road approach to Columbia Road to allow right turn movements only.

Park Avenue & Honeywell Access Road/Route 24 EB On/Off Ramps

- Reconstruct the existing access road to provide channelized right-turn in/out movements only.
- Align the roadway to be compatible with the future Route 24 ramp project by Morris County.

INTRODUCTION

The Rockefeller Group has retained Langan Engineering and Environmental Services to prepare a traffic impact study for the proposed development of 101 Columbia Road (aka Honeywell Campus) located in Morris Township, New Jersey. The campus is located in the southwest quadrant of the intersection of Columbia Turnpike with Park Avenue and is designated as Block 9101, Lot 4, according to township tax maps. The site location is shown in Figure 1.

The campus is currently developed with 1,156,182 sf of office and research / lab space which is partially occupied and actively utilized by Honeywell as its corporate headquarters. Access to the property is currently provided by two signalized driveways on Columbia Road, a controlled access drive along Park Avenue, and a driveway from Kahn Road which connects with Madison Avenue at a signalized intersection. The existing 147 acre campus is currently zoned OL-40/PUD which allows the development of office, lab space, and residential homes.

Project Description

The Rockefeller Group proposes to develop the 147 acre campus to provide 715,000 sf of new office space, 235 residential townhomes, and the adaptive re-use of 185,000 sf of office/lab space that will be retained by Honeywell and will be occupied by approximately 105 Honeywell employees.

Access to the campus will be provided via the two existing signalized access roads that intersect Columbia Road supplemented by a new access road from Columbia Road proposed to provide access to the northeastern portion of the campus, via the existing Kahn Road Access road connecting out to Madison Avenue, and via an improved existing access road connecting to Park Avenue located opposite the proposed future County By-Pass ramps to and from NJ Route 24 southbound.

Study Area

The area surrounding the Honeywell Campus is very diverse in terms of land use with a mix of office, residential, institutional, and recreational land uses. The study area is served by an extensive transportation network including NJ Route 24 and I-287 which accommodates the majority of the regional traffic demands. The secondary road system consists of principal arterials such as Park Avenue, Columbia Road, Columbia Turnpike, and Madison Avenue that provide access to the regions land uses. Finally, the area is supported by mass transit including commuter rail with local stations and bus transit.

In preparing this report, we have reviewed and utilized data as documented in prior available studies as referenced below.

1) Morris County traffic study prepared by The Louis Berger Group, Inc, dated January 2010.

2) 2027 Transportation Needs Assessment Study for Florham Park, prepared by Greenman-Pedersen, Inc. dated December 23, 2007.

3) Traffic Impact Study for the Concept Development Plan: The Green at Florham Park prepared by Stantec dated March 2008.

4) Traffic Impact Study, Concept Development Plan, Honeywell, prepared by Langan Engineering and Environmental Services dated September 10, 2010, revised to November 16, 2011.

These various studies have provided analyses of many of the intersections and roadways surrounding the Honeywell campus.

Based upon a review of the existing traffic studies, an evaluation of the roadway network surrounding the campus, and consideration of the existing and proposed access locations to the campus, the following intersections were identified for analysis within this study:

- Columbia Turnpike and Park Avenue
- Columbia Road and East Honeywell Access Road/ Normandy Heights Road
- Columbia Road and West Honeywell Access Road
- Columbia Road and Normandy Parkway/ Normandy Heights Road
- Madison Avenue and Normandy Parkway
- Madison Avenue and Kahn Road/Old Glen Road
- Park Avenue and Honeywell Access Road/ County By-Pass Ramps
- Columbia Road and Residential East Access Road/ Lohman Road

Scope of Study

To assess the traffic impact associated with the proposed redevelopment plan, Langan has undertaken the following steps:

1. Conducted a field examination of the site and surrounding road network to inventory physical and regulatory conditions including the number of lanes, lane assignments, channelization, traffic-control devices, lateral clearances and other factors that limit traffic capacity.
2. Conducted a series of manual turning movement traffic counts at key study intersections. These manual turning movement traffic counts were undertaken on a typical weekday from 6:00 AM to 9:00 AM and from 4:00 PM to 6:00 PM. We then identified existing weekday morning and evening peak hour traffic volumes based on the manual traffic count data.
3. Established future "2023 Base" traffic volume by applying a general growth factor of 0.5 percent to the existing traffic volumes based upon the North Jersey Transportation Planning Authority (NJTPA) population and employment growth projection for the region.
4. Identified other planned developments and vacancies in the study area and established "2023 No-Build" traffic volumes.
5. Prepared trip generation estimates for the proposed development program based on accepted trip rates developed by the Institute of Transportation Engineers (ITE).
6. Developed a trip distribution based on existing travel patterns and demographic data.
7. Assigned site-generated trips to the site access roads and surrounding road network based on the likely travel routes motorists will use to travel to and from the site.
8. Established future "2023 Build" traffic volumes by adding site-generated trips to the "2023 No-Build" traffic volumes.
9. Performed intersection capacity analyses for the weekday morning and evening peak hours using methodologies as documented in the Highway Capacity Manual.
10. Reviewed the development plan to assess the adequacy of access, on-site circulation and parking.

DESCRIPTION OF EXISTING CONDITIONS

Roads

Columbia Road (C.R. 510)

Columbia Road (County Route 510, aka Columbia Turnpike east of Park Avenue) is a principal arterial road under the jurisdiction of Morris County. Along the project frontage, Columbia Road provides two travel lanes per direction with an auxiliary lane provided in the eastbound direction along the project frontage for right turns to and from the existing driveways. Columbia Road has a posted speed limit of 40 mph. Within the project area, land uses consist of the subject property and established residential neighborhoods.

Park Avenue (C.R. 623)

Park Avenue (County Route 623) is a principal arterial road under the jurisdiction of Morris County. Adjacent to the Honeywell Campus, Park Avenue provides two travel lanes per direction, with a turn lane provided at its intersection with Columbia Turnpike. Park Avenue has a posted speed limit of 45 mph. Land uses along Park Avenue within the project area are primarily commercial.

Normandy Parkway/Normandy Heights Road

Normandy Parkway/ Normandy Heights Road is a local roadway. This roadway provides one travel lane in each direction. This roadway is named Normandy Parkway south of Columbia Road and Normandy Heights Road north of Columbia Road. Normandy Heights Road is a U shaped roadway with both ends of the roadway intersecting with Columbia Road. Normandy Parkway has a posted speed limit of 40mph. Land use along this road within the project area is primarily residential. The Morris Museum is located along Normandy Heights Road.

Madison Avenue (NJ Route 124)

Madison Avenue (NJ Route 124) is a principal arterial road under the jurisdiction of the New Jersey Department of Transportation (NJDOT). In the vicinity of the Honeywell Campus, Madison Avenue provides one travel lane per direction with turn lanes provided at intermittent intersections. Madison Avenue has a posted speed limit of 40 mph. Land uses along Madison Avenue within the project area are primarily commercial and institutional.

Kahn Road/ Old Glen Road

Kahn Road/Old Glen Road is a local roadway. This roadway provides one travel lane in each direction. This roadway is named Kahn Road northeast of the Madison Avenue intersection and

Old Glen Road southwest of the intersection. Land use along Kahn Road is commercial and there is a mix of commercial and residential land uses along Old Glen Road.

NJ Route 24

NJ Route 24 is a limited access highway under the jurisdiction of the New Jersey Department of Transportation (NJDOT). Route 24 runs between Interstate 287 in the northwest in a southeasterly direction connecting with Interstate 78. Route 24 provides two travel lanes per direction and has a posted speed limit of 55mph. In the project area, a full interchange is provided between Route 24 and Columbia Turnpike.

Intersections

Columbia Turnpike and Park Avenue

The intersection of Columbia Turnpike and Park Avenue is a signalized, four-way intersection with a cycle length of 112 seconds. The eastbound approach along Columbia Turnpike consists of one exclusive left-turn lane, two through lanes and one exclusive channelized right-turn lane. The westbound approach along Columbia Turnpike consists of two exclusive left-turn lanes, two through lanes and one exclusive channelized right-turn lane. The northbound approach along Park Avenue consists of one exclusive left-turn lane, two through lanes and one exclusive channelized right-turn lane. The southbound approach along Park Avenue consists of two exclusive left-turn lanes, one exclusive through lane and one shared through and right-turn lane with a channelized right located at the intersection.

Columbia Road and East Honeywell Access Road/ Normandy Heights Road

The intersection of Columbia Road and East Honeywell Access Road/ Normandy Heights Road is a signalized, four-way intersection with a cycle length of 100 seconds. The eastbound approach along Columbia Road consists of one shared left-turn and through lane, one exclusive through lane and one shared through and right-turn lane. The westbound approach along Columbia Road consists of one shared left-turn and through lane and one shared through and right-turn lane. The northbound approach along East Honeywell Access Road consists of one exclusive left-turn lane and one shared through and right-turn lane. The southbound approach along Normandy Heights Road consists of one shared left-turn, through and right-turn lane.

Columbia Road and West Honeywell Access Road

The intersection of Columbia Road and West Honeywell Access Road is a signalized, "T"-intersection with a cycle length of 100 seconds. The eastbound approach along Columbia Road consists of two through lanes and one shared through and right-turn lane. The westbound approach along Columbia Road consists of one shared left-turn and through lane and one exclusive through lane. The northbound approach along West Honeywell Access Road consists of one shared left-turn and right-turn lane.

Columbia Road and Normandy Parkway/ Normandy Heights Road

The intersection of Columbia Road and Normandy Parkway/Normandy Heights Road is a signalized, four-way intersection with a cycle length of 100 seconds. The eastbound approach along Columbia Road consists of one shared left-turn and through lane and one shared through and right-turn lane with a channelized right located at the intersection. The westbound approach along Columbia Road consists of one shared left-turn and through lane and one shared through and right-turn lane with a channelized right located at the intersection. The northbound approach along Normandy Parkway consists of one shared left-turn and through lane and one exclusive right-turn lane. The southbound approach along Normandy Heights Road consists of one shared left-turn and through lane and one exclusive right-turn lane.

Madison Avenue and Normandy Parkway

The intersection of Madison Avenue and Normandy Parkway is a signalized, four-way intersection with a cycle length of 105 seconds. The eastbound approach along Madison Avenue consists of one exclusive left-turn lane and one shared through and right-turn lane. The westbound approach along Madison Avenue consists of one exclusive left-turn lane, one exclusive through lane and one exclusive channelized right-turn lane. The northbound approach along a Private Driveway consists of one shared left-turn, through and right-turn lane. The southbound approach along Normandy Parkway consists of one shared left-turn and through lane and one exclusive right-turn lane.

Madison Avenue and Kahn Road/ Old Glen Road

The intersection of Madison Avenue and Kahn Road/Old Glen Road is a signalized, four-way intersection with a cycle length of 90 seconds. The eastbound approach along Madison Avenue consists of one exclusive left-turn lane and one shared through and right-turn lane. The westbound approach along Madison Avenue consists of one exclusive left-turn lane and one shared through and right-turn lane. The northbound approach along Old Glen Road consists of one exclusive left-turn lane and one shared through and right-turn lane. The southbound approach along Kahn Road consists of one exclusive left-turn lane and one shared through and right-turn lane.

Park Avenue and Site Access Road/ County By-Pass Ramps

The future intersection of Park Avenue and Site Access Road/County By-Pass Ramps will be a signalized, four-way intersection with a cycle length of 100 seconds. The eastbound approach along the Site Access Road will consist of one shared left-turn, through and right-turn lane. The westbound approach along the County By-Pass Ramps will consist of two exclusive left-turn lanes and one through lane. The northbound approach along Park Avenue will consist of one shared left-turn and through lane, one exclusive through lane, and one exclusive channelized right-turn lane. The southbound approach along Park Avenue will consist of one exclusive through lane and one shared through and right-turn lane.

Columbia Road and Lohman Road

The intersection of Columbia Road and Lohman Road is a T-shaped unsignalized intersection. The eastbound approach along Columbia Road consists of a shared left-turn and through lane, and two through lanes, which tapers down to one to the east of the intersection. The westbound approach along Columbia Road consists of a shared through and right-turn lane, and one exclusive through lane. The southbound approach along Lohman Road consists of a shared left-turn, through and right-turn lane.

Kahn Road and Old Turnpike Road

The intersection of Kahn Road and Old Turnpike Road is a four-leg unsignalized intersection. The eastbound approach along Old Turnpike Road consists of a shared left-turn, through and right-turn lane. The westbound approach along Old Turnpike Road consists of a shared left-turn, through and right-turn lane. The northbound approach along Kahn Road consists of a shared left-turn, through and right-turn lane. The southbound approach along Kahn Road consists of a shared left-turn, through and right-turn lane.

Traffic Volumes

To establish existing traffic conditions on the adjacent road system surrounding the site, manual turning movement traffic counts were conducted during peak periods on a weekday morning and evening at the study intersections. Specifically, manual turning movement counts were conducted on Wednesday, March 5, 2014 from 6:00 AM to 9:00 AM and from 4:00 PM to 6:00 PM. Previous traffic count data for the study area intersections was collected on Tuesday, May 25, 2010 and Tuesday, October 4, 2011. This data was correlated with traffic count data documented in the other major regional traffic studies that have been conducted of this area. The data was balanced between intersections as appropriate to establish a representative traffic model of existing 2014 traffic conditions.

The manual traffic counts identify distinct times during the weekday morning and evening when traffic experienced its highest levels. According to the manual traffic count data collected, the weekday morning peak hour was 7:45 AM to 8:45 AM and the weekday evening peak hour was 5:00 PM to 6:00 PM.

Figure 2 illustrates the existing weekday morning and evening peak hour traffic volumes. Summaries of the manual traffic counts are contained in Appendix B.

ESTIMATE OF FUTURE CONDITIONS

This section of the report covers background traffic growth, other planned developments, site-generated trips, trip distribution, and future traffic volumes. We anticipate the proposed development could be completed by the year 2023. Accordingly, we projected traffic volumes to include existing traffic and new traffic created by background growth to derive the 2023 Base traffic volumes. We accounted for trips generated by other planned developments and area vacancies to derive the 2023 Base traffic volumes. We then added site-generated trips based on re-occupancy of the existing development to derive the 2023 No-Build traffic volumes. Further, we then added the proposed development site-generated trips to the 2023 Base traffic volumes to derive the 2023 Build traffic volumes. In preparing the future projections, two scenarios were considered, one without construction of the interchange by-pass improvements by Morris County and one with the County improvements.

Background Traffic Growth

In order to project future 2023 base year traffic volumes, the 2014 existing traffic volumes were increased by a compounded annual growth rate of 0.5 percent. The background general growth pattern is consistent with the North Jersey Transportation Planning Authority (NJTPA) population growth projections for the region.

Other Planned Developments

In addition to general background growth, there are numerous approved developments that have been in development, exist with vacancies, or are to be developed that will influence traffic on the surrounding road network. In preparing the future traffic projections, we have included the traffic associated with these developments on the study area intersections. The following are the developments considered in the No-Build condition:

- Giralda Farms – Buildings One, Three and Four totaling 720,055 sf
- Hamilton Park - 68 room and 15,480 sf conference/meeting space expansion
- Triumph Square Phase I and Phase II – 750,000 sf office space
- Park Place – approximately 63,000 sf vacant space in 200-300 Park Place
- Campus Drive – approximately 208,257 sf vacant space in 100-600 Campus Drive
- Green at Florham – 225 room hotel, 100,000 sf Sports Medicine Institute, 430,000 sf of office space, and 425 age restricted units.

Traffic associated with these developments was developed utilizing data published in the prior traffic studies previously noted. The collective traffic from these developments is shown on Figure 3 without the County By-Pass and Figure 4 with the County By-Pass. These volumes were used to develop the 2023 Base traffic volumes shown on Figures 5 and 6.

No-Build Traffic Volumes

The campus is currently active and is developed with 1,156,182 sf office/ lab space. Honeywell currently occupies only a portion of the existing square footage. The No-Build condition includes the campus at full re-occupancy. For purposes of the analyses, although the campus is currently used as a corporate headquarters, to be conservative, we have projected the re-occupancy traffic generation based upon the existing campus use being considered a Research and Development Center, which generates less traffic as compared to office uses. Accordingly, Table 1 summarizes the peak hour traffic that is generated by the campus based upon full re-occupancy of the current development space on the site.

Table 1 - Trip Generation
Pre-Existing Development Program

Land Use Code 760 – Research and Development Center 1,156,182 square feet			
Time Period	**In**	**Out**	**Total**
Weekday Morning Peak Hour	906	186	1092
Weekday Evening Peak Hour	151	855	1006

The 2023 No-Build traffic volumes were derived by adding the re-populated trips, shown on Figure 8, to the 2023 Base traffic volumes. Figures 9 and 10 illustrate the 2023 No-Build weekday morning and evening peak hour volumes without and with the County improvements at Columbia Turnpike and Park Avenue, respectively.

Site-Generated Trips

The General Development Plan envisions development of the property to provide 715,000 sf of office/ lab space, 235 residential townhomes, and 185,000 sf of office/ lab space which will be retained by Honeywell and be occupied by approximately 105 Honeywell employees.

In order to project traffic associated with the existing, proposed, and potential build-out development scenario for the property, data as published by the Institute of Transportation Engineers in the publication Trip Generation, 9th Edition was utilized. Specifically, data contained within Land Use Codes 230 – Residential Condominium/Townhouse, Land Use Code 710 – Office, and Land Use Code 760 – Research and Development Center was utilized to estimate the peak hour traffic associated with the various development scenarios.

Table 2 provides a summary of the peak hour traffic generation associated with the proposed development program. The proposed development provides a mix of uses that reduces the overall existing office/R&D space on site to 900,000 sf and provides for 235 residential homes. It is noted that for purposes of this traffic analyses, and to be conservative, all of the new commercial building space (715,000sf) is considered to be occupied as office space even though research/ lab space is a permitted use.. If some of this space were to be occupied for research and lab space uses, lower peak hour traffic generation would be experienced, since trip generation for research/ lab space in less than general office use.

Table 2 – Trip Generation
Proposed Development Program

Land Use Code 710 – General Office Building 715,000 square feet			
Time Period	**In**	**Out**	**Total**
Weekday Morning Peak Hour	812	111	923
Weekday Evening Peak Hour	149	730	879
Land Use Code 230 – Residential Condominium/Townhouse 235 dwelling units			
Time Period	**In**	**Out**	**Total**
Weekday Morning Peak Hour	17	85	102
Weekday Evening Peak Hour	81	40	121
Land Use Code 760 – Research and Development Center 185,000 square feet (105 employees)			
Time Period	**In**	**Out**	**Total**
Weekday Morning Peak Hour	54	9	63
Weekday Evening Peak Hour	7	58	65
Total Trips for Entire Site			
Time Period	**In**	**Out**	**Total**
Weekday Morning Peak Hour	883	205	1088
Weekday Evening Peak Hour	237	828	1065

Table 3 provides a comparison of traffic generated by the proposed development program as compared to the pre-existing development. It is noted that the traffic projection for the proposed development program is conservative and does not take into account the inherent reduction in traffic associated with internal interaction of the various uses on site, or the opportunity that the mix of uses creates an opportunity for enhanced transit opportunities for the site. Further, as previously noted, traffic generation estimates for re-occupancy of the existing campus space was projected assuming that the entire campus was a research and development center, while the proposed new commercial space of 715,000 sf was projected assuming that it would be 100% occupied by office uses. The actual traffic generation from the site may be 5 to 15 percent less than as projected in Table 3 and as used in our analyses.

Table 3 – Trip Generation Comparison
Proposed vs. Pre-Existing

Time Period	In	Out	Total
Weekday Morning Peak Hour	- 23	+19	- 4
Weekday Evening Peak Hour	+86	- 27	+59

Trip Distribution

We determined the directional distribution of site-generated trips based on existing travel patterns in the study area and demographic data. The directional distribution of site traffic is shown in Table 4 and on figures 7, 11,12,17 and 18.

Table 4 – Trip Distribution

Road Direction (To and From)	Distribution Percentage	
	OFFICE	RESIDENTIAL
Madison Avenue (West)	17%	11%
Old Glen Road (South)	6%	0%
Columbia Turnpike (West)	16%	39%
Columbia Turnpike (East)	6%	5%
Park Avenue (North)	5%	6%
Park Avenue (South)	9%	3%
Normandy Heights Road (North)	1%	0%
NJ Route 24 (Northwest)	21%	19%
NJ Route 24 (Southeast)	19%	17%
Total	**100%**	**100%**

The arrival/departure distributions associated with each component of the development plan are shown on Figures 11, 12, 17, and 18. The distribution patterns were developed both for the existing roadway network and with the proposed Columbia Turnpike/ Park Avenue By-Pass Ramps. The resultant traffic volume distribution for each component and the aggregate of the development plan are shown on Figures 13, 14, 15, 16, 19, 20, 21, and 22.

Build Traffic Volumes

The 2023 Build traffic volumes were derived by adding the site-generated trips to the 2023 No-Build traffic volumes. Figures 23 and 24 illustrate the 2023 Build weekday morning and evening peak hour traffic volumes without and with the County improvements at Columbia Turnpike and Park Avenue, respectively.

ANALYSIS OF TRAFFIC OPERATIONS

This section describes the capacity analysis we conducted to assess traffic operations for the Existing, No-Build and Build conditions. Capacity analysis provides an indication of the adequacy of road facilities to serve traffic demand.

Level of Service Criteria

Level of Service (LOS) is the term used to denote different operating conditions that occur on a given road segment under various traffic volume demands. LOS is a qualitative measure that considers a number of factors including road geometry, speed, travel delay and freedom to maneuver. LOS designations range from A to F and provide an index of operational qualities of a road segment or an intersection. LOS A represents the best operating conditions; LOS F represents the worst.

LOS designations are reported differently for signalized and unsignalized intersections. For signalized intersections, the analysis considers the operation of all traffic entering the intersection. For unsignalized intersections, the analysis considers the operation of all movements that conflict with other movements, such as main-line left turns and traffic exiting a side street. The evaluation criteria used to analyze the study area intersections are based on the 2010 Highway Capacity Manual (HCM), published by the Transportation Research Board and the latest version of the Highway Capacity Software (HCS).

The HCM defines LOS for signalized intersections as follows:

LOS	Control Delay per Vehicle
A	<10 sec
B	≥10 and ≤20 sec
C	≥20 and ≤35 sec
D	≥35 and ≤55 sec
E	≥55 and ≤80 sec
F	>80 sec

The HCM defines LOS for unsignalized intersections as follows:

LOS	Delay Range (sec/veh)
A	<10 sec
B	≥10 and ≤15 sec
C	≥15 and ≤25 sec
D	≥25 and ≤35 sec
E	≥35 and ≤50 sec
F	>50 sec

Capacity Analysis

Capacity analyses for the key intersections in the study area were conducted. Overall, the analyses show that the proposed development will not significantly impact operations in the study area during peak hours as compared to full re-occupancy of the existing facilities on the campus. Moreover, the proposed campus access points will operate acceptably during peak hours.

Tables 5 and 6 present a summary of the capacity analyses for the weekday morning and evening peak hours. Table 5 summarizes the results of our analyses for the existing condition, and the future 2023 No-Build traffic condition both without and with the county by-pass improvements at Columbia Turnpike and Park Avenue. Table 6 summarizes the projected 2023 Build Condition. The scenarios analyzed include 2023 Build for the existing roadway network; 2023 Build with the county by-pass ramps assumed as constructed; 2023 Build with signal timing optimization at each of the study locations; and finally, 2023 Build with the long term intersection improvements identified within the January 2010 Morris County regional traffic study.

Morris County is pursuing improvements to the Columbia Turnpike/ Route 24/ Park Avenue interchange which will provide a by-pass of the Columbia Turnpike and Park Avenue intersection for traffic traveling to and from Park Avenue arriving from the north on Route 24 and departing to the south on Route 24. The improvements being considered are shown on the attached Exhibit B-1. The flyover concept is the preferred scheme for several reasons including the desire to avoid an additional signal on Columbia Turnpike, and Utility conflicts. Scheme B-1 is estimated to cost $10,000,000. No funding source has been identified or committed for construction. The interchange will fall under NJDOT jurisdiction, and will require NJDOT approvals. While the redevelopment plan does not rely on the construction of these improvements by others, the proposed access and circulation elements have been designed to be consistent with these improvements by others in the future.

In preparing our analyses, since funding for construction is not committed, we have evaluated two scenarios, one scenario based upon the existing roadway network, and the second scenario based upon the proposed implementation of the county preferred scheme.

Table 5 - Intersection Capacity Analysis Summary – Existing and No-Build

LOCATION	MOVEMENT		2014 EXISTING		2023 NO-BUILD WITHOUT BY-PASS		2023 NO-BUILD WITH BY-PASS ROAD	
			AM	PM	AM	PM	AM	PM
SIGNALIZED INTERSECTIONS								
Columbia Turnpike & Park Avenue	EB	L	E(55.3)	D(54.9)	E(56.4)	E(57.8)	E(56.4)	E(55.6)
		T	F(100.6)	D(51.8)	F(241.2)	F(143.3)	F(241.2)	F(118.2)
		R	C(30.5)	B(16.9)	C(35.2)	B(18.7)	C(35.2)	B(17.2)
	WB	L	E(71.2)	D(45.3)	F(363.0)	E(59.0)	F(80.4)	D(46.2)
		T	C(24.6)	C(29.7)	C(32.1)	D(41.1)	C(32.1)	D(48.5)
		R	A(8.3)	B(15.6)	A(8.7)	B(19.4)	A(8.7)	C(20.4)
	NB	L	E(56.5)	E(68.1)	E(56.8)	F(170.8)	E(56.8)	F(147.1)
		T	E(60.0)	F(138.3)	E(71.9)	F(247.4)	E(71.9)	F(208.9)
		R	B(18.9)	C(24.3)	C(21.3)	D(45.2)	B(19.3)	C(24.8)
	SB	L	D(52.1)	D(50.6)	E(56.1)	D(54.4)	E(56.1)	D(51.8)
		T,R	F(186.8)	D(52.6)	F(420.2)	E(71.6)	F(420.2)	E(63.7)
	OVERALL		**E(78.2)**	**D(51.8)**	**F(200.3)**	**F(91.1)**	**F(145.7)**	**F(83.0)**
Columbia Turnpike & East Honeywell Access Road	EB	L,T,R	A(1.7)	A(2.9)	A(3.1)	B(11.0)		
	WB	L T,R	A(3.3)	A(3.6)	C(23.1)	B(10.7)		
	NB	L	D(41.0)	D(51.6)	D(49.7)	D(53.5)		
		T,R	A(0.2)	B(17.9)	A(0.7)	A(9.4)		
	SB	L,T,R	D(48.2)	D(38.8)	A(1.6)	A(0.2)		
	OVERALL		**A(3.2)**	**A(5.1)**	**B(12.5)**	**B(12.5)**		
Columbia Turnpike & West Honeywell Access Road	EB	T,R	A(0.7)	A(3.2)	A(2.8)	A(9.0)		
	WB	L,T	A(0.9)	A(4.7)	A(5.6)	C(21.3)		
	NB	L,R	D(35.9)	D(36.9)	C(31.7)	D(41.4)		
	OVERALL		**A(0.9)**	**A(5.9)**	**A(4.7)**	**B(19.6)**		
Columbia Turnpike & Normandy Parkway/ Normandy Heights Road	EB	L,T,R	D(45.9)	D(35.7)	F(186.3)	D(37.5)		
	WB	L,T,R	D(35.3)	D(39.8)	D(38.2)	F(178.8)		
	NB	L,T	D(36.2)	D(41.6)	D(39.6)	D(43.2)		
		R	A(7.2)	A(8.9)	A(7.2)	A(9.0)		
	SB	L,T	D(51.8)	D(39.0)	E(62.6)	D(41.6)		
		R	C(29.3)	C(30.2)	C(30.4)	C(30.7)		
	OVERALL		**D(38.6)**	**C(34.9)**	**F(103.9)**	**F(113.8)**		
Madison Avenue & Normandy Parkway	EB	L	D(52.7)	F(170.2)	D(53.9)	F(217.3)		
		T,R	B(17.8)	A(9.3)	F(120.6)	B(12.1)		
	WB	L	D(47.8)	N/A	D(47.8)	N/A		
		T	D(41.2)	F(88.1)	F(90.2)	F(370.7)		
		R	A(4.2)	A(3.0)	A(4.2)	A(5.2)		
	NB	L,T,R	A(0.0)	C(32.3)	A(0.0)	C(32.2)		
	SB	L,T	F(92.6)	E(72.4)	F(119.0)	E(75.5)		
		R	A(0.6)	A(0.5)	A(0.7)	A(0.7)		
	OVERALL		**C(30.5)**	**E(59.5)**	**F(82.5)**	**F(175.3)**		

Table 5 cont'd - Intersection Capacity Analysis Summary – Existing and No-Build

LOCATION	MOVEMENT		2014 EXISTING		2023 NO-BUILD WITHOUT BY-PASS		2023 NO-BUILD WITH BY-PASS ROAD	
			AM	PM	AM	PM	AM	PM
Madison Avenue & Kahn Road/Old Glen Road	EB	L	A(6.2)	A(4.0)	B(15.8)	C(27.9)		
		T,R	B(15.3)	A(6.8)	F(158.6)	B(13.2)		
	WB	L	A(7.3)	A(4.7)	C(22.3)	A(9.9)		
		T,R	A(8.0)	A(8.2)	B(13.2)	E(75.1)		
	NB	L	C(34.7)	D(45.2)	C(30.4)	D(43.7)		
		T,R	C(32.1)	B(14.6)	E(50.5)	B(13.8)		
	SB	L	C(33.0)	C(34.7)	C(33.2)	C(30.8)		
		T,R	B(14.7)	C(31.7)	B(13.3)	D(42.5)		
	OVERALL		**B(15.3)**	**B(10.5)**	**F(93.8)**	**D(47.8)**		
Park Avenue & Site Access Road/Route 24 East On/Off Ramps	WB	L					D(42.1)	C(34.1)
	NB	L,T					A(7.5)	B(10.0)
		R					A(0.1)	A(0.6)
	SB	T,R					D(48.3)	A(5.6)
	OVERALL						**D(36.4)**	**A(9.1)**
UNSIGNALIZED INTERSECTIONS								
Columbia Road & Lohman Road	EB	L	A(9.9)	B(11.2)	B(12.3)	B(13.6)		
		T	A(0.0)	A(0.0)	A(0.1)	A(0.1)		
	SB	L,R	B(13.2)	C(17.8)	C(18.9)	D(26.3)		
Kahn Road & Old Turnpike Road	EB	L,T,R	A(7.3)	A(7.4)	A(7.7)	A(7.9)		
	WB	L,T,R	A(7.4)	A(8.8)	A(7.9)	A(9.9)		
	NB	L,T,R	A(7.4)	A(7.2)	A(8.6)	A(8.0)		
	SB	L,T,R	A(7.1)	A(7.9)	A(7.5)	A(9.4)		

Table 6 - Intersection Capacity Analysis Summary – Build

LOCATION	MOVEMENT		2023 BUILD WITHOUT BYPASS ROAD		2023 BUILD WITH BYPASS ROAD AND FULL ACCESS ROAD		2023 BUILD WITH OPTIMIZED TIMING MODIFICATIONS		2023 BUILD WITH IMPR. IDENTIFIED IN REGIONAL REPORT	
			AM	PM	AM	PM	AM	PM	AM	PM
SIGNALIZED INTERSECTIONS										
Columbia Turnpike & Park Avenue	EB	L	E(56.5)	E(57.8)	E(56.4)	E(55.7)	E(63.5)	F(80.0)		
		T	F(247.9)	F(140.2)	F(229.9)	E(75.5)	F(170.4)	E(69.2)		
		R	C(34.7)	B(17.9)	C(34.7)	B(16.7)	D(46.1)	B(13.1)		
	WB	L	F(364.4)	E(62.0)	F(81.0)	D(46.4)	F(147.3)	E(69.9)		
		T	C(31.9)	D(42.2)	C(28.2)	D(45.8)	C(28.2)	D(49.8)		
		R	A(8.7)	B(19.4)	A(8.7)	C(20.3)	A(9.9)	C(26.9)		
	NB	L	E(57.5)	F(169.4)	E(57.5)	F(147.5)	F(246.5)	E(70.2)		
		T	E(71.9)	F(247.4)	E(71.9)	F(208.4)	D(49.8)	E(55.1)		
		R	C(21.3)	D(45.2)	B(19.3)	C(24.7)	B(19.1)	C(21.7)		
	SB	L	E(56.1)	D(54.4)	E(56.1)	D(52.0)	E(78.2)	F(95.9)		
		T,R	F(410.5)	E(73.8)	F(409.7)	E(64.7)	F(134.6)	E(67.8)		
	OVERALL		**F(200.9)**	**F(91.4)**	**F(145.2)**	**E(75.4)**	**F(102.9)**	**E(54.7)**		
Columbia Turnpike & East Honeywell Access Road	EB	L,T,R	B(12.8)	B(16.6)	A(9.9)	B(14.5)	B(10.7)	A(7.9)		
	WB	L	C(28.8)	A(6.0)	B(13.5)	A(5.1)	B(8.1)	A(4.8)		
		T,R	A(3.4)	A(7.5)	A(3.2)	A(7.3)	A(3.2)	A(7.3)		
	NB	L	D(51.8)	D(53.4)	D(51.8)	D(54.2)	D(51.8)	D(54.2)		
		T,R	A(0.5)	A(5.0)	A(0.3)	A(1.3)	A(0.3)	A(2.6)		
	SB	L,T,R	A(1.3)	A(0.2)	A(1.3)	A(0.2)	A(1.3)	A(0.2)		
	OVERALL		**B(10.6)**	**B(12.8)**	**A(8.1)**	**B(11.9)**	**A(8.3)**	**A(9.4)**		
Columbia Turnpike & West Honeywell Access Road	EB	T,R	A(2.6)	A(8.3)	A(2.2)	A(7.3)	A(2.2)	A(6.9)		
	WB	L,T	B(11.3)	C(23.9)	A(6.8)	B(19.3)	A(7.3)	B(13.3)		
	NB	L,R	C(32.4)	D(42.1)	D(34.7)	D(43.7)	D(34.7)	D(48.1)		
	OVERALL		**A(6.6)**	**C(20.5)**	**A(4.5)**	**B(17.4)**	**A(4.7)**	**B(14.4)**		
Columbia Turnpike & Normandy Parkway/ Normandy Heights Road	EB	L,T,R	F(190.3)	D(38.6)			E(61.7)	E(57.2)		
	WB	L,T,R	D(38.5)	F(181.5)			E(76.8)	E(70.8)		
	NB	L,T	D(44.4)	D(44.0)			E(59.5)	E(68.9)		
		R	A(7.1)	A(8.9)			A(7.7)	B(11.2)		
	SB	L,T	E(65.6)	D(41.5)			F(93.5)	E(79.2)		
		R	C(30.3)	C(30.7)			C(32.1)	D(36.8)		
	OVERALL		**F(106.0)**	**F(114.2)**			**E(64.1)**	**E(61.0)**		
Madison Avenue & Normandy Parkway	EB	L	D(53.8)	F(232.4)			E(78.5)	F(360.2)	C(22.3)	F(128.9)
		T,R	F(119.2)	B(12.3)			F(82.5)	A(7.3)	F(119.2)	B(12.3)
	WB	L	D(47.8)	N/A			D(47.8)	N/A	D(47.8)	N/A
		T	F(88.0)	F(367.7)			D(39.6)	F(223.4)	C(24.8)	E(72.5)
		R	A(4.2)	A(5.1)			A(2.8)	A(2.0)		
	NB	L,T,R	A(0.0)	C(32.2)			A(0.0)	D(48.2)	A(0.0)	C(32.2)
	SB	L,T	F(121.9)	F(80.9)			F(237.5)	F(280.3)	F(121.9)	F(80.9)
		R	A(0.7)	A(0.7)			A(0.7)	A(0.7)	A(0.7)	A(0.7)
	OVERALL		**F(81.6)**	**F(175.7)**			**E(69.3)**	**F(146.8)**	**E(66.4)**	**D(55.0)**

Table 6 cont'd - Intersection Capacity Analysis Summary – Build

LOCATION	MOVEMENT		2023 BUILD WITHOUT BYPASS ROAD		2023 BUILD WITH BYPASS ROAD AND FULL ACCESS ROAD		2023 BUILD WITH OPTIMIZED TIMING MODIFICATIONS		2023 BUILD WITH IMPR. IDENTIFIED IN REGIONAL REPORT	
			AM	PM	AM	PM	AM	PM	AM	PM
Madison Avenue & Kahn Road/Old Glen Road	EB	L	B(15.2)	D(46.2)			A(7.3)	D(41.6)	A(6.8)	A(7.2)
		T,R	F(157.9)	B(13.1)			F(95.9)	A(9.7)	B(13.4)	B(12.2)
	WB	L	C(22.2)	B(9.8)			B(17.9)	A(6.5)	A(6.2)	A(6.3)
		T,R	B(13.1)	E(75.2)			A(7.6)	D(53.0)	B(11.5)	B(14.8)
	NB	L	C(30.5)	D(43.2)			D(41.7)	D(54.7)	C(33.7)	D(46.0)
		T,R	D(50.1)	B(13.8)			F(137.8)	B(16.7)	D(40.8)	B(13.5)
	SB	L	C(31.9)	C(30.7)			D(40.4)	D(36.1)	D(35.1)	C(30.4)
		T,R	B(12.1)	D(42.1)			B(16.4)	E(56.3)	B(13.2)	D(35.5)
	OVERALL		**F(93.4)**	**D(48.0)**			**E(68.7)**	**D(37.3)**	**B(15.9)**	**B(16.2)**
Park Avenue & Site Access Road/ Route 24 East On/Off Ramps	EB	L,T,R			D(49.6)	E(64.9)	D(49.9)	E(64.9)		
	WB	L			D(51.4)	E(56.0)	D(51.4)	E(56.0)		
		T			D(39.7)	D(45.3)	D(39.7)	D(45.3)		
	NB	L,T			B(10.2)	C(20.9)	B(10.2)	C(20.9)		
		R			A(0.1)	A(0.6)	A(0.1)	A(0.6)		
	SB	T,R			E(76.3)	B(10.8)	E(76.3)	B(10.8)		
	OVERALL				**D(54.0)**	**C(20.0)**	**D(54.0)**	**C(20.0)**		
UNSIGNALIZED INTERSECTIONS										
Columbia Road & Lohman Road/ Proposed Site Access Road	EB	L	B(12.2)	B(13.7)	B(11.1)	B(13.4)				
	WB	L	B(13.8)	B(11.9)	B(13.6)	B(11.2)				
	NB	R	C(16.8)	B(14.0)	C(16.3)	B(13.2)				
	SB	L,T,R	D(28.0)	E(48.9)	C(22.2)	C(21.4)				
Park Avenue & Site Access Road	EB	R	E(41.2)	C(15.0)						
Kahn Road & Old Turnpike Road	EB	L,T,R	A(7.7)	A(8.0)	A(7.6)	A(8.0)				
	WB	L,T,R	A(7.9)	B(10.0)	A(7.9)	A(9.9)				
	NB	L,T,R	A(8.7)	A(8.2)	A(8.6)	A(8.2)				
	SB	L,T,R	A(7.5)	A(9.3)	A(7.5)	A(9.3)				

Columbia Turnpike and Park Avenue

Without By-Pass

Under the No-Build condition, with re-occupancy of the existing campus the intersection is expected to operate at an overall LOS F during both the weekday morning and evening peak hours. Under the Build condition, the intersection is expected to continue to operate at an overall LOS F, but with a lower delay than the No-Build condition during both the weekday morning and evening peak hours.

With By-Pass

Under the No-Build condition, with re-occupancy of the existing campus the intersection is expected to operate at an overall LOS F during both the weekday morning and evening peak hours. With the construction of the county by-pass the westbound left and northbound right movements are expected to operate at improved levels of service from the No-Build condition without the proposed improvement. Under the Build condition, the intersection is expected to continue to operate at an overall LOS F, but with a lower delay than the No-Build condition during the weekday morning peak hour. During the weekday evening peak hour the intersection is expected to operate at an overall LOS E, under the Build condition.

The by-pass ramps significantly improve the operation of the intersection, and provide an opportunity to optimize the traffic signal operation. With optimization, the intersection is expected to operate at an overall LOS F and LOS E during the weekday morning and evening peak hours, respectively, with a significant decrease in the overall delay.

Columbia Turnpike and East Honeywell Access Road/Normandy Heights Road

It is proposed to improve the lane geometry at the intersection by minor widening and restriping along the campus frontage to provide a separate left turn on the westbound and eastbound approaches, and re-alignment of the east access road to align with Normandy Heights Road. The provision for the left turn lanes will improve the intersection safety by separating left turning traffic from the through movement lanes, and will increase the capacity of the eastbound/westbound through movements.

Without By-Pass

Under the No-Build condition, with re-occupancy of the existing campus the intersection is expected to operate at an overall LOS B during both the weekday morning and evening peak hours. Under the Build condition, the intersection is expected to operate at an overall LOS B during both the weekday morning and evening peak hours.

With By-Pass

Under the No-Build condition, the intersection is expected to operate at an overall LOS B during both the weekday morning and evening peak hours. Under the Build condition, the intersection is expected to operate at an overall LOS A and LOS B during the weekday morning and evening peak hour, respectively.

The by-pass ramps and proposed improvements effect the overall operation of the intersection, and provide an opportunity to optimize the traffic signal operation. With optimization, the intersection is expected to operate at an overall LOS A during both the weekday morning and evening peak hours.

Columbia Turnpike and West Honeywell Access Road

Without By-Pass

Under the No-Build condition, with re-occupancy of the existing campus the intersection is expected to operate at an overall LOS A and LOS B during the weekday morning and evening peak hours, respectively. Under the Build condition, the intersection is expected to continue to operate at an overall LOS A and LOS C during the weekday morning and evening peak hours, respectively.

With By-Pass

Under the No-Build condition, the intersection is expected to operate at an overall LOS A and LOS B during the weekday morning and evening peak hours, respectively. Under the Build condition, the intersection is expected to continue to operate at an overall LOS A and LOS B during the weekday morning and evening peak hours, respectively.

The by-pass ramps effect the overall operation of the intersection, and provide an opportunity to optimize the traffic signal operation. With optimization, the intersection is expected to continue to operate at the same levels of service during both peak hours.

Columbia Turnpike and Normandy Parkway/ Normandy Heights Road

Under the No-Build condition, with re-occupancy of the existing campus the intersection is expected to operate at an overall LOS F during both the weekday morning and evening peak hours. Under the Build condition, the intersection is expected to continue to operate at an overall LOS F during both the weekday morning and evening peak hours, but will operate with a lower overall delay.

Improvements to the intersection could be done through optimization of the traffic signal operation. With optimization, the intersection is expected to improve and operate at an overall LOS E during both the weekday morning and evening peak hours.

Madison Avenue and Normandy Parkway

Under the No-Build condition, with re-occupancy of the existing campus the intersection is expected to operate at an overall LOS F during both the weekday morning and evening peak hours. Under the Build condition, the intersection is expected to continue to operate at an overall LOS F during both the weekday morning and evening peak hours, but will operate with a lower overall delay.

Improvements to the intersection could be done through optimization of the traffic signal operation. With optimization, the intersection is expected to improve to operate at an overall LOS E during the weekday morning peak hour. During the weekday evening peak hour the intersection is expected to continue to operate at an overall LOS F, but with a significant decrease in the overall delay.

Consistent with the findings of the January 2010 county study, this intersection will experience increased delays in the future. The long term improvements identified in the county study will alleviate the projected future intersection operation. Under the improvement from the study, the intersection is expected to operate at an overall LOS E and LOS D during the weekday morning and evening peak hours, respectively.

Madison Avenue and Kahn Road/ Old Glen Road

Under the No-Build condition, the intersection is expected to operate at an overall LOS F and LOS D during the weekday morning and evening peak hours, respectively. Under the Build condition, the intersection is expected to continue to operate at an overall LOS F and LOS D during the weekday morning and evening peak hours, respectively, but with a lower overall delay than the No-Build condition.

Improvements to the intersection could be done through optimization of the traffic signal operation. With optimization, the intersection is expected to improve to operate at an overall LOS E and LOS D during the weekday morning and evening peak hours, respectively.

Consistent with the findings of the January 2010 county study, this intersection will experience increased delays in the future. The long term improvements identified in the county study will alleviate the projected future intersection operation and improve the overall operation of the intersection to LOS B during both the peak hours.

Park Avenue and Site Access Road/ County By-Pass Ramps

The county is pursuing improvements to the Columbia Turnpike/ Route 24/ Park Avenue interchange. These improvements will result in the construction of a new signalized intersection opposite the Honeywell Park Avenue access road. Associated with the development of the campus, and construction of this new signal, it is proposed to provide a full access connection at this location opposite the new ramp termini. The access road at this location will reduce the amount of new traffic that will travel through the Columbia Turnpike/Park Avenue intersection during both the weekday morning and evening peak hours.

Associated with the construction of the new ramp terminal, it is recommended that the following improvements be implemented:

- Open the driveway to provide full access onto Park Avenue.
- Design the westbound ramp approach to provide a through lane in addition to the proposed two exclusive left turn lanes.
- Design the northbound approach to provide an exclusive right-turn lane to the ramp.
- Design the signal operation to provide split phases for the eastbound and westbound approaches.
- Construct the eastbound exit approach from the Honeywell Campus to provide one lane.

Without By-Pass

Under the Build condition, the unsignalized right turn in/out intersection is expected to operate at LOS E or better during the weekday morning peak hour and LOS C or better during the weekday evening peak hour.

With By-Pass

Under the No-Build condition, the signalized intersection is expected to operate at an overall LOS D during the weekday morning peak hour and LOS A during the weekday evening peak hour. Under the Build condition, the intersection is expected to operate at an overall LOS D and LOS C during the weekday morning and evening peak hours, respectively.

Columbia Road and Lohman Road/ Proposed Residential East Street

Access to the residential east district of the project is to be provided via a street that is proposed to intersect Columbia Road directly across from Lohman Road. It is proposed to widen and restripe Columbia Road to provide an exclusive left turn lane on both the westbound and eastbound direction, and continue to provide two through lanes in each direction on the Columbia Road approaches as well. The new street will be designed to restrict left turns out and provide a channelized right turn lane. No changes are proposed for the southbound Lohman Road approach.

Without By-Pass

Under the No-Build condition, all movements at the unsignalized intersection are expected to operate at LOS C or better during the weekday morning peak hour and LOS D or better during the weekday evening peak hour. Under the Build condition, all movements are expected to operate at LOS D or better in both the weekday morning and evening peak hours, with the exception of the southbound movement which is expected to operate at an LOS E during the weekday evening peak hour.

With By-Pass

Under the No-Build condition, all movements at the unsignalized intersection are expected to operate at LOS C or better during the weekday morning peak hour and LOS D or better during the weekday evening peak hour. Under the Build condition, all movements are expected to operate at LOS C or better during both the weekday morning and evening peak hour.

Kahn Road and Old Turnpike Road

Without By-Pass

Under the No-Build condition, all movements at the unsignalized intersection are expected to operate at LOS A during both the weekday morning peak hour and evening peak hours. Under the Build condition, all movements are expected to operate at LOS A during the weekday morning peak hour and LOS B or better during the weekday evening peak hour.

With By-Pass

Under the No-Build condition, all movements at the unsignalized intersection are expected to operate at LOS A during both the weekday morning peak hour and evening peak hours. Under the Build condition, all movements are expected to operate at LOS A during both the weekday morning evening peak hours.

CONCLUSIONS

Based upon the analyses as contained herein, it is determined that the proposed development will provide a mix of uses that reduces the overall office/lab space to 900,000 sf from the pre-existing 1,156,182 sf and provides for a residential development of 235 townhomes which will generate a level of traffic that is similar to the level of traffic generated by the existing campus upon full re-occupancy during both the weekday morning and evening peak hours. For purposes of this traffic impact study, when evaluating the pre-existing traffic impacts from the existing campus, the existing space was assumed to be fully utilized as a research and development center which generates lower traffic volumes than office and corporate office uses. It is noted that the existing campus is currently utilized by Honeywell as its Global Corporate Headquarters and for research and development activities. Further, the traffic projections for the new commercial space of 715,000 sf was assumed to be fully occupied by office users even though it is possible that some of the space may be occupied by research/ lab users which has a lower traffic generation as compared to office space use. Based upon our analyses, we have determined that the proposed development program traffic generation, even with the conservative traffic generation estimates described above, will be essentially the same as the traffic generation from the site if the existing campus space was re-occupied.

Based upon the traffic analyses as documented herein, it is concluded that the project will not significantly impact operations in the study area during peak hours as compared to the prior occupancy traffic generation from the campus. Moreover, the proposed site access roads will be improved and will operate acceptably during the peak hours.

The proposed site access roadways and internal circulation system as depicted on the General Development Circulation Plan will provide for safe and efficient access and on-site circulation.

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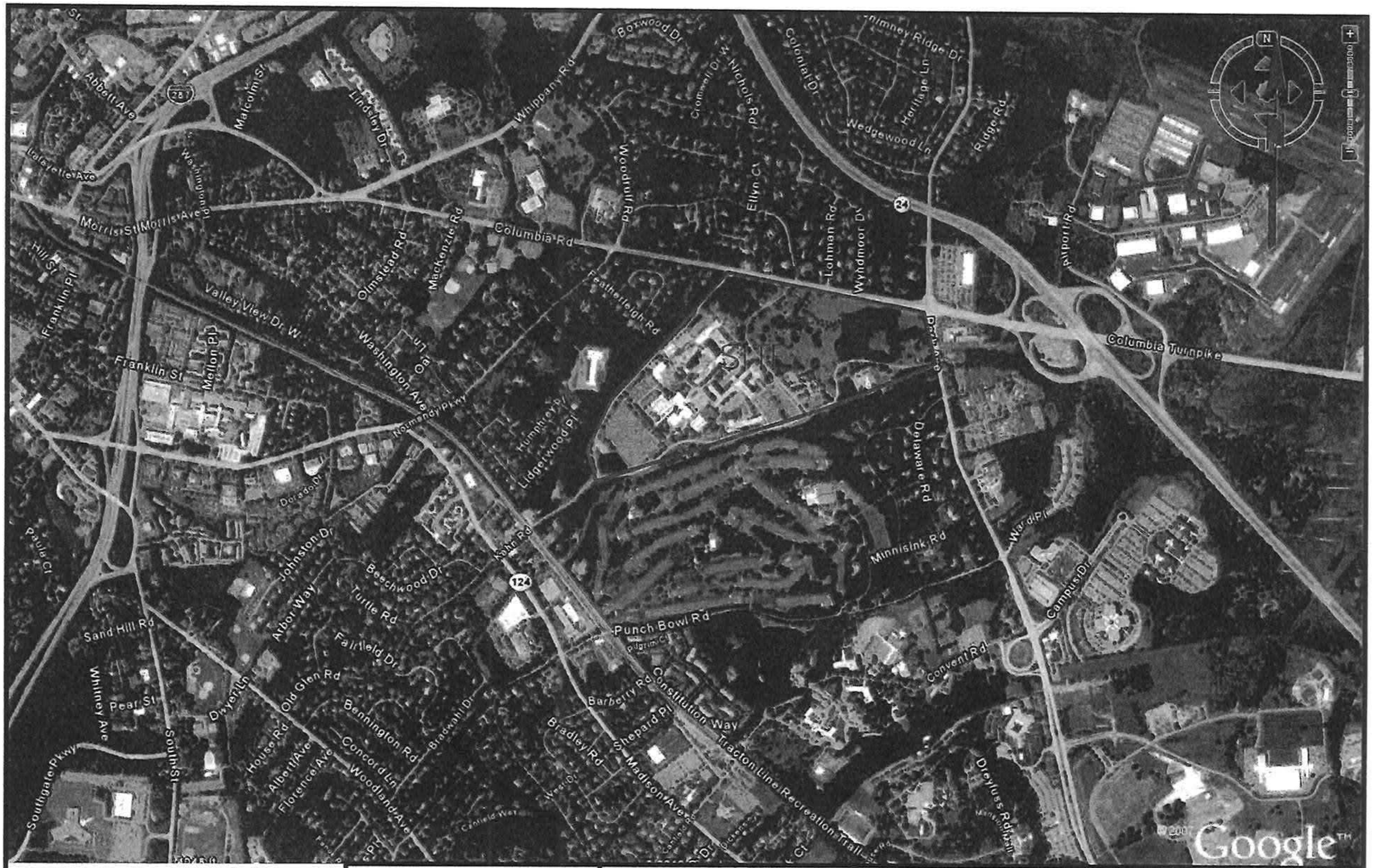
APPENDIX A
FIGURES



LANGAN

989 Lenox Drive, Suite 124
Lawrenceville, NJ 08648
T: 609.282.8000 F: 609.282.8001 www.langan.com

Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C.
Langan Engineering and Environmental Services, Inc.
Langan CT, Inc.
Langan International LLC
Collectively known as Langan

NJ CERTIFICATE OF AUTHORIZATION No. 24GA27996400

Project

HONEYWELL
CAMPUS
REDEVELOPMENT
BLOCK No. 9101, LOT No. 4
MORRIS TOWNSHIP
MORRIS COUNTY NEW JERSEY

Drawing Title

SITE LOCATION
MAP

Project No.
130032902

Date
04/24/2014

Scale
N.T.S.

Drawn By
KAMP

Checked By

Submission Date
APRIL 2014

Drawing No.

FIGURE 1

Sheet 1 of 24

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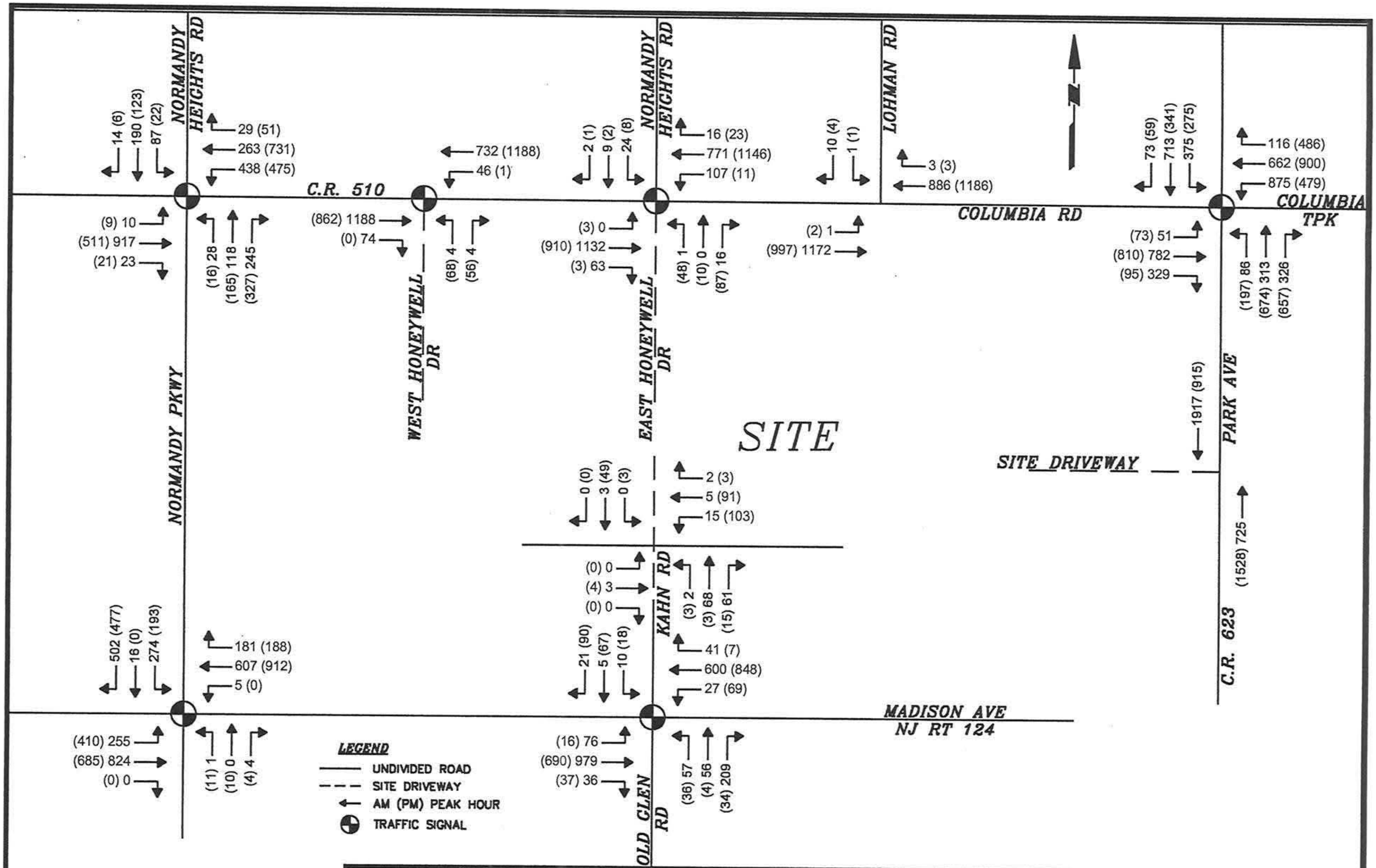

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989 Lenox Drive, Suite 124
Lawrenceville, NJ 08648
T: 609.282.8000 F: 609.282.8001 www.langan.com

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Langan Engineering and Environmental Services, Inc.
Langan CT, Inc.
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Collectively known as Langan

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Project

HONEYWELL
CAMPUS
REDEVELOPMENT
BLOCK No. 9101, LOT No. 4
MORRIS TOWNSHIP
MORRIS COUNTY NEW JERSEY

Drawing Title

2014 EXISTING PEAK HOUR TRAFFIC VOLUMES

Project No. 130032902
Date 04/24/2014
Scale N.T.S.
Drawn By KAMP
Checked By
Submission Date APRIL 2014

Drawing No.

FIGURE 2

Sheet 2 of 24

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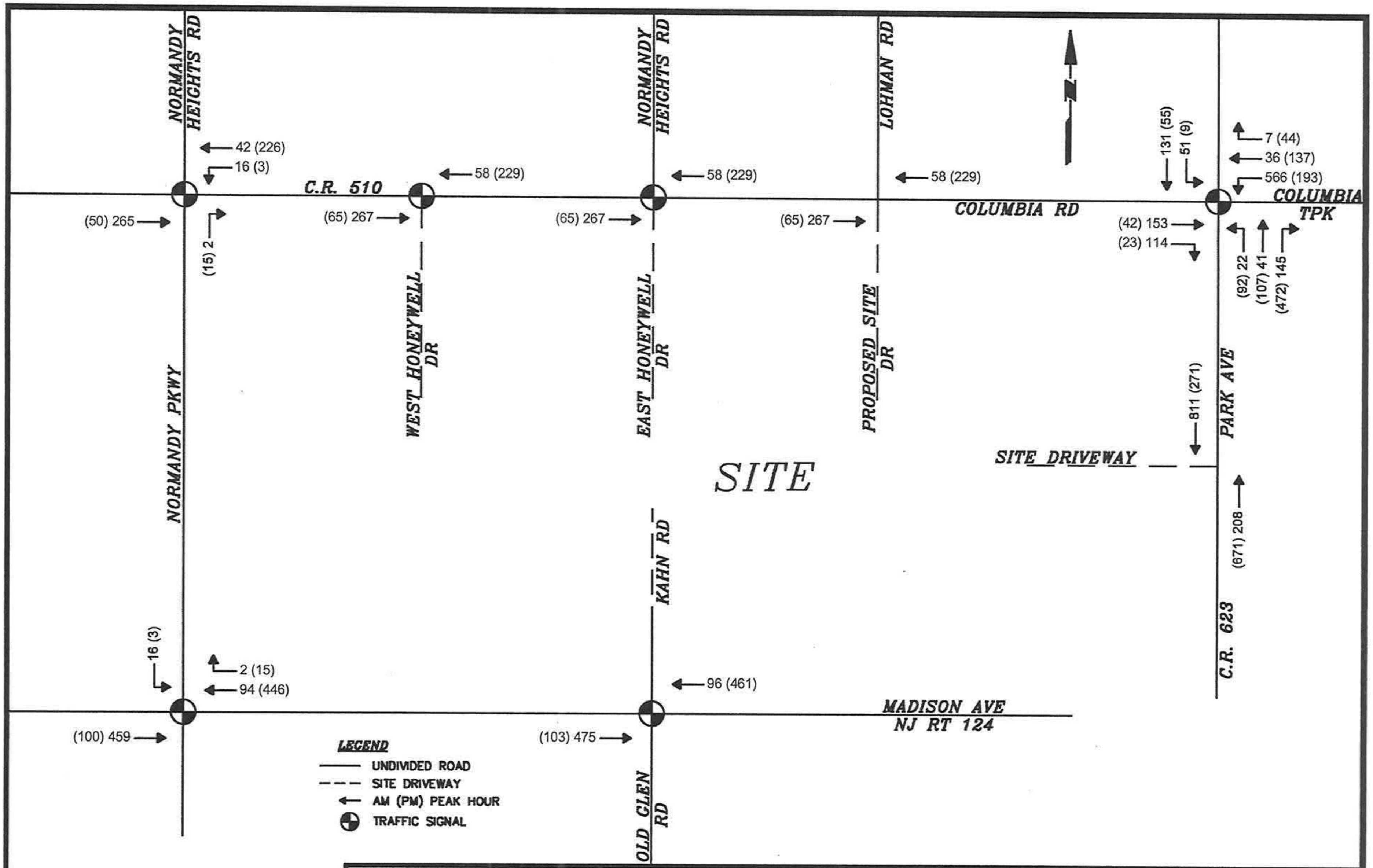

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989 Lenox Drive, Suite 124
Lawrenceville, NJ 08648
T: 609.282.8000 F: 609.282.8001 www.langan.com

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Project

HONEYWELL
CAMPUS
REDEVELOPMENT
BLOCK No. 9101, LOT No. 4
MORRIS TOWNSHIP
MORRIS COUNTY NEW JERSEY

Drawing Title

OTHER
DEVELOPMENT
TRAFFIC VOLUMES
WITHOUT COUNTY
BY-PASS

Project No. 130032902
Date 04/24/2014
Scale N.T.S.
Drawn By KAMP
Checked By
Submission Date APRIL 2014

Drawing No.

FIGURE 3

Sheet 3 of 24

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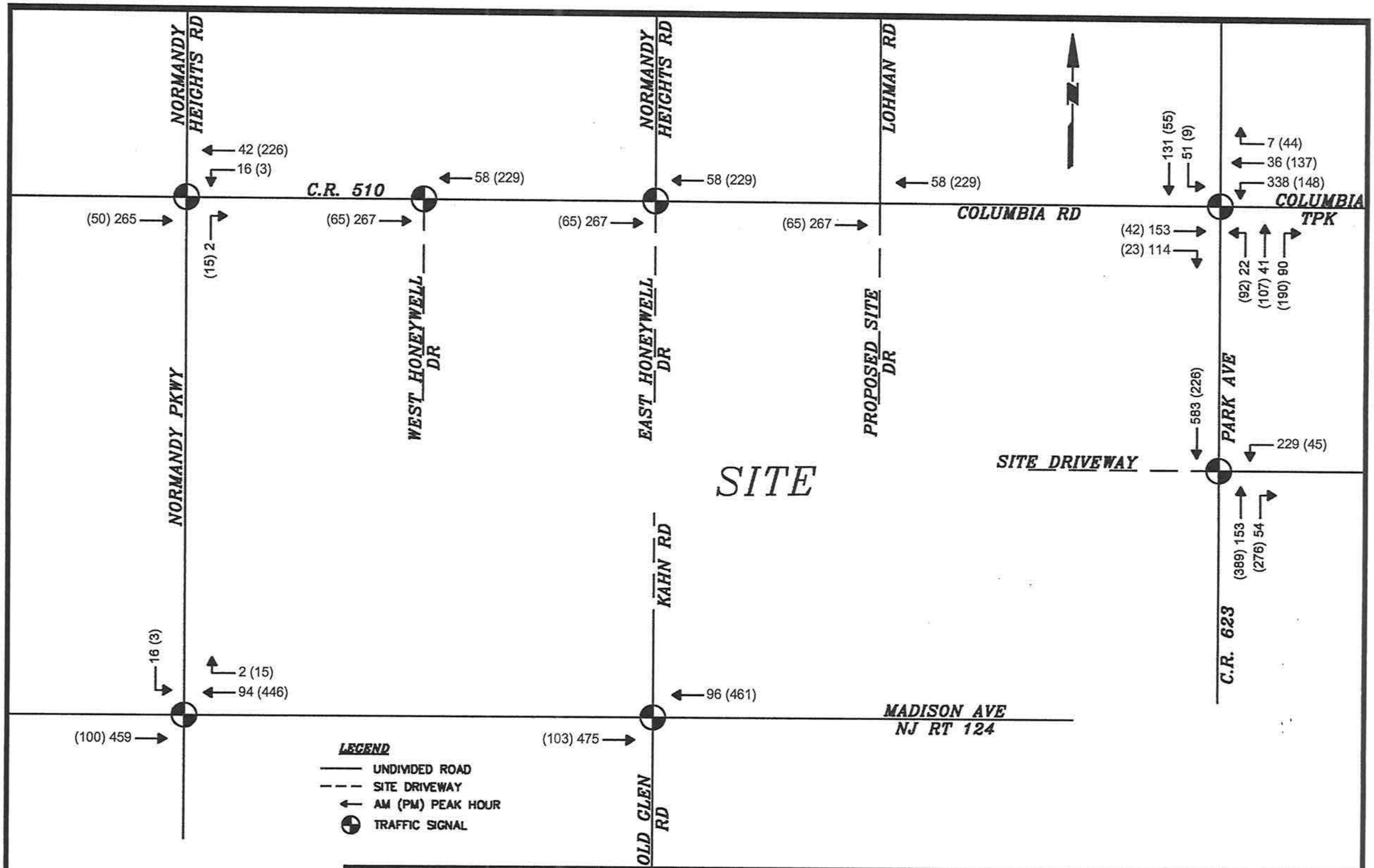

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989 Lenox Drive, Suite 124
Lawrenceville, NJ 08648
T: 609.282.8000 F: 609.282.8001 www.langan.com

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Project

HONEYWELL
CAMPUS
REDEVELOPMENT
BLOCK No. 9101, LOT No. 4
MORRIS TOWNSHIP
MORRIS COUNTY NEW JERSEY

Drawing Title

OTHER
DEVELOPMENT
TRAFFIC VOLUMES
WITH COUNTY
BY-PASS

Project No. 130032902	Drawing No. FIGURE 4
Date 04/24/2014	
Scale N.T.S.	
Drawn By KAMP	Checked By
Submission Date APRIL 2014	Sheet 4 of 24

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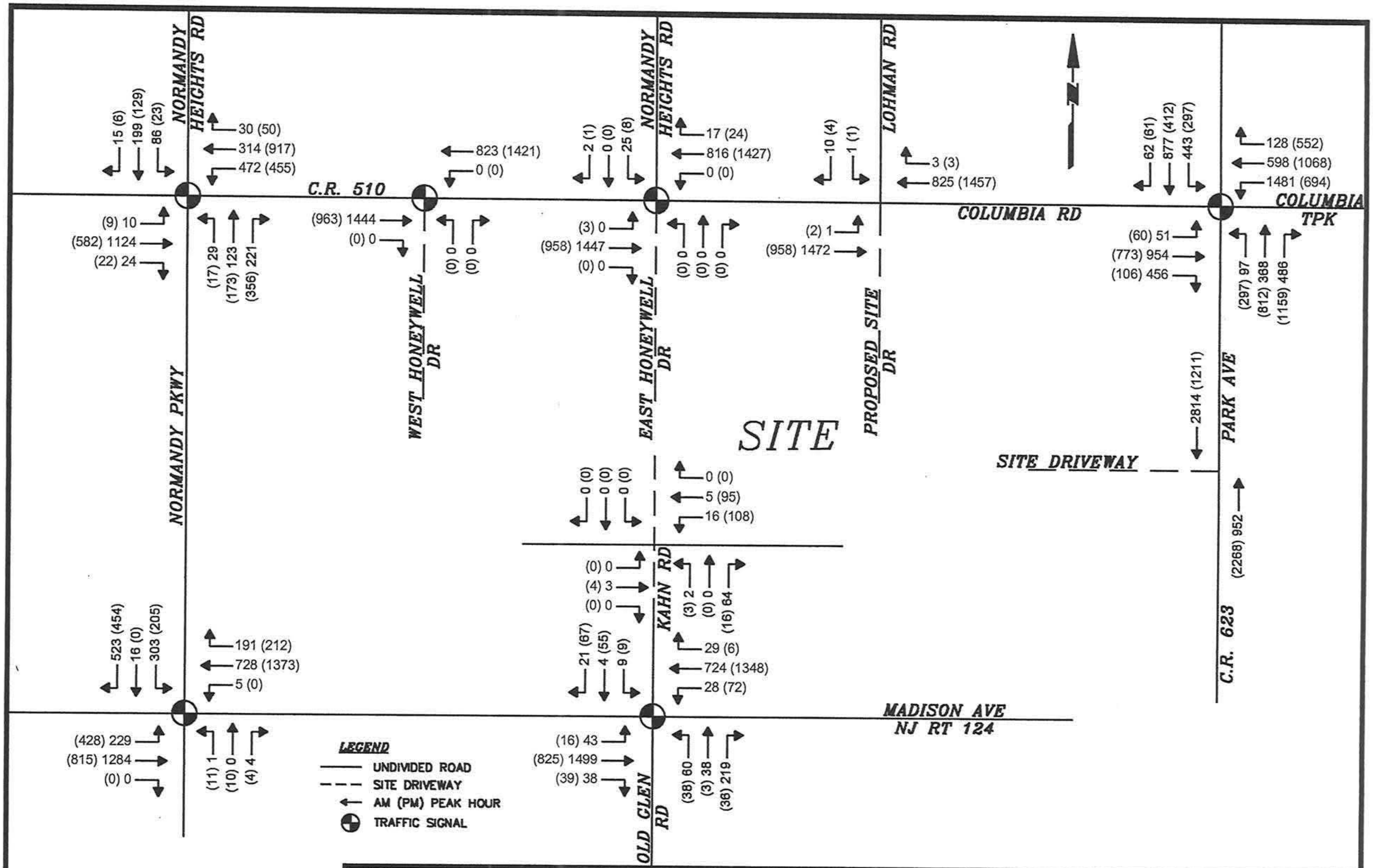

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989 Lenox Drive, Suite 124
Lawrenceville, NJ 08648
T: 609.282.8000 F: 609.282.8001 www.langan.com

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Project

HONEYWELL
CAMPUS
REDEVELOPMENT
BLOCK No. 9101, LOT No. 4
MORRIS TOWNSHIP
MORRIS COUNTY NEW JERSEY

Drawing Title

2023 BASE TRAFFIC
VOLUMES WITH
OTHER DEVELOPMENT
TRAFFIC WITHOUT
COUNTY BY-PASS

Project No. 130032902	Drawing No.
Date 04/24/2014	FIGURE 5
Scale N.T.S.	
Drawn By KAMP	Checked By
Submission Date APRIL 2014	Sheet 5 of 24

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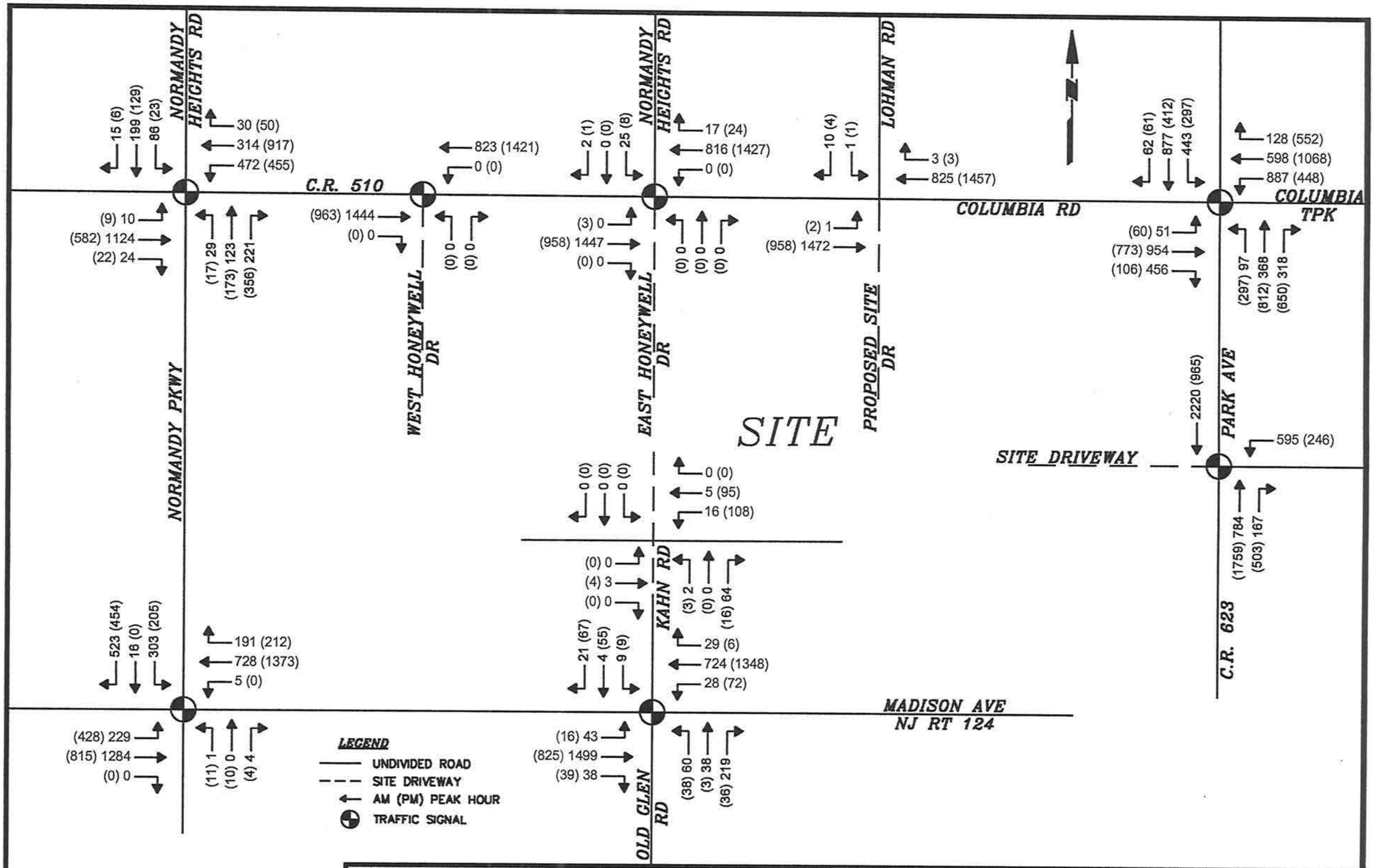

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989 Lenox Drive, Suite 124
Lawrenceville, NJ 08648
T: 609.282.8000 F: 609.282.8001 www.langan.com

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Project

HONEYWELL
CAMPUS
REDEVELOPMENT
BLOCK No. 9101, LOT No. 4
MORRIS TOWNSHIP
MORRIS COUNTY NEW JERSEY

Drawing Title

2023 BASE TRAFFIC VOLUMES WITH OTHER DEVELOPMENT TRAFFIC WITH COUNTY BY-PASS

Project No.
130032902

Date
04/24/2014

Scale
N.T.S.

Drawn By
KAMP

Checked By

Submission Date
APRIL 2014

Drawing No.

FIGURE 6

Sheet 6 of 24

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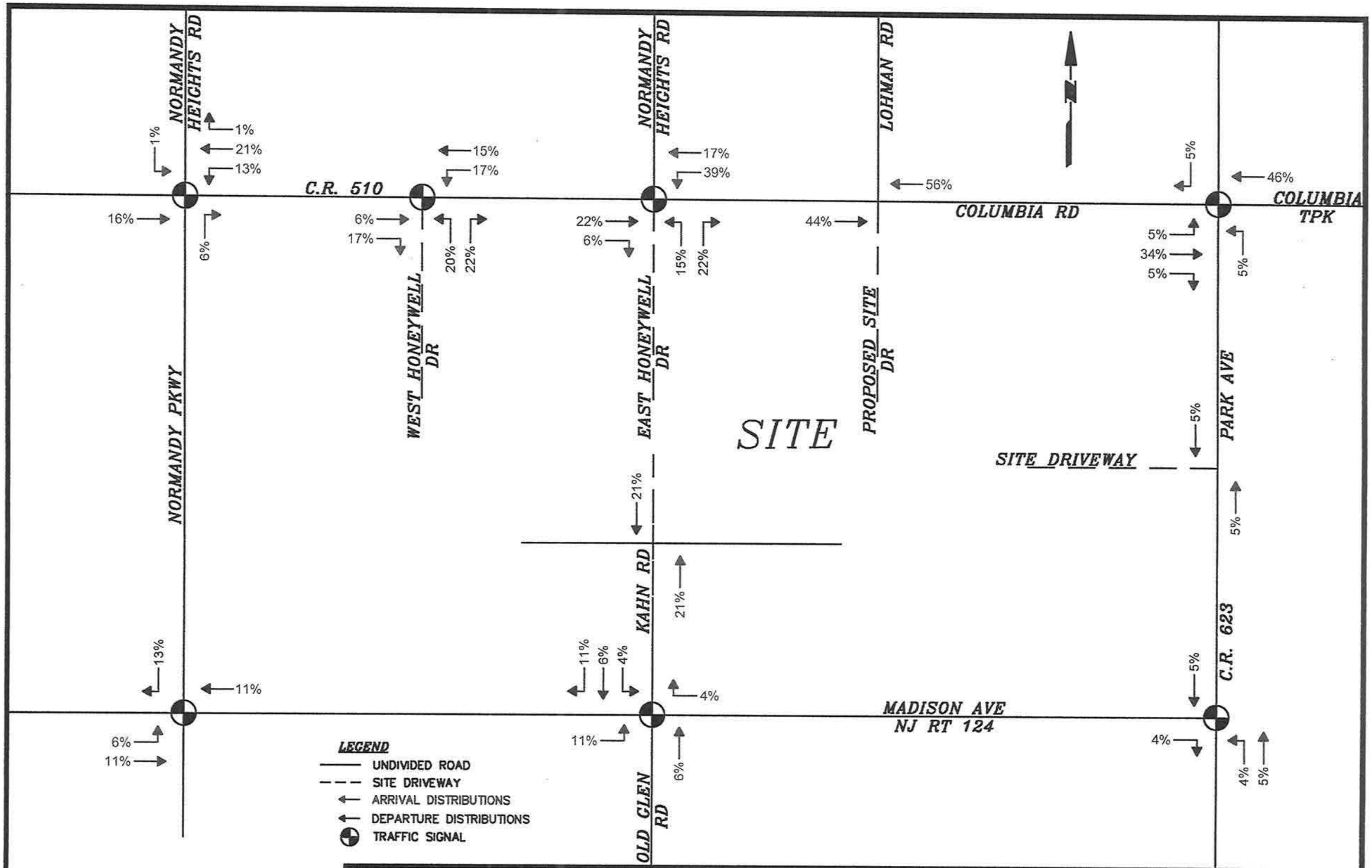

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989 Lenox Drive, Suite 124
Lawrenceville, NJ 08648
T: 609.282.8000 F: 609.282.8001 www.langan.com

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Project

HONEYWELL
CAMPUS
REDEVELOPMENT
BLOCK No. 9101, LOT No. 4
MORRIS TOWNSHIP
MORRIS COUNTY NEW JERSEY

Drawing Title

HONEYWELL
RE-POPULATED
DISTRIBUTIONS

Project No. 130032902	
Date 04/24/2014	
Scale N.T.S.	
Drawn By KAMP	Checked By
Submission Date APRIL 2014	

Drawing No.

FIGURE 7

Sheet 7 of 24

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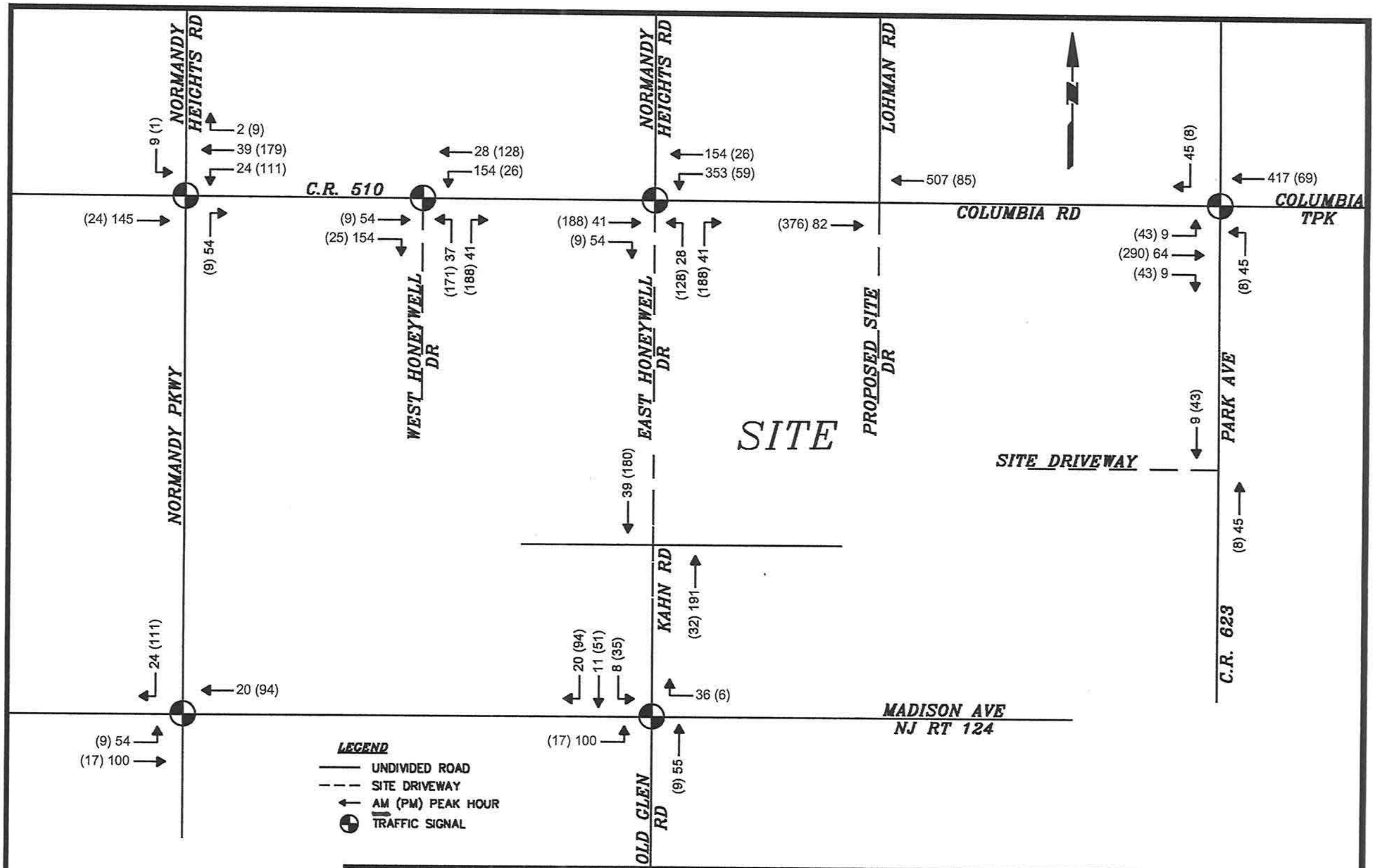

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Lawrenceville, NJ 08648
T: 609.282.8000 F: 609.282.8001 www.langan.com

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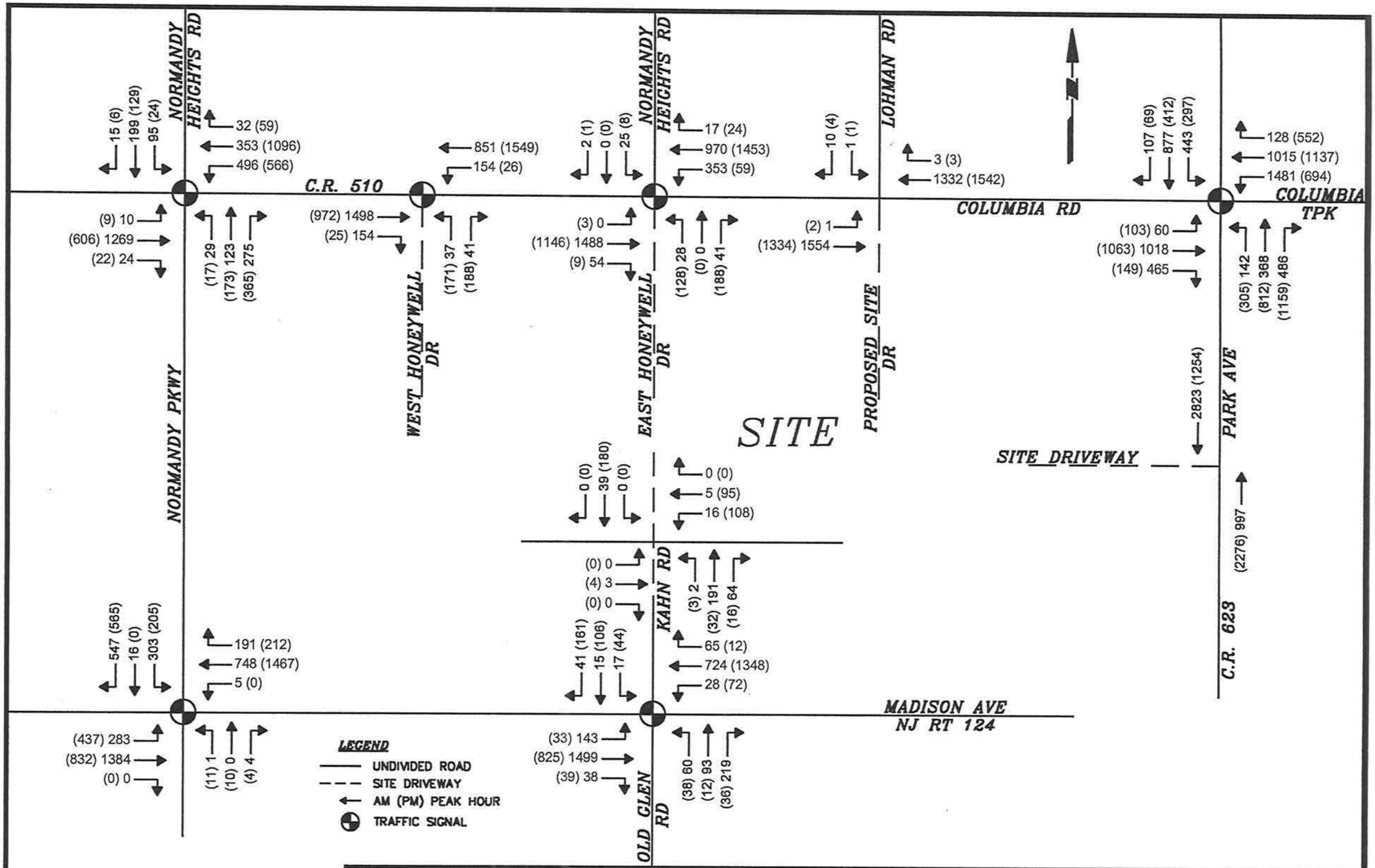
HONEYWELL
CAMPUS
REDEVELOPMENT
BLOCK No. 9101, LOT No. 4
MORRIS TOWNSHIP
MORRIS COUNTY NEW JERSEY

Drawing Title

HONEYWELL
RE-POPULATED
TRAFFIC VOLUMES

Project No. 130032902	Drawing No.
Date 04/24/2014	FIGURE 8
Scale N.T.S.	
Drawn By KAMP	Checked By
Submission Date APRIL 2014	Sheet 8 of 24

Filename: \\langan.com\data\TR\data9\130032902\Engineering Data\Traffic\Figures & Tables\TIS Figures Honeywell Redevelopment 03-2014.dwg Date: 4/24/2014 Time: 17:07 User: kapehnke Style Table: Langan.stb Layout: 8-RePopTrips



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NJ CERTIFICATE OF AUTHORIZATION No. 24GA27996400

Project

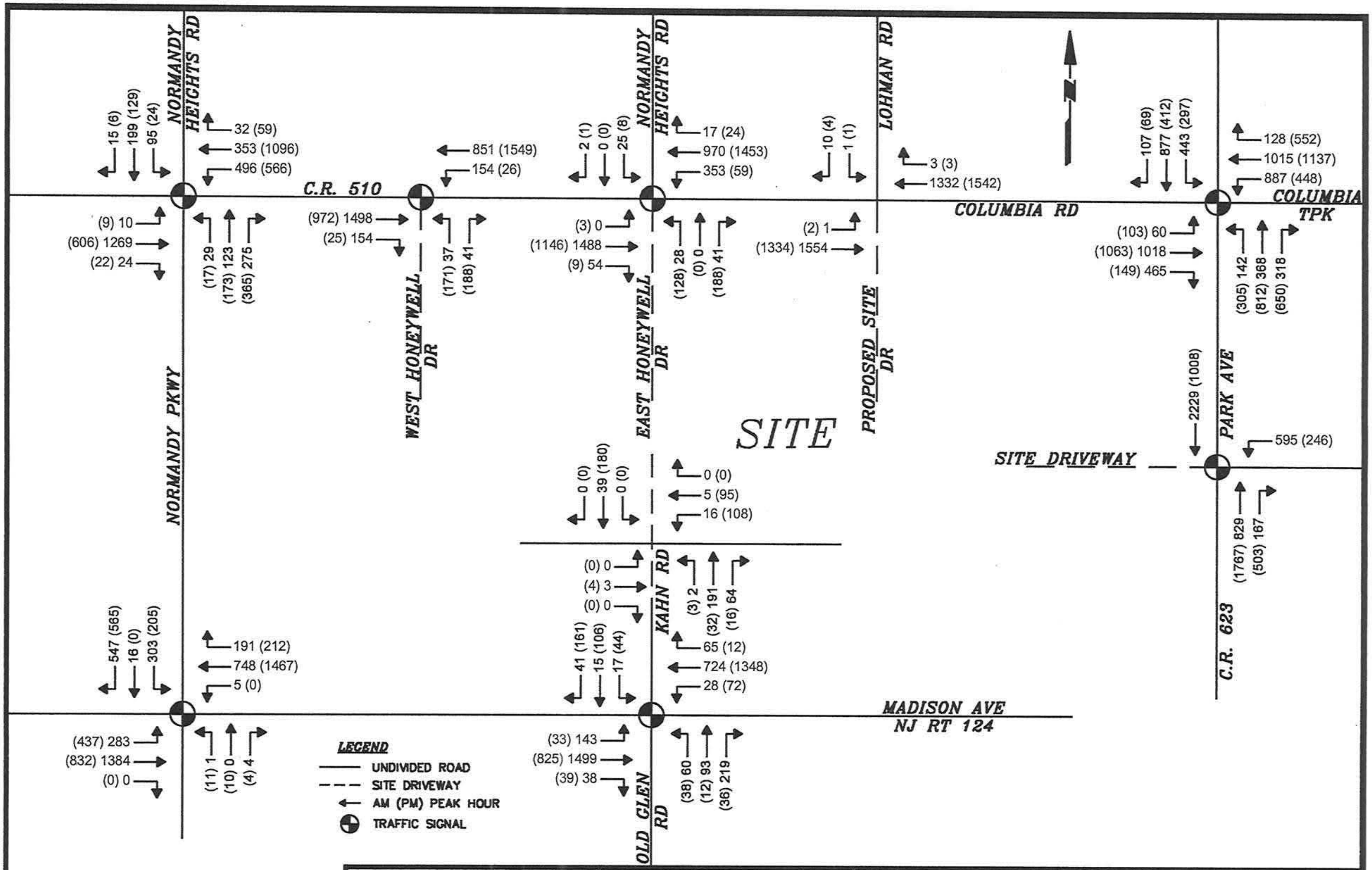
HONEYWELL
CAMPUS
REDEVELOPMENT
BLOCK No. 9101, LOT No. 4
MORRIS TOWNSHIP
MORRIS COUNTY NEW JERSEY

Drawing Title

2023 NO-BUILD TRAFFIC VOLUMES WITHOUT COUNTY BY-PASS

Project No. 130032902	Drawing No.
Date 04/24/2014	FIGURE 9
Scale N.T.S.	
Drawn By KAMP / Checked By	
Submission Date APRIL 2014	Sheet 9 of 24

Filename: \\langan.com\data\TR\data9\130032902\Engineering Data\Traffic\Figures & Tables\TIS Figures Honeywell Redevelopment 03-2014.dwg Date: 4/24/2014 Time: 17:08 User: kapehnke Style Table: Langan.stb Layout: 9-NBw-out



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Project

HONEYWELL CAMPUS REDEVELOPMENT

BLOCK No. 9101, LOT No. 4
MORRIS TOWNSHIP
MORRIS COUNTY NEW JERSEY

Drawing Title

2023 NO-BUILD TRAFFIC VOLUMES WITH COUNTY BY-PASS

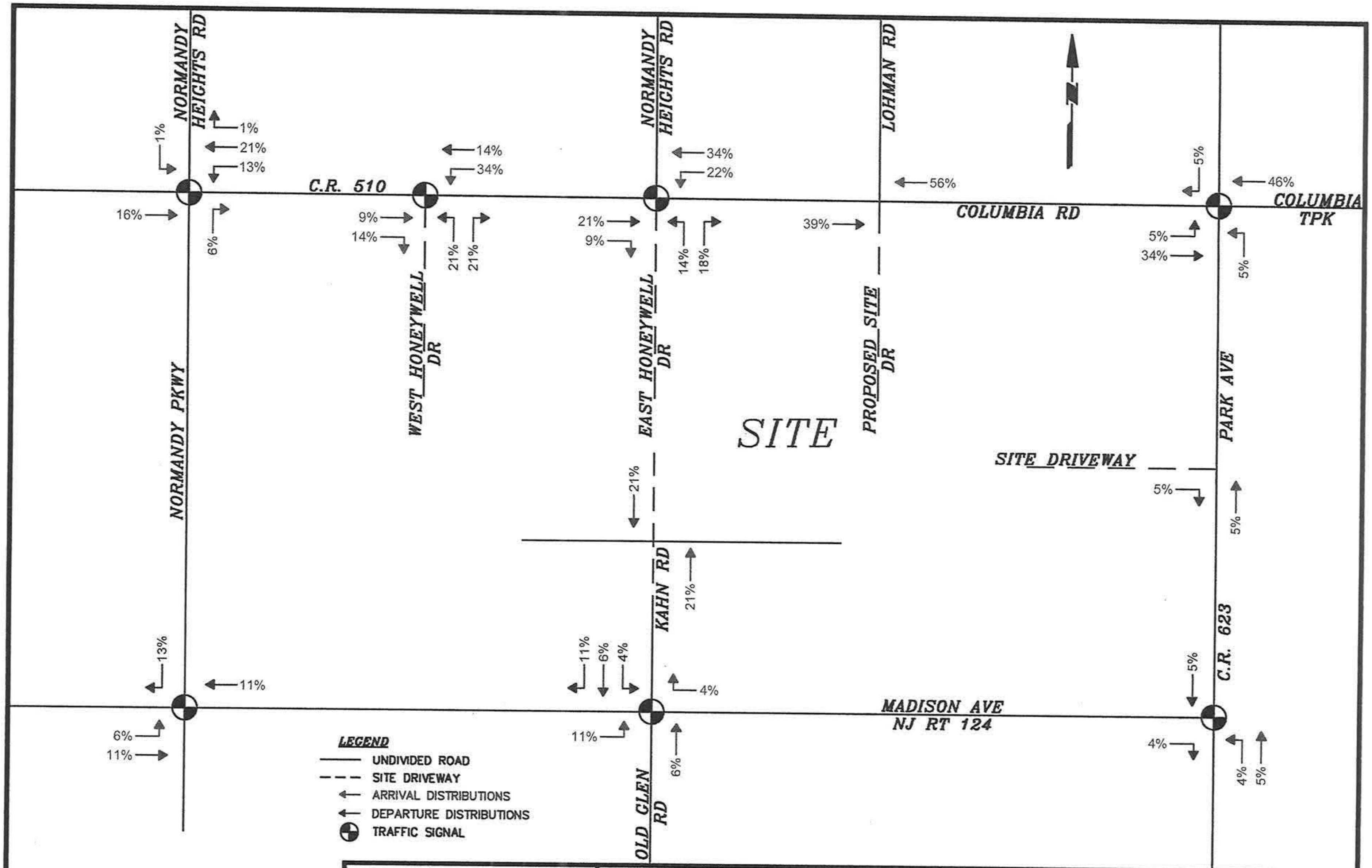
Project No. 130032902
Date 04/24/2014
Scale N.T.S.
Drawn By KAMP
Checked By
Submission Date APRIL 2014

Drawing No.

FIGURE 10

Sheet 10 of 24

Filename: \\langan.com\data\TR\data9\130032902\Engineering Data\Traffic\Figures & Tables\TIS Figures Honeywell Redevelopment 03-2014.dwg Date: 4/24/2014 Time: 17:09 User: kapehnke Style Table: Langan.stb Layout: 10-NBwith



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HONEYWELL CAMPUS REDEVELOPMENT
BLOCK No. 9101, LOT No. 4
MORRIS TOWNSHIP
MORRIS COUNTY NEW JERSEY

Drawing Title

OFFICE DISTRIBUTIONS WITHOUT COUNTY BY-PASS

Project No.
130032902

Date
04/24/2014

Scale
N.T.S.

Drawn By
KAMP

Checked By

Submission Date
APRIL 2014

Drawing No.

FIGURE 11

Sheet 11 of 24

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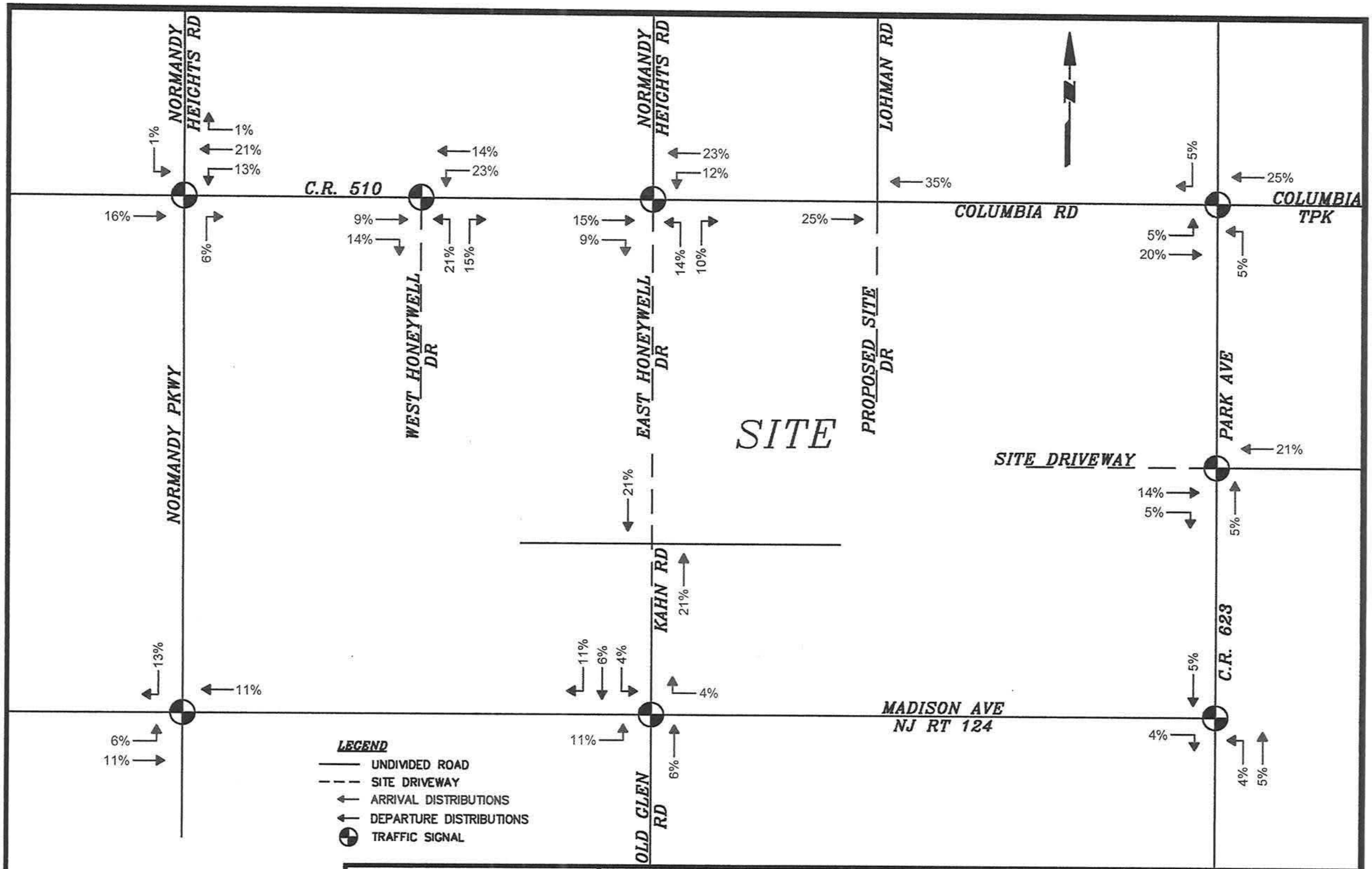

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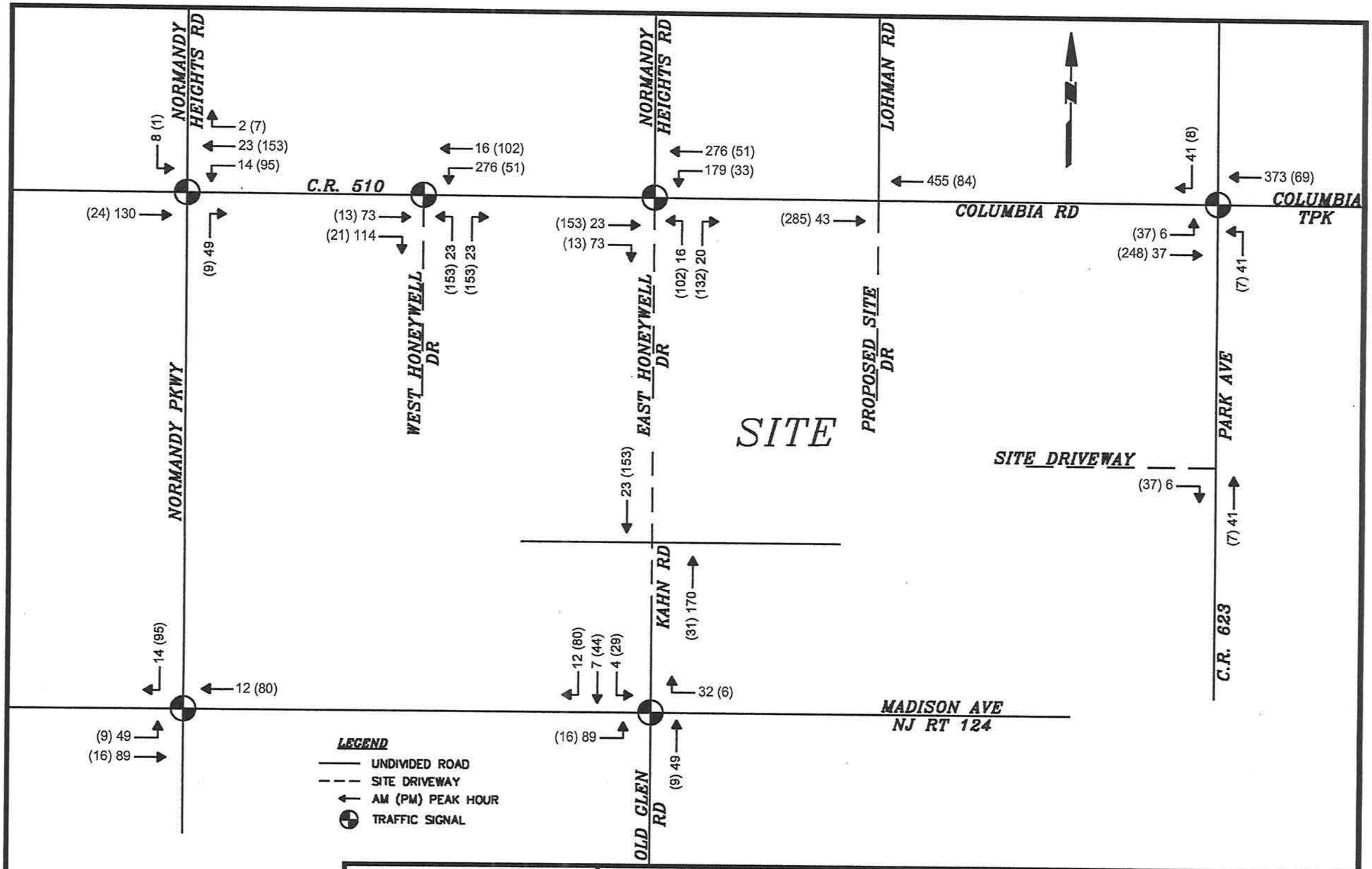
HONEYWELL CAMPUS REDEVELOPMENT
BLOCK No. 9101, LOT No. 4
MORRIS TOWNSHIP
MORRIS COUNTY NEW JERSEY

Drawing Title

OFFICE DISTRIBUTIONS WITH COUNTY BY-PASS

Project No. 130032902	Drawing No.
Date 04/24/2014	**FIGURE 12**
Scale N.T.S.	
Drawn By KAMP	Checked By
Submission Date APRIL 2014	Sheet 12 of 24

Filename: \\langan.com\data\TR\data9\130032902\Engineering Data\Traffic\Figures & Tables\TIS Figures Honeywell Redevelopment 03-2014.dwg Date: 4/24/2014 Time: 17:10 User: kapehnke Style Table: Langan.stb Layout: 12-OffDistWith



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HONEYWELL CAMPUS REDEVELOPMENT
BLOCK No. 9101, LOT No. 4
MORRIS TOWNSHIP
MORRIS COUNTY NEW JERSEY

Drawing Title

OFFICE TRAFFIC VOLUMES WITHOUT COUNTY BY-PASS

Project No.
130032902
Date
04/24/2014
Scale
N.T.S.
Drawn By
KAMP
Checked By
Submission Date
APRIL 2014

Drawing No.

FIGURE 13

Sheet 13 of 24

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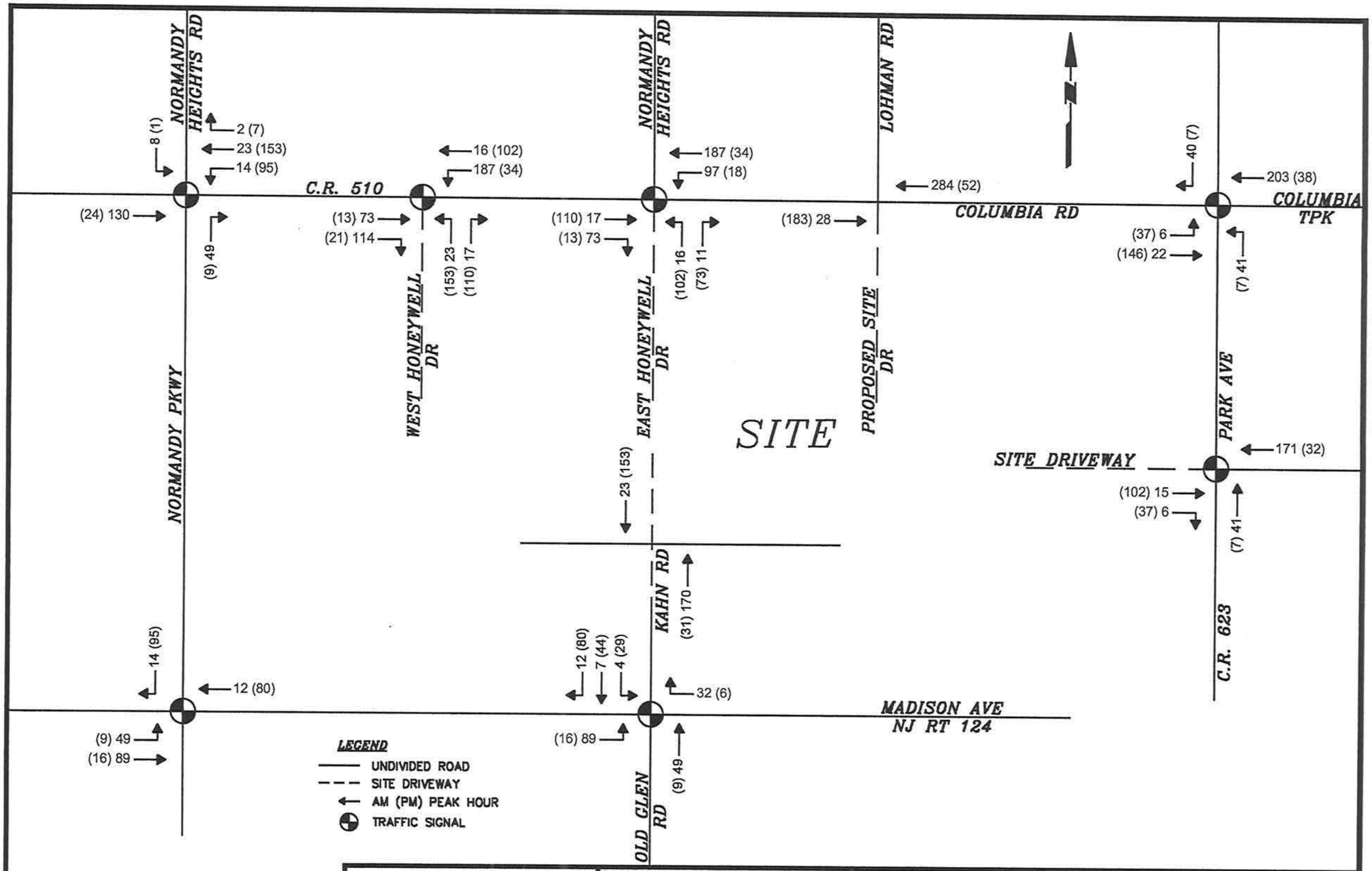

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Project

HONEYWELL
CAMPUS
REDEVELOPMENT
BLOCK No. 9101, LOT No. 4
MORRIS TOWNSHIP
MORRIS COUNTY NEW JERSEY

Drawing Title

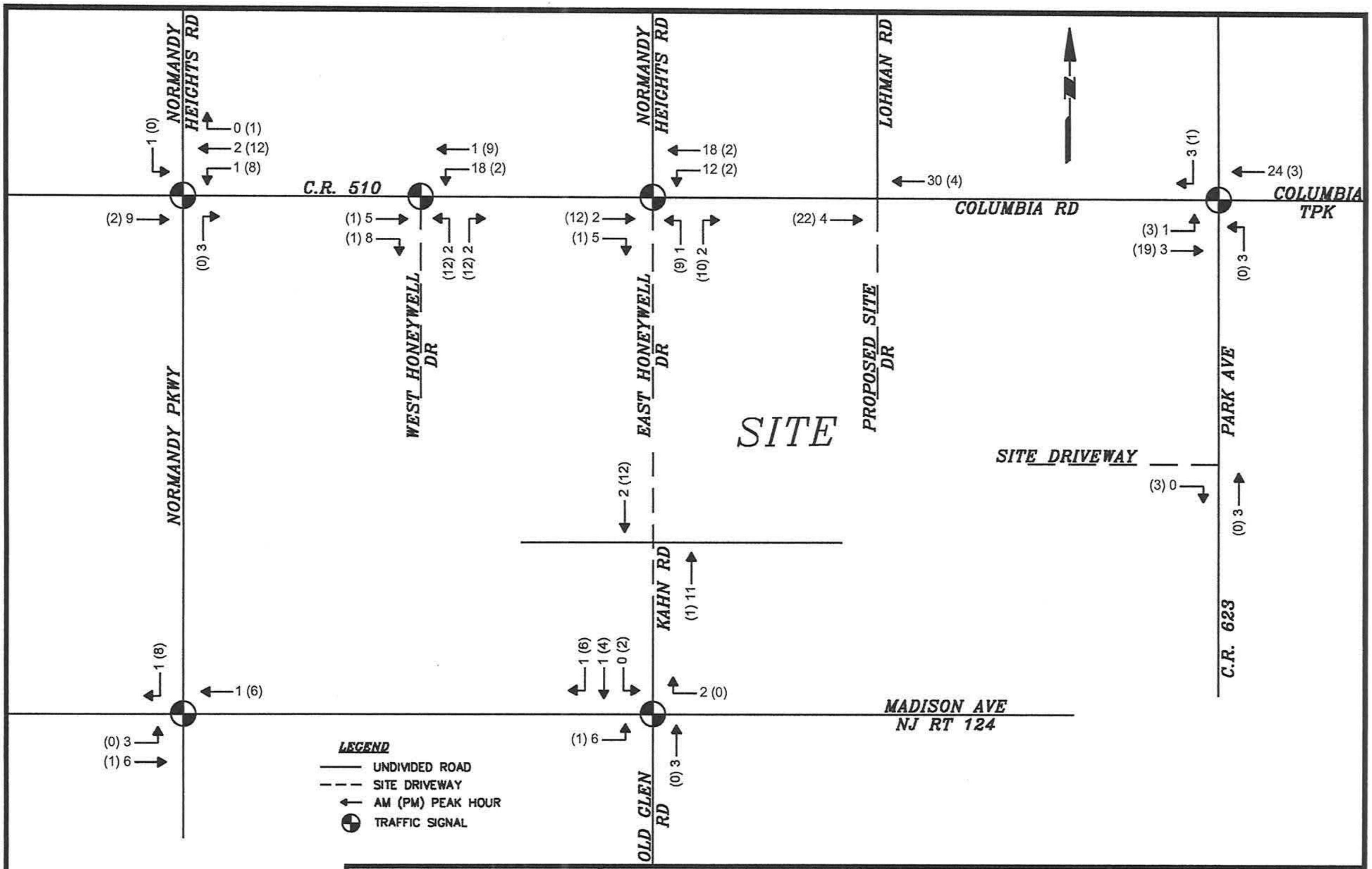
OFFICE TRAFFIC VOLUMES WITH COUNTY BY-PASS

Project No. 130032902	
Date 04/24/2014	
Scale N.T.S.	
Drawn By KAMP	Checked By
Submission Date APRIL 2014	

Drawing No.

FIGURE
14

Sheet 14 of 24



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HONEYWELL CAMPUS REDEVELOPMENT
BLOCK No. 9101, LOT No. 4
MORRIS TOWNSHIP
MORRIS COUNTY NEW JERSEY

Drawing Title

RESEARCH & DEVELOPMENT TRAFFIC VOLUMES WITHOUT COUNTY BY-PASS

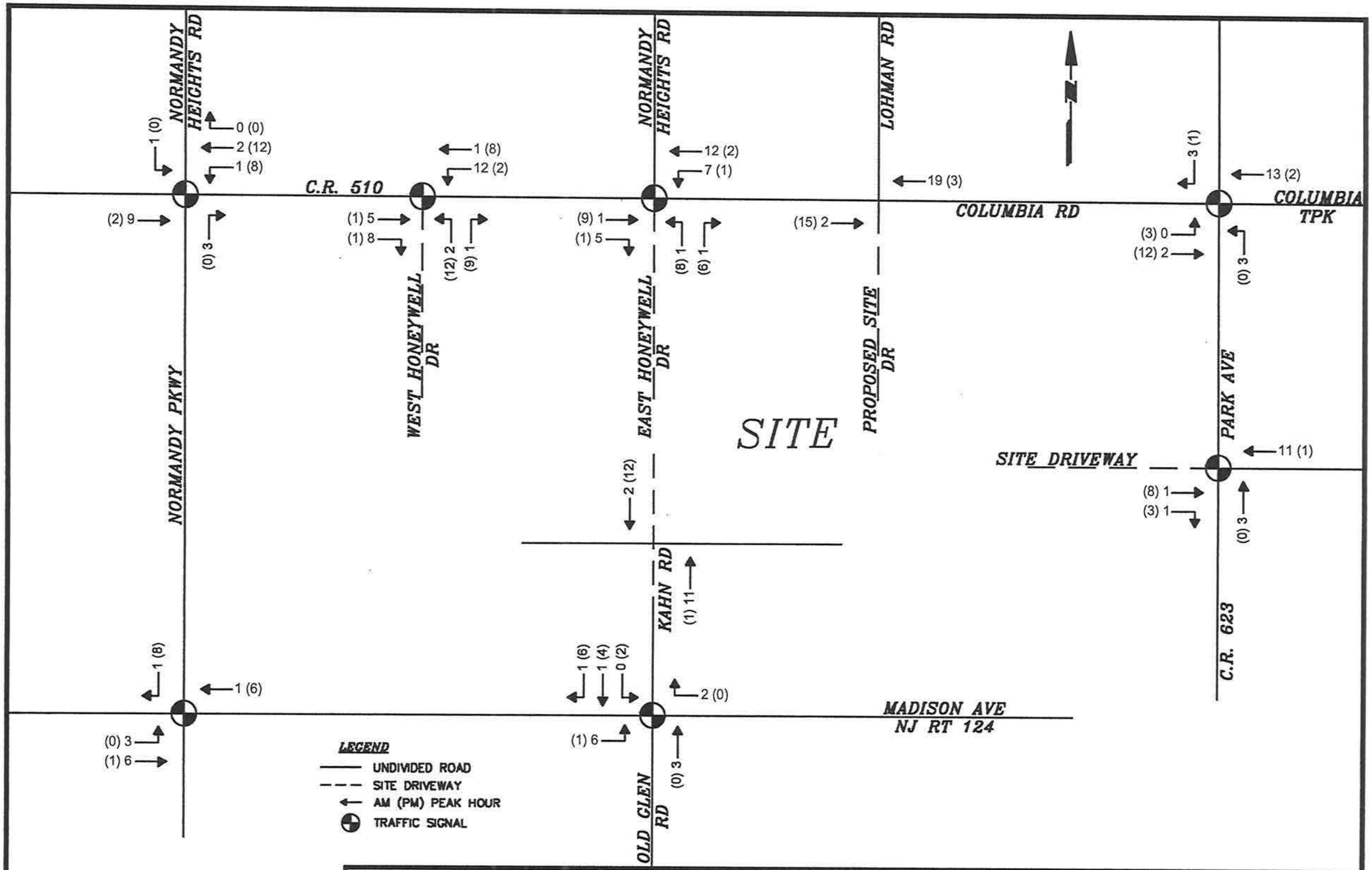
Project No. 130032902
Date 04/24/2014
Scale N.T.S.
Drawn By KAMP
Checked By
Submission Date APRIL 2014

Drawing No.

FIGURE 15

Sheet 15 of 24

Filename: \\langan.com\data\TR\data9\130032902\Engineering Data\Traffic\Figures & Tables\TIS Figures Honeywell Redevelopment 03-2014.dwg Date: 4/24/2014 Time: 17:12 User: kapehnke Style Table: Langan.stb Layout: 15-R&DTripW-out



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HONEYWELL CAMPUS REDEVELOPMENT
BLOCK No. 9101, LOT No. 4
MORRIS TOWNSHIP
MORRIS COUNTY NEW JERSEY

Drawing Title

RESEARCH & DEVELOPMENT TRAFFIC VOLUMES WITH COUNTY BY-PASS

Project No. 130032902
Date 04/24/2014
Scale N.T.S.
Drawn By KAMP
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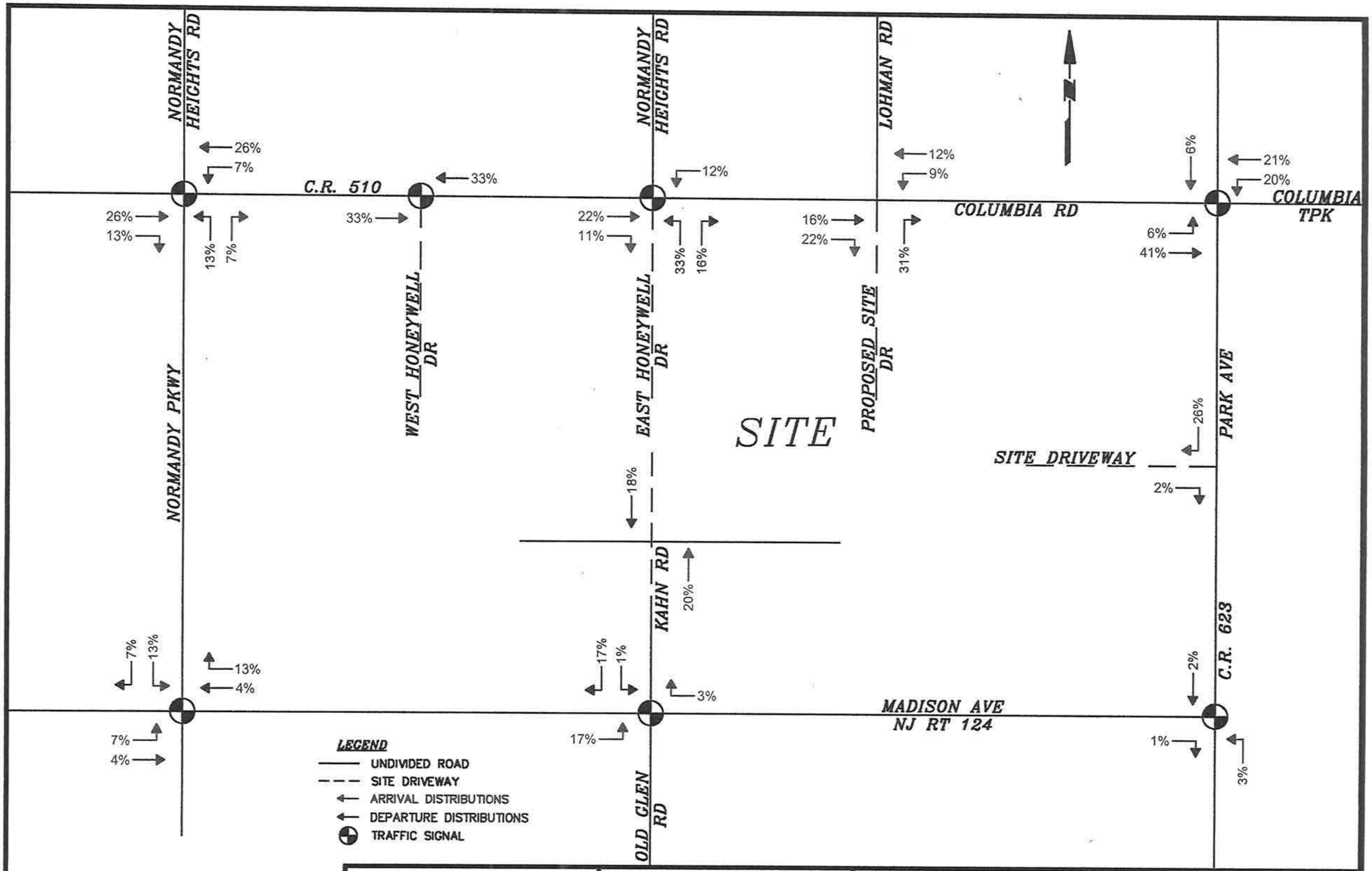
Submission Date APRIL 2014

Drawing No.

FIGURE 16

Sheet 16 of 24

Filename: \\langan.com\data\TR\data9\130032902\Engineering Data\Traffic\Figures & Tables\TIS Figures Honeywell Redevelopment 03-2014.dwg Date: 4/24/2014 Time: 17:13 User: kapehnke Style Table: Langan.stb Layout: 16-R&DTripWith



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HONEYWELL
CAMPUS
REDEVELOPMENT
BLOCK No. 9101, LOT No. 4
MORRIS TOWNSHIP
MORRIS COUNTY NEW JERSEY

Drawing Title

RESIDENTIAL
DISRIBUTIONS
WITHOUT
COUNTY BY-PASS

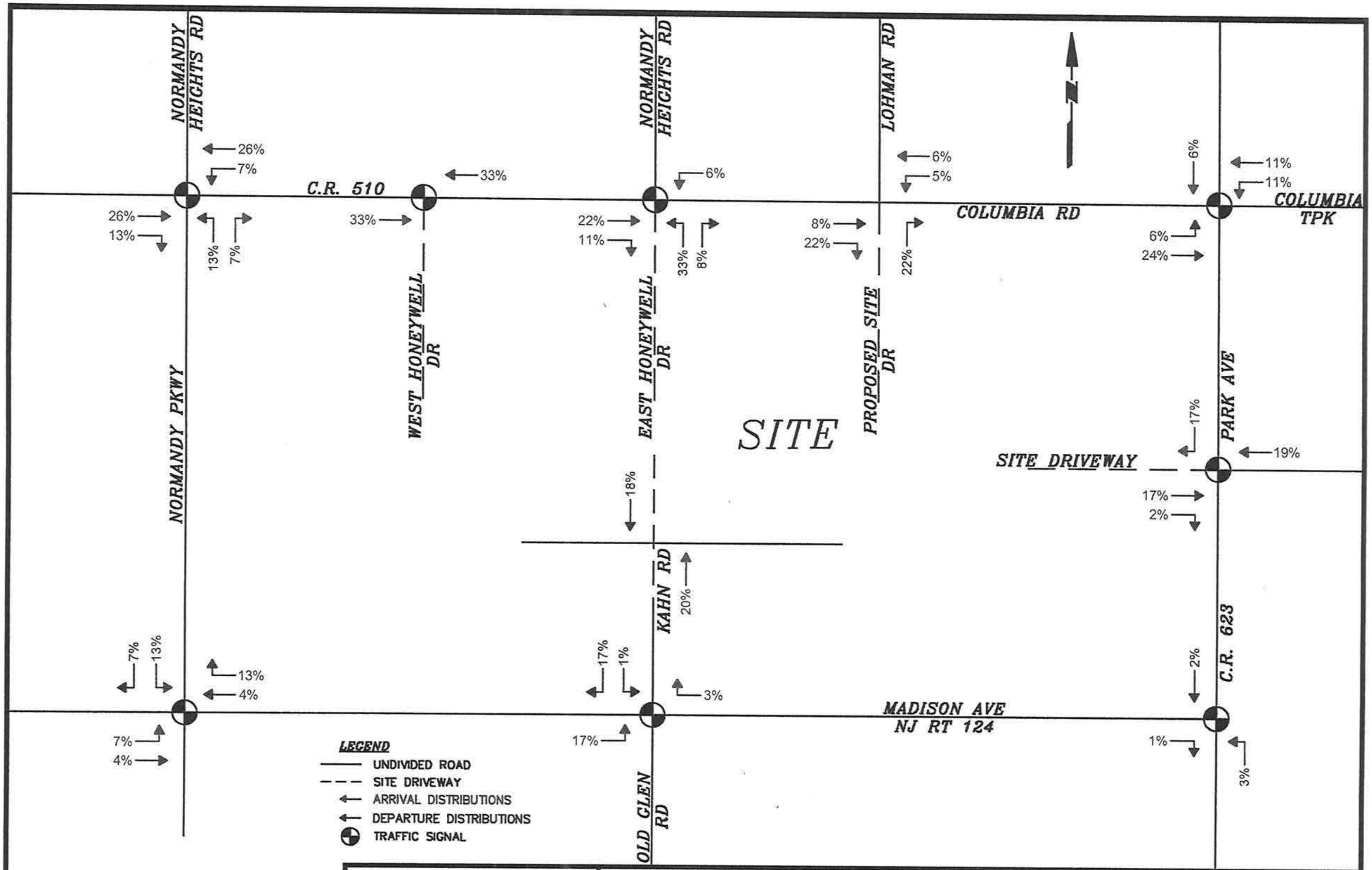
Project No.	130032902
Date	04/24/2014
Scale	N.T.S.
Drawn By	KAMP
Checked By	
Submission Date	APRIL 2014

Drawing No.

FIGURE
17

Sheet 17 of 24

Filename: \\langan.com\data\TR\data9\130032902\Engineering Data\Traffic\Figures & Tables\TIS Figures Honeywell Redevelopment 03-2014.dwg Date: 4/24/2014 Time: 17:14 User: kapehnke Style Table: Langan.stb Layout: 17-ResDistW-out



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BLOCK No. 9101, LOT No. 4
MORRIS TOWNSHIP
MORRIS COUNTY NEW JERSEY

Drawing Title

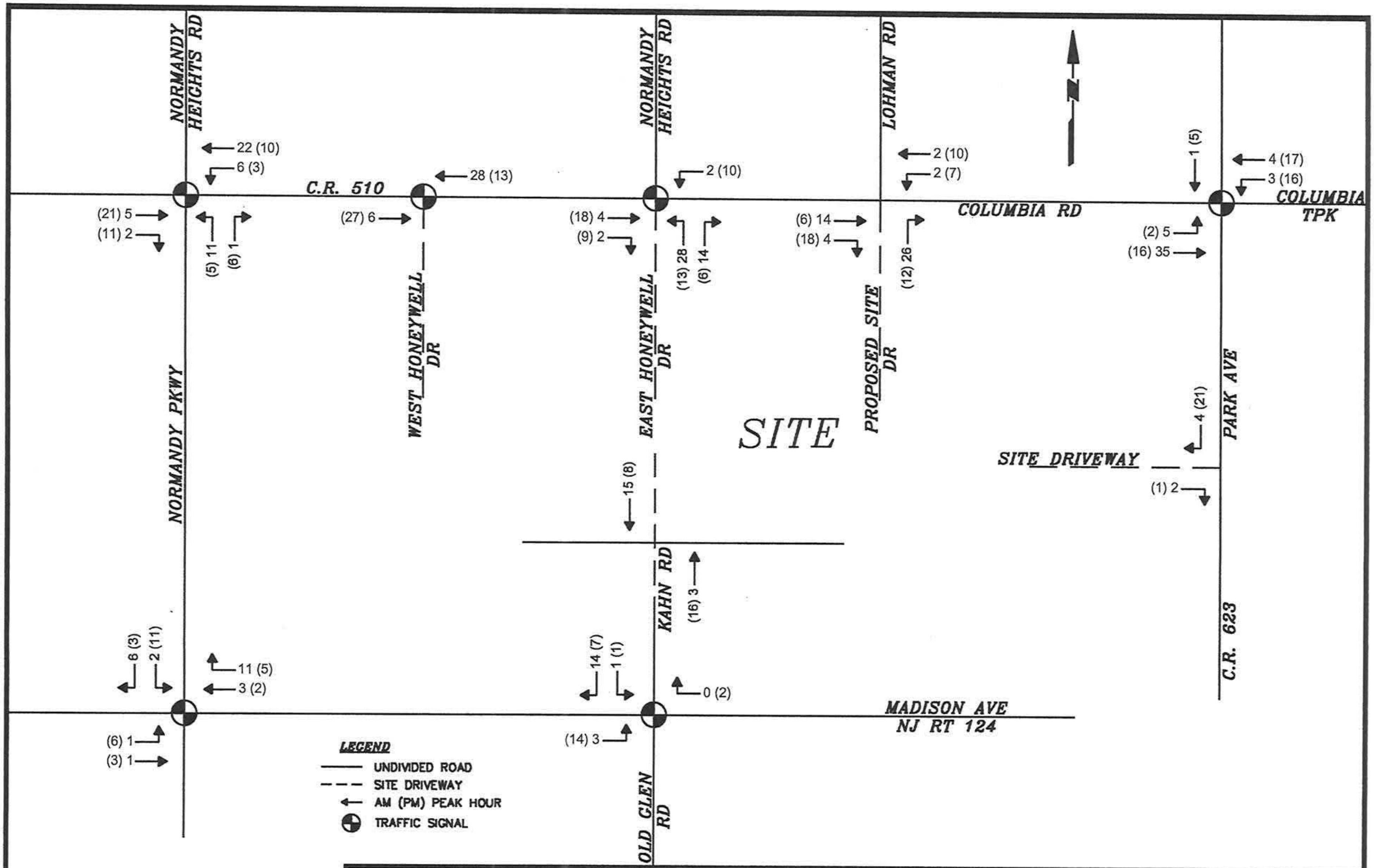
RESIDENTIAL DISTRIBUTIONS WITH COUNTY BY-PASS

Project No. 130032902
Date 04/24/2014
Scale N.T.S.
Drawn By KAMP
Checked By
Submission Date APRIL 2014

Drawing No.
FIGURE 18

Sheet 18 of 24

Filename: \\langan.com\data\TR\data9\130032902\Engineering Data\Traffic\Figures & Tables\TIS Figures Honeywell Redevelopment 03-2014.dwg Date: 4/24/2014 Time: 17:15 User: kapehnke Style Table: Langan.stb Layout: 18-ResDistWith



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Project

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CAMPUS
REDEVELOPMENT
BLOCK No. 9101, LOT No. 4
MORRIS TOWNSHIP
MORRIS COUNTY NEW JERSEY

Drawing Title

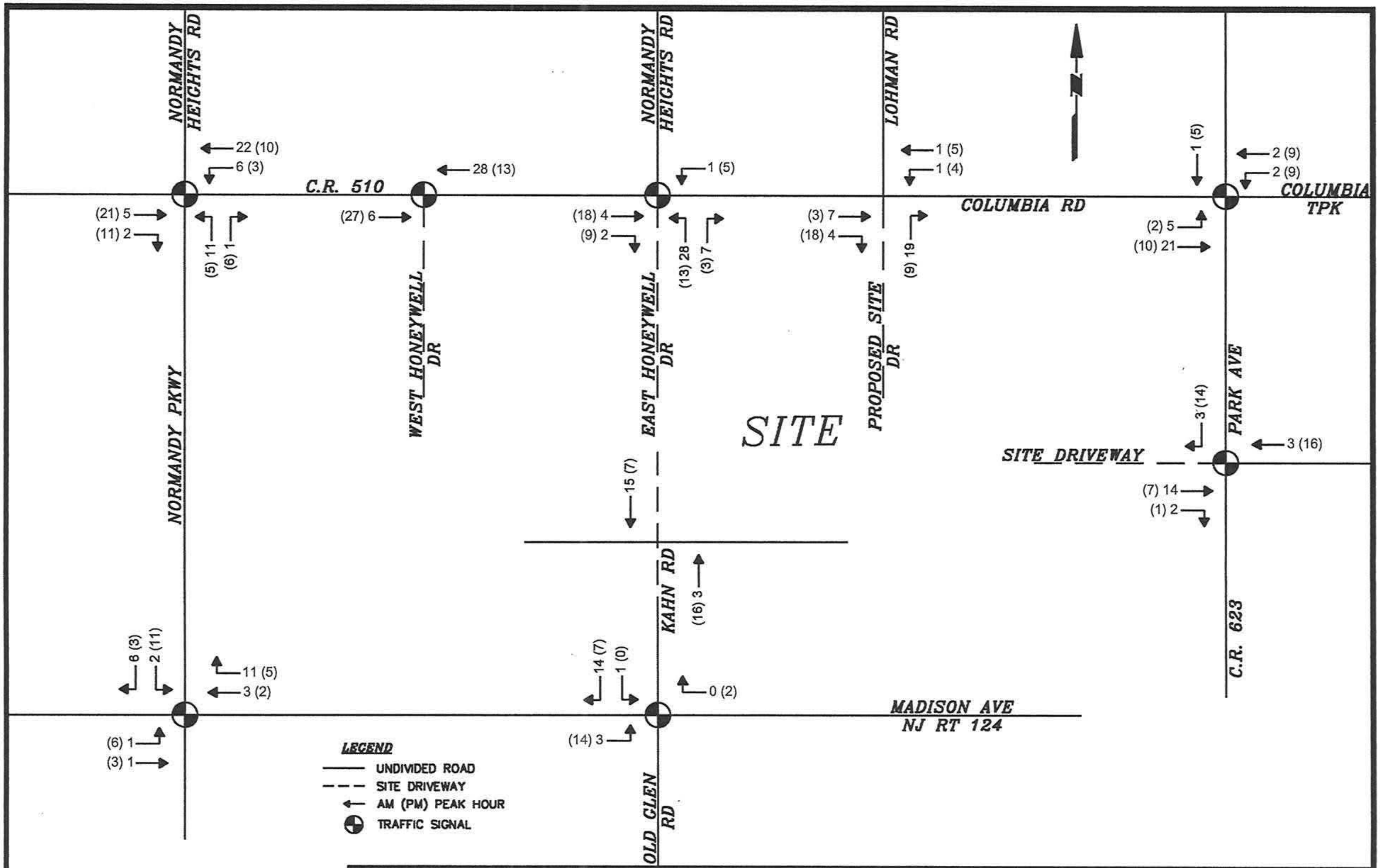
RESIDENTIAL
TRAFFIC VOLUMES
WITHOUT
COUNTY BY-PASS

Project No. 130032902
Date 04/24/2014
Scale N.T.S.
Drawn By KAMP
Checked By
Submission Date APRIL 2014

Drawing No.
FIGURE
19

Sheet 19 of 24

Filename: \\langan.com\data\TR\data9\130032902\Engineering Data\Traffic\Figures & Tables\TIS Figures Honeywell Redevelopment 03-2014.dwg Date: 4/24/2014 Time: 17:15 User: kapehnke Style Table: Langan.stb Layout: 19-ResTripW-out



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Project

HONEYWELL CAMPUS REDEVELOPMENT

BLOCK No. 9101, LOT No. 4
MORRIS TOWNSHIP
MORRIS COUNTY NEW JERSEY

Drawing Title

RESIDENTIAL TRAFFIC VOLUMES WITH COUNTY BY-PASS

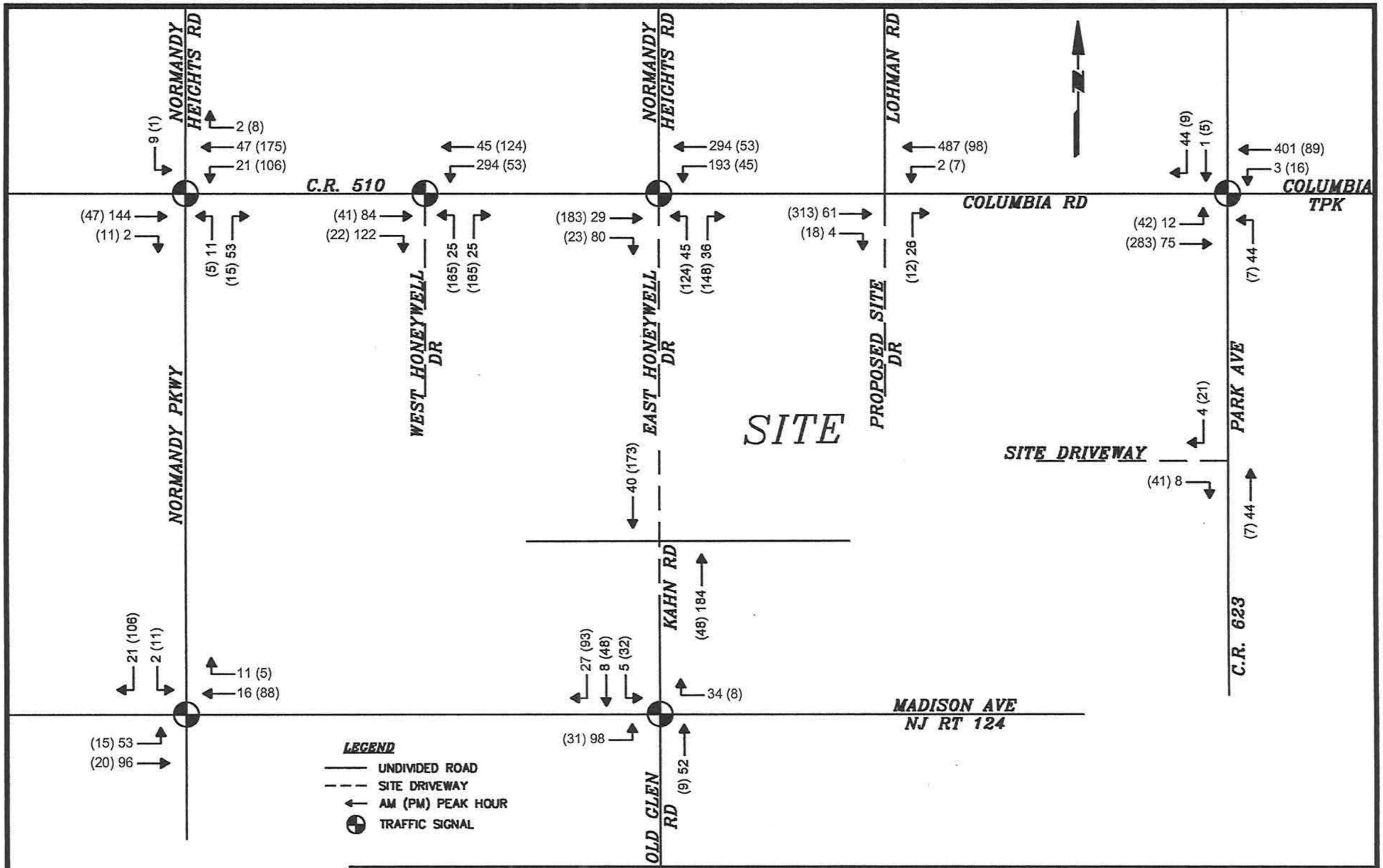
Project No.	130032902
Date	04/24/2014
Scale	N.T.S.
Drawn By	KAMP
Checked By	
Submission Date	APRIL 2014

Drawing No.

FIGURE 20

Sheet 20 of 24

Filename: \\langan.com\data\TR\data9\130032902\Engineering Data\Traffic\Figures & Tables\TIS Figures Honeywell Redevelopment 03-2014.dwg Date: 4/24/2014 Time: 17:16 User: kapehnke Style Table: Langan.stb Layout: 20-ResTripWith



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Project

HONEYWELL CAMPUS REDEVELOPMENT
BLOCK No. 9101, LOT No. 4
MORRIS TOWNSHIP
MORRIS COUNTY NEW JERSEY

Drawing Title

TOTAL SITE GENERATED TRAFFIC WITHOUT COUNTY BY-PASS

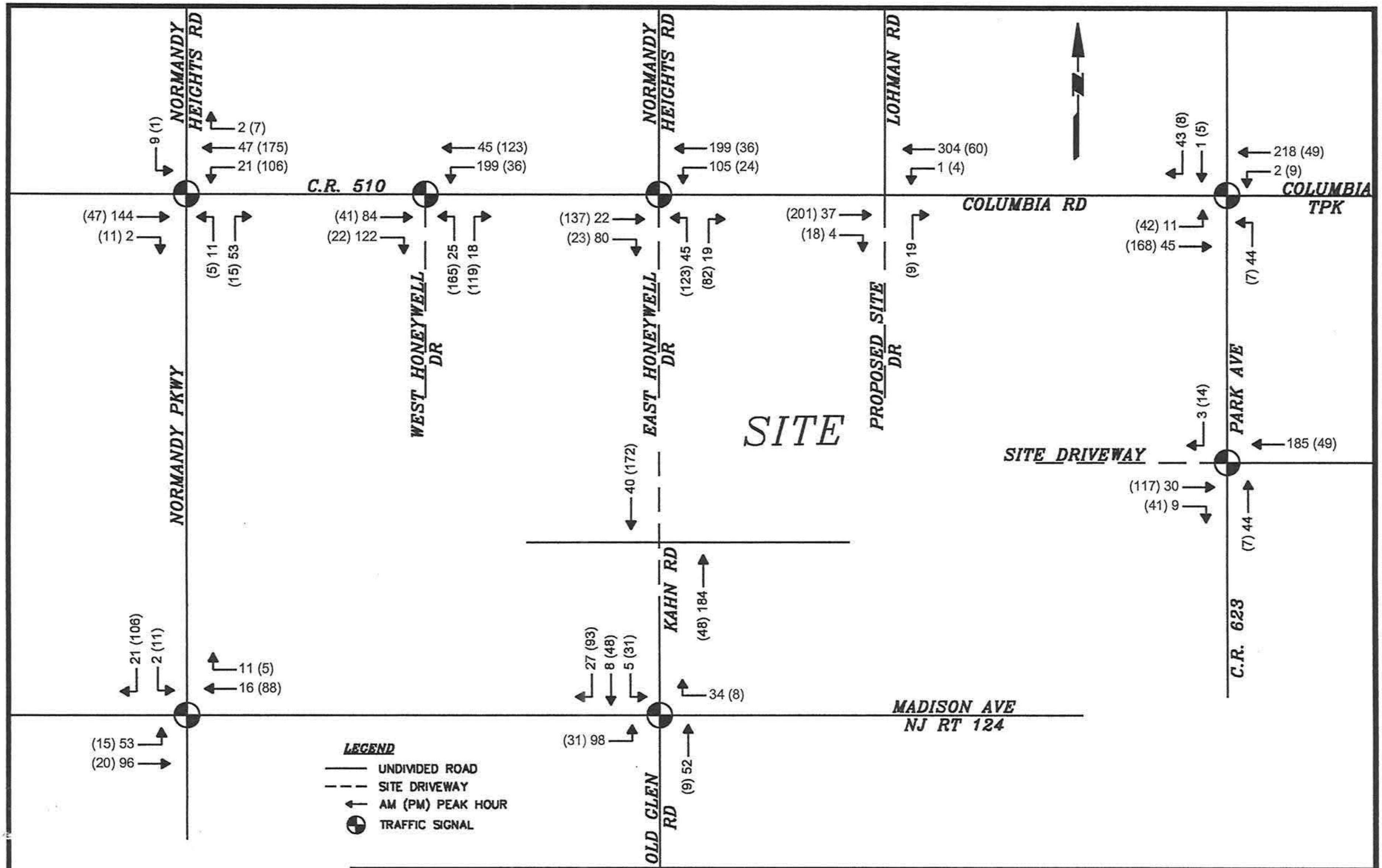
Project No. 130032902
Date 04/24/2014
Scale N.T.S.
Drawn By KAMP
Checked By
Submission Date APRIL 2014

Drawing No.

FIGURE 21

Sheet 21 of 24

Filename: \\langan.com\data\TR\data9\130032902\Engineering Data\Traffic\Figures & Tables\TIS Figures Honeywell Redevelopment 03-2014.dwg Date: 4/24/2014 Time: 17:17 User: kapehnke Style Table: Langan.stb Layout: 21-TTw-out



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Project

HONEYWELL CAMPUS REDEVELOPMENT

BLOCK No. 9101, LOT No. 4
MORRIS TOWNSHIP
MORRIS COUNTY NEW JERSEY

Drawing Title

TOTAL SITE GENERATED TRAFFIC WITH COUNTY BY-PASS

Project No. 130032902

Date 04/24/2014

Scale N.T.S.

Drawn By KAMP

Checked By

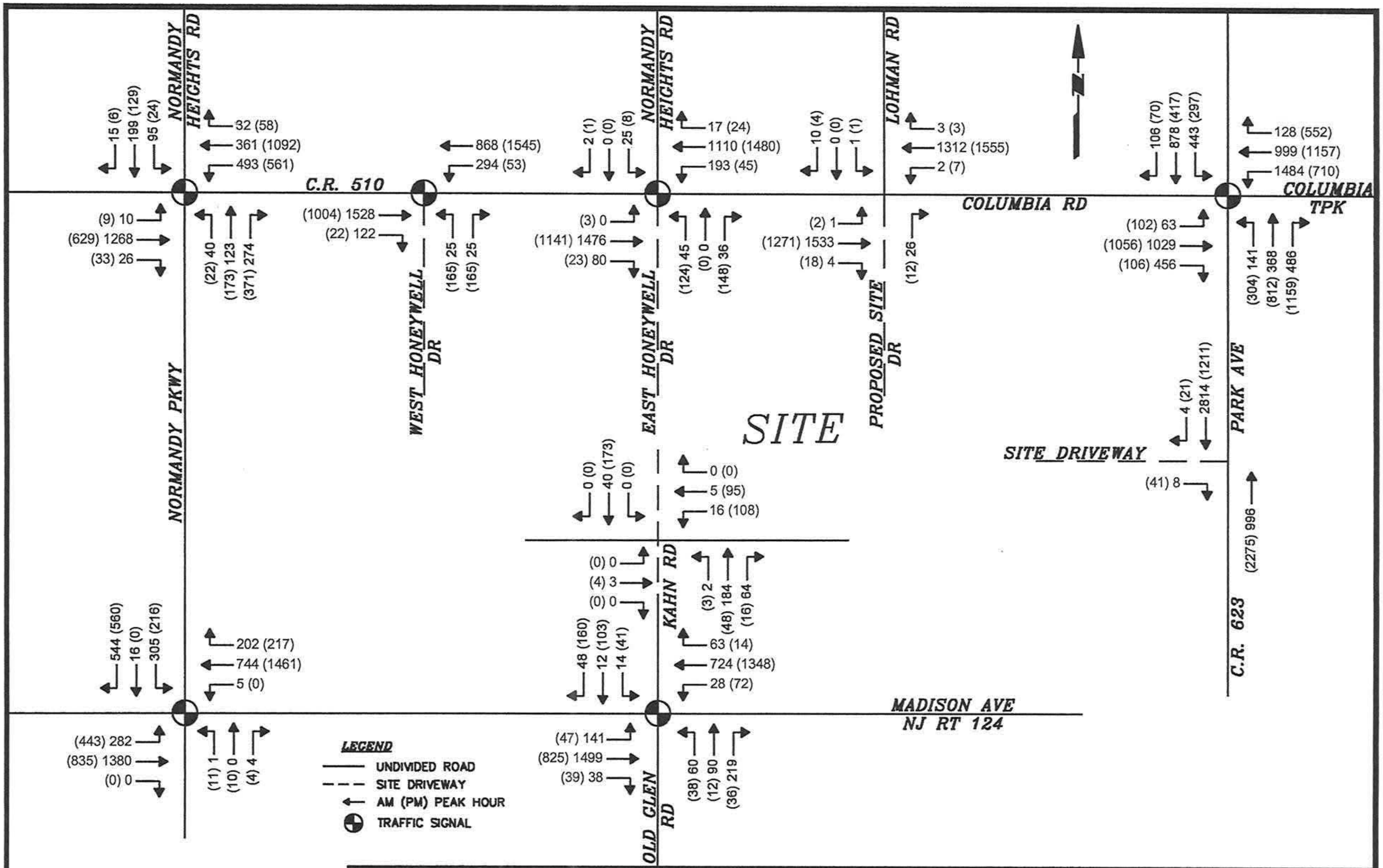
Submission Date APRIL 2014

Drawing No.

FIGURE 22

Sheet 22 of 24

Filename: \\langan.com\data\TR\data9\130032902\Engineering Data\Traffic\Figures & Tables\TIS Figures Honeywell Redevelopment 03-2014.dwg Date: 4/24/2014 Time: 17:17 User: kapehnke Style Table: Langan.stb Layout: 22-TTwith



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Project

HONEYWELL CAMPUS REDEVELOPMENT
BLOCK No. 9101, LOT No. 4
MORRIS TOWNSHIP
MORRIS COUNTY NEW JERSEY

Drawing Title

2023 BUILD TRAFFIC VOLUMES WITHOUT COUNTY BY-PASS

Project No. 130032902
Date 04/24/2014
Scale N.T.S.
Drawn By KAMP
Checked By
Submission Date APRIL 2014

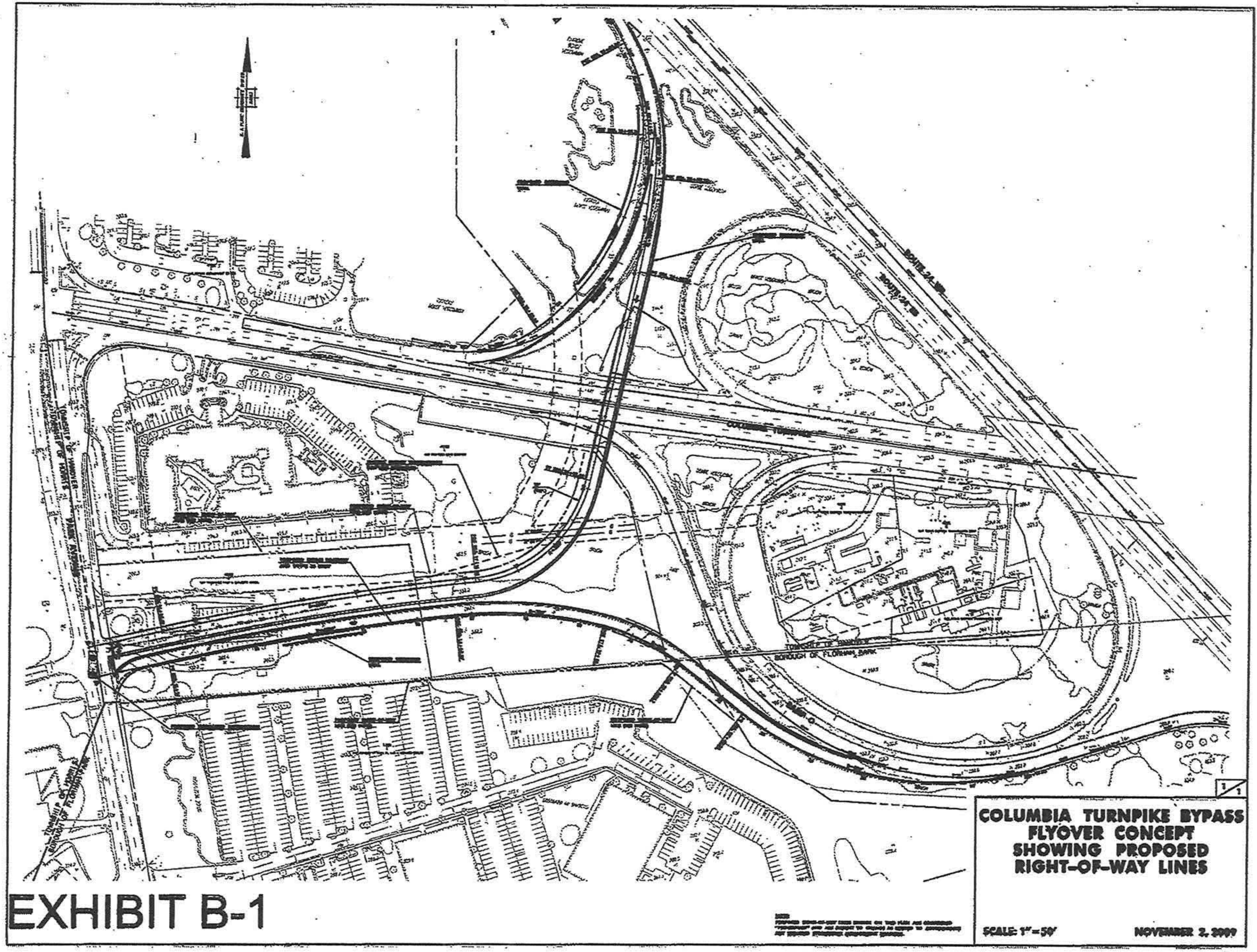
Drawing No.

FIGURE 23

Sheet 23 of 24

Filename: \\langan.com\data\TR\data9\130032902\Engineering Data\Traffic\Figures & Tables\TIS Figures Honeywell Redevelopment 03-2014.dwg Date: 4/24/2014 Time: 17:18 User: kapehnke Style Table: Langan.stb Layout: 23-Bw-out

EXHIBIT B-1



COLUMBIA TURNPIKE BYPASS FLYOVER CONCEPT SHOWING PROPOSED RIGHT-OF-WAY LINES

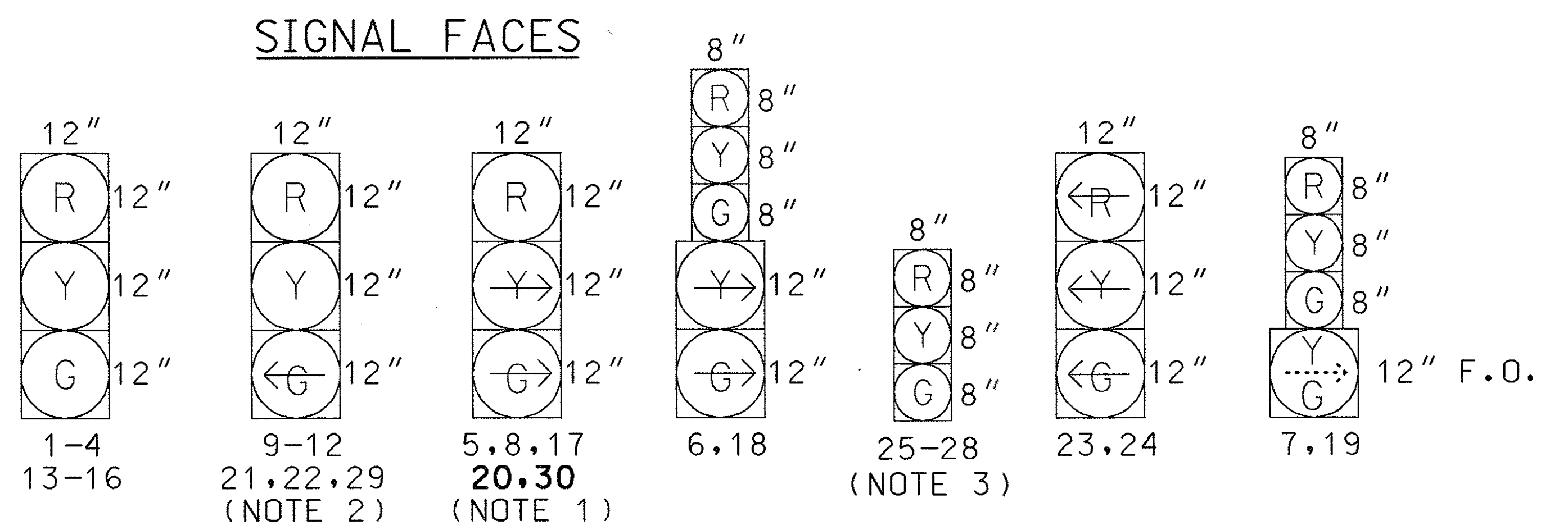
SCALE: 1" = 50'

NOVEMBER 2, 2009

Traffic signal plans and timing

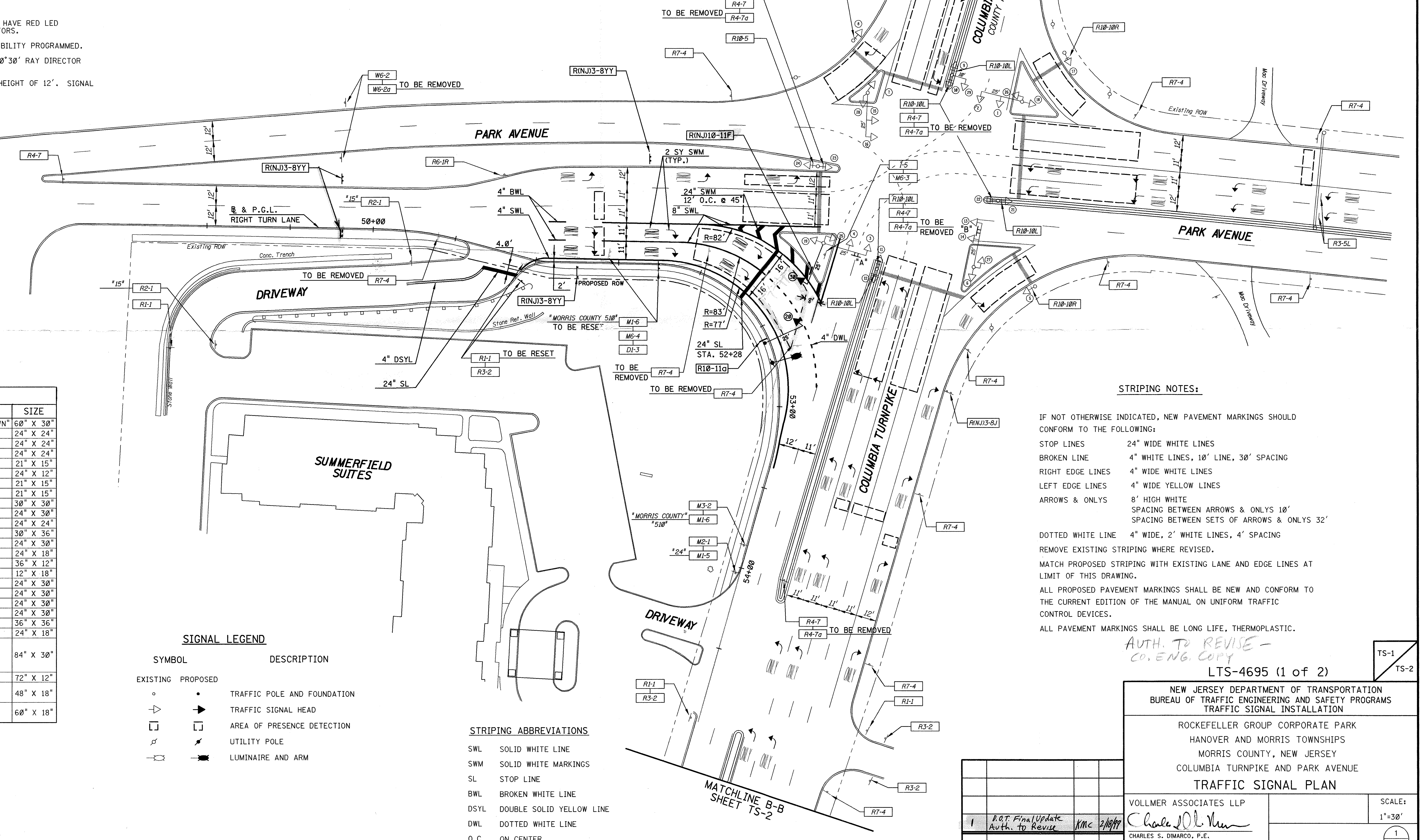
FILE NAME: n:B9885100Bdgn\Bsht\Bsht09.dgn
DATE: 07 FEB 99
TIME: 11:07:52

SIGNAL FACES

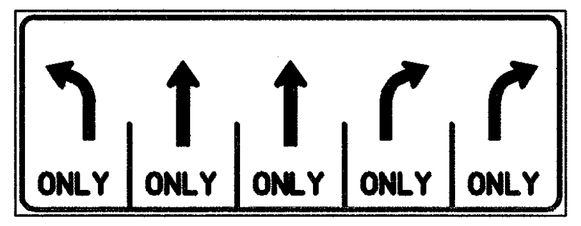


NOTES:

1. THE TWO PROPOSED SIGNAL HEADS 20 AND 30 SHALL HAVE RED LED AND GREEN ARROW LED SIGNAL MODULES FOR INDICATORS.
2. EXISTING SIGNAL HEADS 9-12,21,22 AND 29 ARE VISIBILITY PROGRAMMED.
3. EXISTING SIGNAL HEADS 25-28 ARE EQUIPPED WITH 10°30' RAY DIRECTOR IN ALL INDICATIONS.
4. SIGNAL HEADS 9-12, 21 AND 22 ARE MOUNTED AT A HEIGHT OF 12'. SIGNAL HEADS 25-28 ARE MOUNTED AT A HEIGHT OF 8'.



SIGN LEGEND		
SIGN	MESSAGE	SIZE
D1-3	"WHIPPANY, FLORHAM PARK, MORRISTOWN"	60" X 30"
I-5	AIRPORT SYMBOL	24" X 24"
M1-5	STATE ROUTE MARKER	24" X 24"
M1-6	COUNTY ROUTE MARKER	24" X 24"
M2-1	"JCT"	21" X 15"
M3-2	"EAST"	24" X 12"
M6-3	DIRECTIONAL ARROW	21" X 15"
M6-4	DIRECTIONAL ARROW	21" X 15"
R1-1	"STOP"	30" X 30"
R2-1	"SPEED LIMIT XX"	24" X 30"
R3-2	NO LEFT TURN	24" X 24"
R3-5L	LEFT ONLY	30" X 36"
R4-7	KEEP RIGHT	24" X 30"
R4-7a	"KEEP RIGHT"	24" X 18"
R6-1R	"ONE WAY"	36" X 12"
R7-4	"NO STOPPING OR STANDING ↔ "	12" X 18"
R10-5	"LEFT ON GREEN ARROW ONLY"	24" X 30"
R10-10L	"LEFT TURN SIGNAL"	24" X 30"
R10-10R	"RIGHT TURN SIGNAL"	24" X 30"
R10-11a	"NO TURN ON RED"	24" X 30"
W6-2	DIVIDED HIGHWAY ENDS	36" X 36"
W6-2a	"DIVIDED HIGHWAY ENDS"	24" X 18"
R(NJ)3-8J	ONLY ONLY ONLY ONLY ONLY	84" X 30"
R(NJ)10-11F	"NO TURN ON RED"	72" X 12"
"A"	Park Ave	48" X 18"
"B"	Columbia Tpk	60" X 18"



R(NJ)3-8YY
84" X 30"
BLACK ON WHITE

SIGNAL LEGEND

SYMBOL		DESCRIPTION
EXISTING	PROPOSED	
○	●	TRAFFIC POLE AND FOUNDATION
▷	▶	TRAFFIC SIGNAL HEAD
⊔	⊔	AREA OF PRESENCE DETECTION
ø	ø	UTILITY POLE
⊸	⊸	LUMINAIRE AND ARM

STRIPING ABBREVIATIONS

SWL	SOLID WHITE LINE
SWM	SOLID WHITE MARKINGS
SL	STOP LINE
BWL	BROKEN WHITE LINE
DSYL	DOUBLE SOLID YELLOW LINE
DWL	DOTTED WHITE LINE
O.C.	ON CENTER

STRIPING NOTES:

IF NOT OTHERWISE INDICATED, NEW PAVEMENT MARKINGS SHOULD CONFORM TO THE FOLLOWING:

STOP LINES	24" WIDE WHITE LINES
BROKEN LINE	4" WHITE LINES, 10' LINE, 30' SPACING
RIGHT EDGE LINES	4" WIDE WHITE LINES
LEFT EDGE LINES	4" WIDE YELLOW LINES
ARROWS & ONLYS	8' HIGH WHITE SPACING BETWEEN ARROWS & ONLYS 10' SPACING BETWEEN SETS OF ARROWS & ONLYS 32'
DOTTED WHITE LINE	4" WIDE, 2' WHITE LINES, 4' SPACING

REMOVE EXISTING STRIPING WHERE REVISED.

MATCH PROPOSED STRIPING WITH EXISTING LANE AND EDGE LINES AT LIMIT OF THIS DRAWING.

ALL PROPOSED PAVEMENT MARKINGS SHALL BE NEW AND CONFORM TO THE CURRENT EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

ALL PAVEMENT MARKINGS SHALL BE LONG LIFE, THERMOPLASTIC.

AUTH. TO REVISE –
CO. ENG. COPY

TS-1
TS-2

LTS-4695 (1 of 2)

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF TRAFFIC ENGINEERING AND SAFETY PROGRAMS
TRAFFIC SIGNAL INSTALLATION

ROCKEFELLER GROUP CORPORATE PARK
HANOVER AND MORRIS TOWNSHIPS
MORRIS COUNTY, NEW JERSEY
COLUMBIA TURNPIKE AND PARK AVENUE

TRAFFIC SIGNAL PLAN

REV.	DESCRIPTION	BY	DATE
1	D.O.T. Final Update Auth. to Revise	KMC	2/18/99

VOLLMER ASSOCIATES LLP
Charles S. DiMarco
CHARLES S. DIMARCO, P.E.
N.J. P.E. LIC. NO. 21730

SCALE:
1"=30'

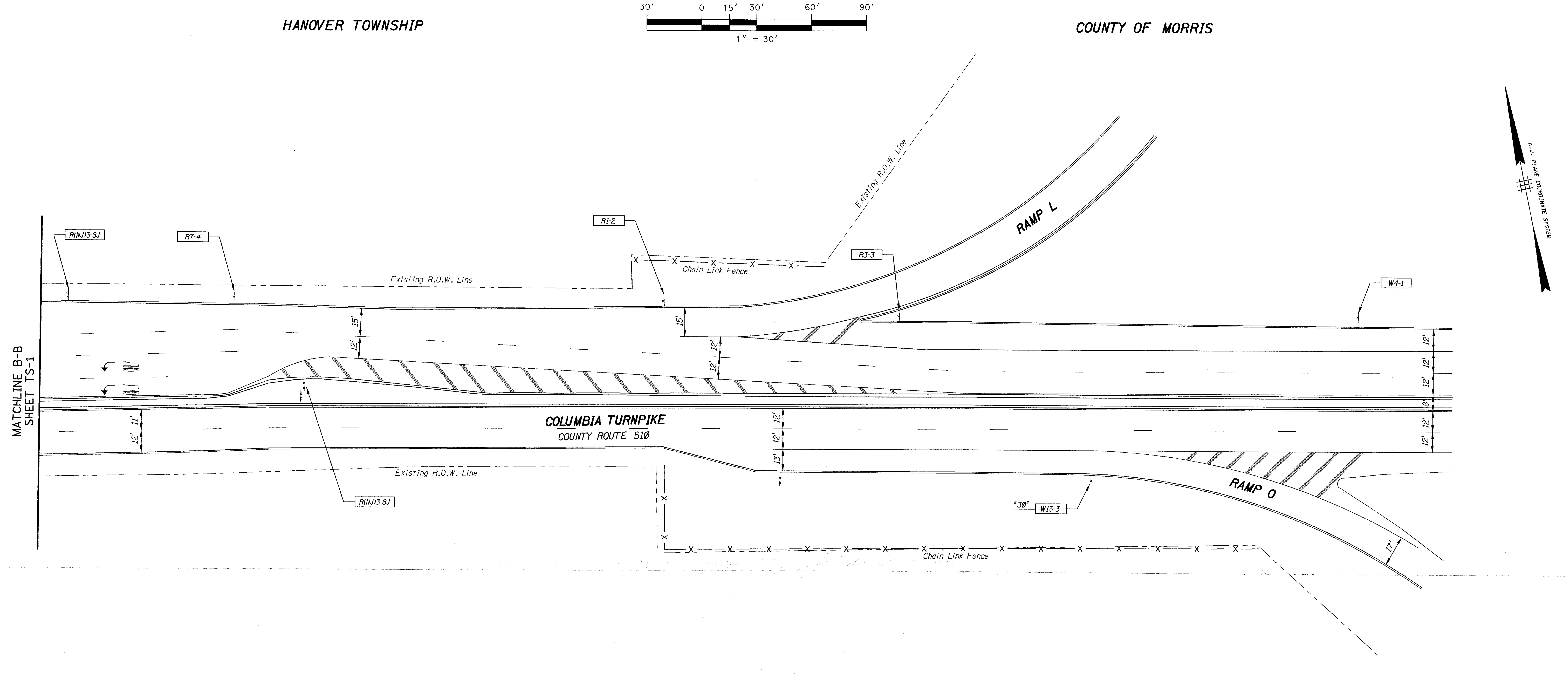
1

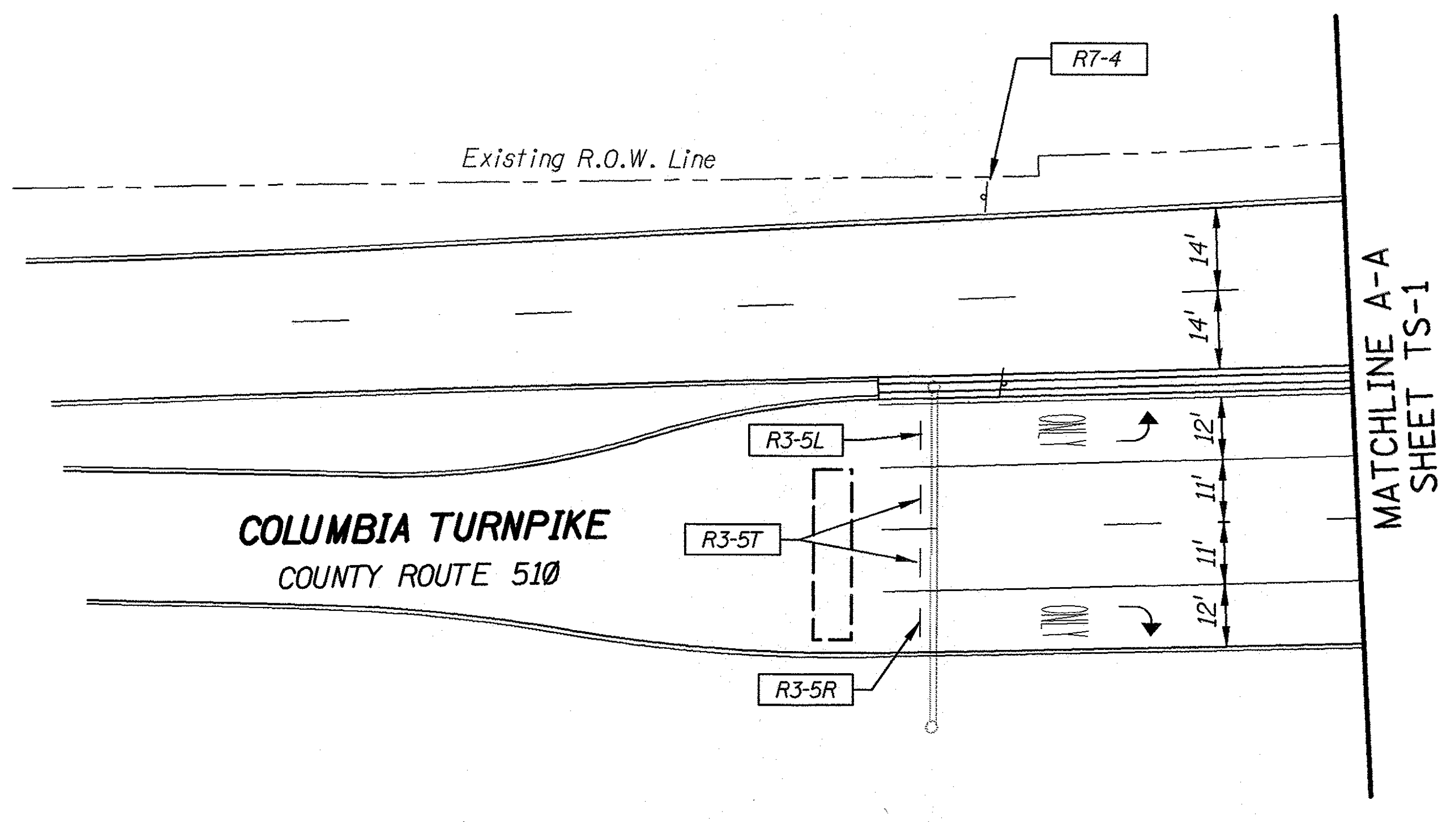
VOLLMER ASSOCIATES LLP
ENGINEERS • LANDSCAPE ARCHITECTS • PLANNERS
365 W. PASSAIC STREET, ROCHELLE PARK, NJ 07662-3017
TEL 201•587•9040 • FAX 201•587•0444

IN CHARGE OF ____
DESIGNED BY ____
DESIGN CHECKED BY ____
DETAILED BY ____
DETAIL CHECKED BY ____

n:\9885100\dgn\sht\sht09.dgn Feb. 07, 1999 11:07:43

FILE NAME: n:\9885100\dgn\sht\sht10.dgn
DATE: 07 FEB 99
TIME: 11:17:49





SIGN LEGEND

SIGN	MESSAGE	SIZE
R1-2	"YIELD"	36" X 36" X 36"
R3-3	"NO TURNS"	24" X 24"
R3-5L	LEFT ONLY	30" X 36"
R3-5R	RIGHT ONLY	30" X 36"
R3-5T	THRU ONLY	30" X 36"
R7-4	"NO STOPPING OR STANDING ⟷ "	12" X 18"
W13-3	"RAMP 30 MPH"	48" X 60"
R(NJ)3-8J	ONLY ONLY ONLY ONLY ONLY	84" X 30"

VOLLMER ASSOCIATES LLP
ENGINEERS·LANDSCAPE ARCHITECTS·PLANNERS
365 W. PASSAIC STREET, ROCHELLE PARK, NJ 07662-3017
TEL 201·587·9040 · FAX 201·587·0444

IN CHARGE OF ______
DESIGNED BY ______
DESIGN CHECKED BY ______
DETAILED BY ______
DETAIL CHECKED BY ______

TS-2 / TS-2

LTS-4695 (2 of 2)

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF TRAFFIC ENGINEERING AND SAFETY PROGRAMS
TRAFFIC SIGNAL INSTALLATION

ROCKEFELLER GROUP CORPORATE PARK
HANOVER AND MORRIS TOWNSHIPS
MORRIS COUNTY, NEW JERSEY
COLUMBIA TURNPIKE AND PARK AVENUE

TRAFFIC SIGNAL PLAN

VOLLMER ASSOCIATES LLP
Charles S. DiMarco
CHARLES S. DIMARCO, P.E.
N.J. P.E. LIC. NO. 21730

SCALE:
1"=30'

2

n:\9885100\dgn\sht\sht10.dgn Feb. 07, 1999 11:17:41

Columbia Turnpike and Park Avenue
Morris Township and Hanover Township
Morris County, New Jersey

REVISED JUNE 15, 1999

TIMING SCHEDULE

PHASE		1-4,27,28	7	5	8	9,11	10,12,29	13,14,25	15,16,26	19	17	20,30	21	23	22	24	6	18	TIME	
																			I	II
																			(SEC)	(SEC)
3/7	PARK AVE. LEFT TURN ROW & COLUMBIA TPKE. RIGHT TURN	R	R/G>	G>	G>	R	R	R	R	R	R	R	<G	<G	<G	<G	R/G>	R	5-20	5-16
	CHANGE	R	R/Y>	Y>	Y>	R	R	R	R	R	R	R	Y	<Y	Y	<Y	R/Y>	R	3	3
	CLEARANCE	R	R	R	R	R	R	R	R	R	R	R	R	<R	R	<R	R	R	2	2
4/8	PARK AVE. ROW	R	R	R	R	R	R	G	G	G/G>	G>	G>	R	<R	R	<R	R	G/G>	7-14	7-17
	CHANGE	R	R	R	R	R	R	Y	Y	Y/G>	G>	G>	R	<R	R	<R	R	Y/G>	5	5
	CLEARANCE	R	R	R	R	R	R	R	R	R/G>	G>	G>	R	<R	R	<R	R	R/G>	2	2
1/5	COLUMBIA TPKE. LEFT TURN ROW & PARK AVE. RIGHT TURN	R	R	R	R	<G	<G	R	R	R/G>	G>	G>	R	<R	R	<R	R	R/G>	5-30	5-26
	CHANGE	R	R	R	R	Y	Y	R	R	R/Y>	Y>	Y>	R	<R	R	<R	R	R/Y>	3	3
	CLEARANCE	R	R	R	R	R	R	R	R	R	R	R	R	<R	R	<R	R	R	2	2
2/6	COLUMBIA TPKE. ROW	G	G/G>	G>	G>	R	R	R	R	R	R	R	R	<R	R	<R	G/G>	R	7-24	7-29
	CHANGE	Y	Y/G>	G>	G>	R	R	R	R	R	R	R	R	<R	R	<R	Y/G>	R	5	5
	CLEARANCE	R	R/G>	G>	G>	R	R	R	R	R	R	R	R	<R	R	<R	R/G>	R	2	2
	FLASHING OPERATION	Y	Y	Y>	Y>	Y	Y	R	R	R	R	R	R	<R	R	<R	Y	R		

COLUMBIA TURNPIKE AND PARK AVENUE

Revised June 15, 1999
NOTES:

1. THE CONTROLLER IS ON A 48-112 SECOND VARIABLE CYCLE.

2. VEHICLE INTERVAL IS TO BE 2 SECONDS.

3. MANUAL CONTROL IS TO BE OMITTED FROM THE CONTROLLER CABINET.

4. THE MEMORY CIRCUIT FOR THE LOOP DETECTORS IS TO BE DISCONNECTED.

5. PEDESTRIAN ACTUATION IS TO PROVIDE A MINIMUM GREEN OF 18 SECONDS FOR PHASES 2/6 AND 4/8.

6. CONTROLLER SHALL REST IN PHASE 2/6.

7. THE CONTROLLER SHALL HAVE THE CAPABILITY OF SKIPPING PHASE 1/5 OR 3/7 OR BOTH; SHALL PERMIT EITHER LEFT TURN MOVEMENT TO OCCUR OR TERMINATE WITHOUT THE OTHER AND ALLOW NON-CONFLICTING MOVEMENTS ON PARK AVENUE AND COLUMBIA TURNPIKE TO OCCUR; SHALL HAVE A DUAL MAXIMUM SETTING FOR EACH ACTUATED PHASE.

8. SCHEDULE I TIMING IS TO OCCUR FROM 5 AM TO 11 AM AND SCHEDULE II TIMING IS TO OCCUR AT ALL OTHER TIMES.

9. DURING SCHEDULE I, THE MAXIMUM LENGTH OF GREEN ARROW FOR SIGNALS 22 AND 24 IS TO BE 11 SECONDS.

10. DURING SCHEDULE II, THE MAXIMUM LENGTH OF GREEN ARROW FOR SIGNALS 21 AND 23 IS TO BE 12 SECONDS.

11. ALL SIGNALS WITH RIGHT TURN ARROWS (#5-8, 17-20,30) ARE TO HAVE THEIR GREEN ARROWS TERMINATED CONCURRENTLY WITH THEIR CORRESPONDING OVERLAPPING LEFT TURN SIGNALS. A CONFLICT MONITOR IS TO BE MAINTAINED TO ENSURE THIS.

State of New Jersey

DEPARTMENT OF TRANSPORTATION
P.O.Box 600
Trenton, New Jersey 08625-0600

CHRISTINE TODD WHITMAN
Governor

JAMES WEINSTEIN
Commissioner

AUTHORIZATION TO
REVISE-Traffic Signal
Columbia Tpk & Park Ave
Hanover & Morris Twps.
Morris County

March 5, 1999

Stephen W. Hammond, P.E.
Supervising Engineer
Admn. & Records Bldg. - PO Box 900
Morristown, NJ 07963-0900

Dear Mr. Hammond:

This is in reference to your letter dated February 10, 1999, wherein you forwarded revised plans for the existing traffic control signal currently proposed for reconstruction at the above captioned intersection.

Submitted with the letter was your certification that the revisions are in accordance with the Manual on Uniform Traffic Control Devices. Therefore, authorization is hereby issued to proceed with the installation of the revised traffic signal layout and operation at the subject intersection in accordance with the enclosed Plan LTS-4695 bearing the latest revision date of February 18, 1999 and timing schedule most recently revised on November 23, 1998.

When you have completed the revisions to the traffic signal installation, you should then submit a certification with a Professional Engineer's Seal that the installation has been completed in accordance with the authorized design and has been inspected to ensure such conformance. At that point, the Commissioner's approval will be granted.

Sincerely,

William E. Anderson
DRS

Willliam E. Anderson
Manager, Bureau of Traffic Engineering
and Safety Programs

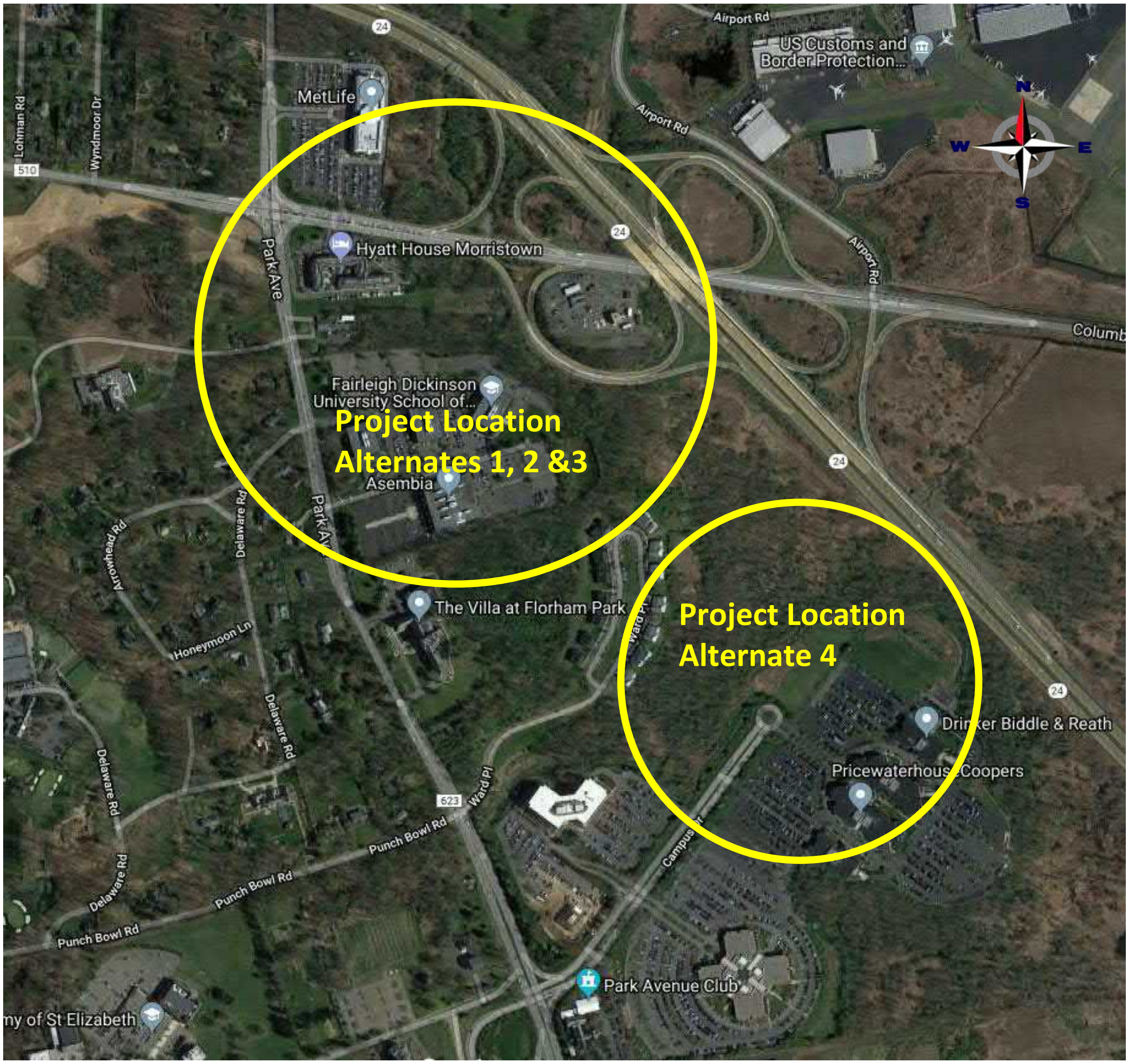
Enclosures

RECEIVED
COUNTY OF MORRIS
MAR - 8 1999
ENGINEERING
DEPARTMENT

Appendix "H"

Aerial Plan and Photographs

PROJECT LOCATION



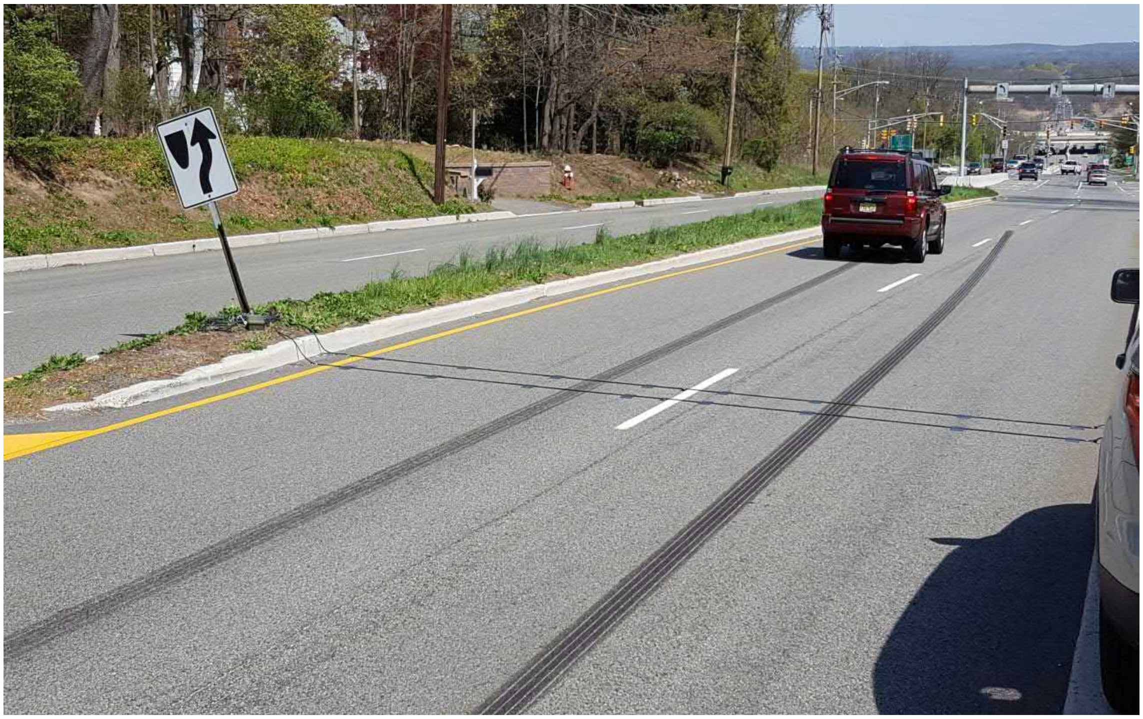


Photo 1 - View of Columbia Turnpike/Park Avenue Interchange from West Approach.

Photo 2 - View of Columbia Turnpike/Park Avenue Interchange from East Approach.

Photo 3 - View of Columbia Turnpike and Park Avenue Interchange from MetLife parking lot (NE Quadrant).

Photo 4 - View of Columbia Turnpike WB from the intersection at Park Avenue.

Photo 5 - Vehicles cutting across lanes of traffic from Route 24 EB Ramp to Columbia Turnpike.

Photo 6 – Vehicles queued up to make the left onto Park Avenue SB.

Photo 7 – Vehicles queued up on Columbia Turnpike WB, the majority of which are turning left onto Park Avenue SB.

Photo 8 – Vehicles queued up on Columbia Turnpike EB bound for Route 24 and beyond.

Photo 9 – Driveway for Hyatt House from Park Avenue to be revoked.

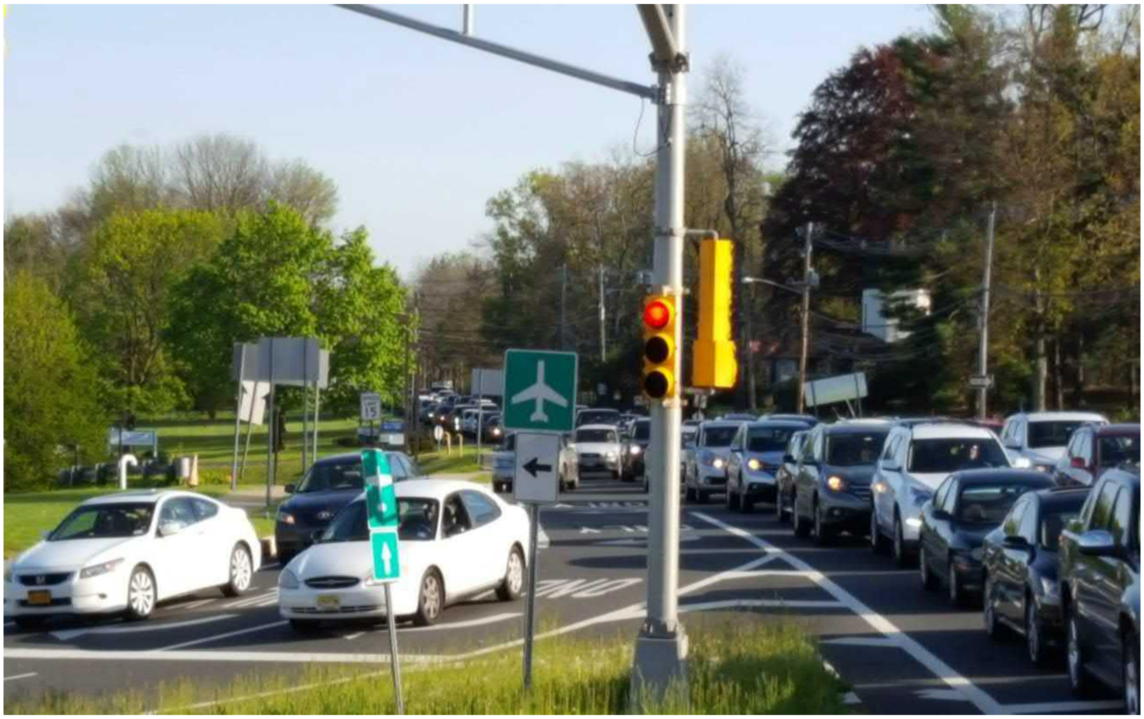


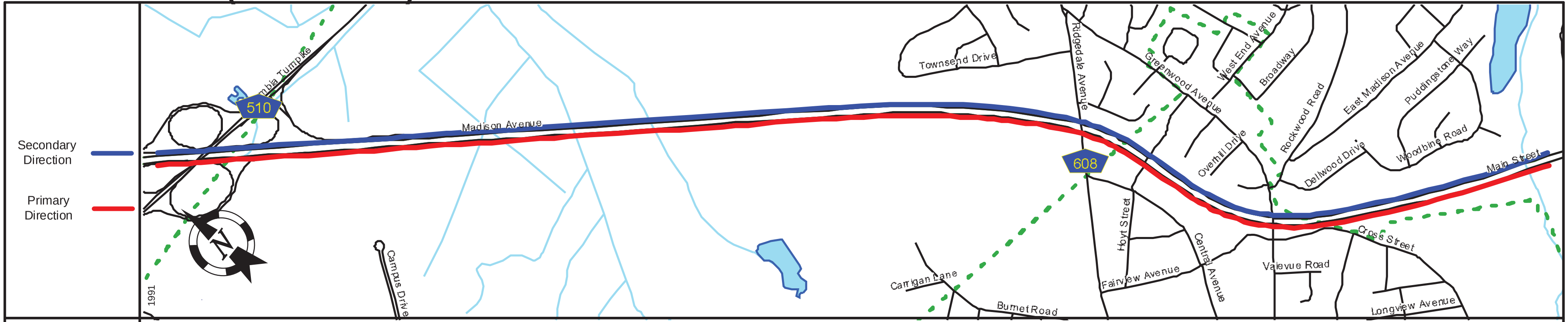
Photo 10 – Vehicle queues on Park Avenue NB.

Appendix “I”

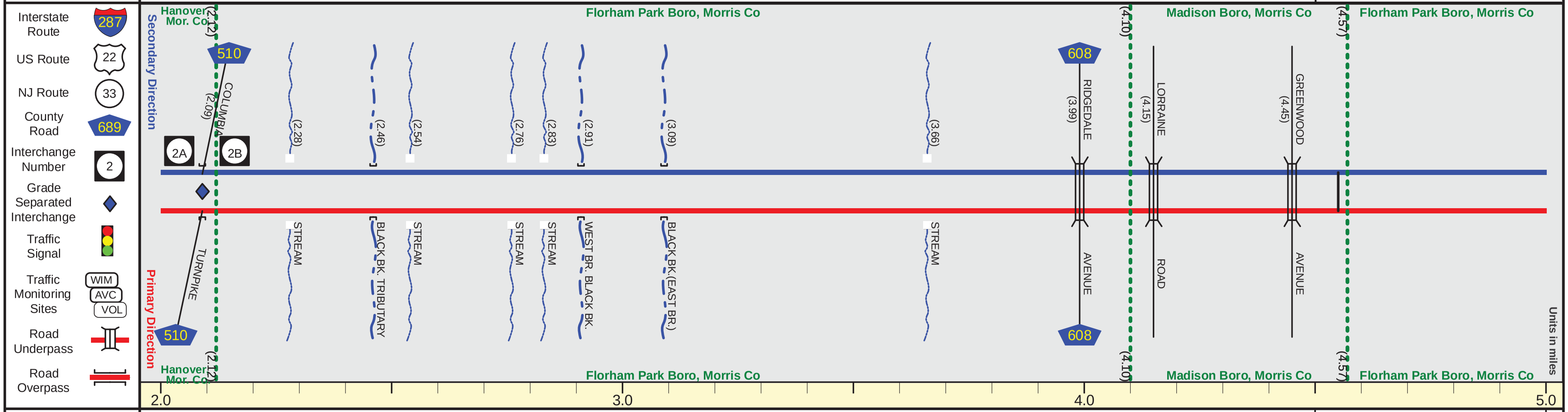
Straight Line Diagrams

NJ 24 (West to East)

Mile Posts: 2.000 - 5.000



Pavement	24	
Shoulder	12	
Number of Lanes	2	
Speed Limit	65	
Street Name	Madison Avenue	Main Street



Street Name	Madison Avenue	Main Street
Jurisdiction	N.J.D.O.T.	
Functional Class	Urban Principal Arterial Freeway/Expressway	
Federal Aid - NHS Sy	NHS	
Control Section	1422	
Speed Limit	65	
Number of Lanes	2	
Med. Type	Positive	
Med. Width	46	
Pavement	24	
Shoulder	12	
Traffic Volume		
Traffic Sta. ID		
Structure No.	1422165 1422163 1422152 N/A N/A N/A 1422153 1422154 N/A 1422157 1422158 1422155	
Enlarged Views		

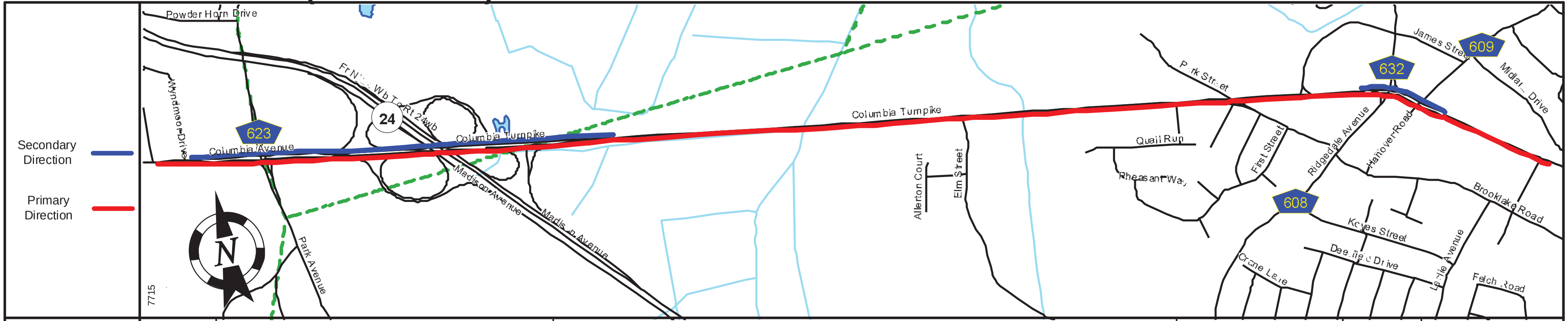
SRI = 00000024__

Date last inventoried: May 2015

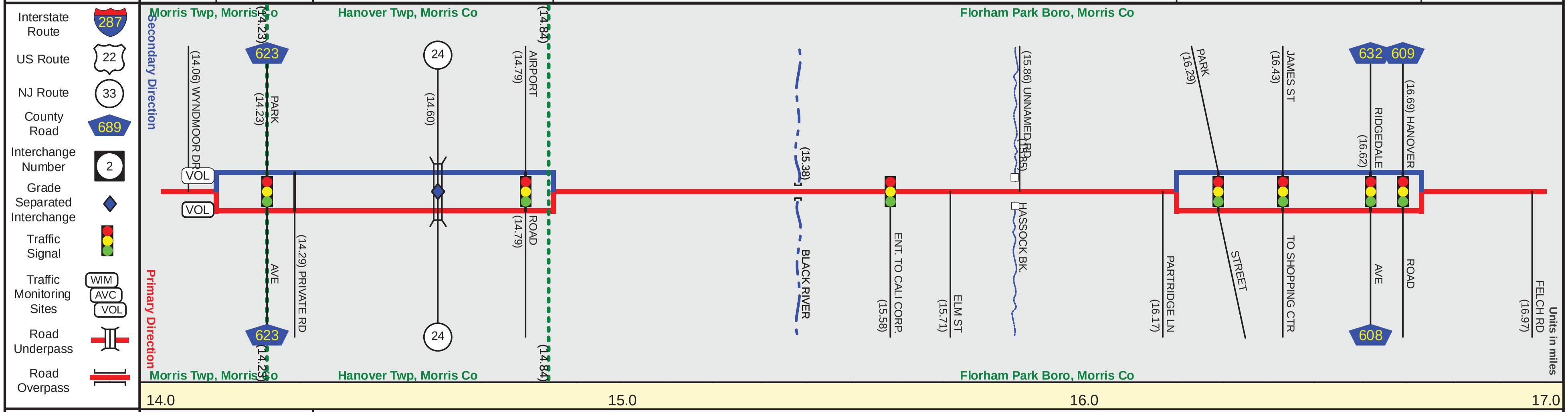
Page Created: June, 2015

ROUTE 510 (West to East)

Mile Posts: 14.000 - 17.000



Pavement	24	31	36
Shoulder	0	12	0
Number of Lanes	2	2	
Speed Limit	40	50	35
Street Name	Columbia Avenue	Columbia Turnpike	Columbia Turnpike



Street Name	Columbia Avenue	Columbia Turnpike					
Jurisdiction	County						
Functional Class	Urban Principal Arterial						
Federal Aid - NHS Sy	NHS						
Control Section							
Speed Limit	40	50	35	45			
Number of Lanes	5	4	2	4	2	4	
Med. Type	None	Curbed	Positive	Curbed	None	Painted/Unprotected	Curbed None
Med. Width	0	4	3	12	0	6	VAR 0
Pavement	60	48	24	46	31	24	50
Shoulder	0	0	2	0			
Traffic Volume	24,026 (2011)	29,603 (2012)31,141 (2012) 16,506 (2012)31,076 (2012)					
Traffic Sta. ID	1-1-040	121402121402 121402121402					
Structure No.	1422165	N/A N/A	N/A				
Enlarged Views							

SRI = 00000510__

Date last inventoried: August 2007

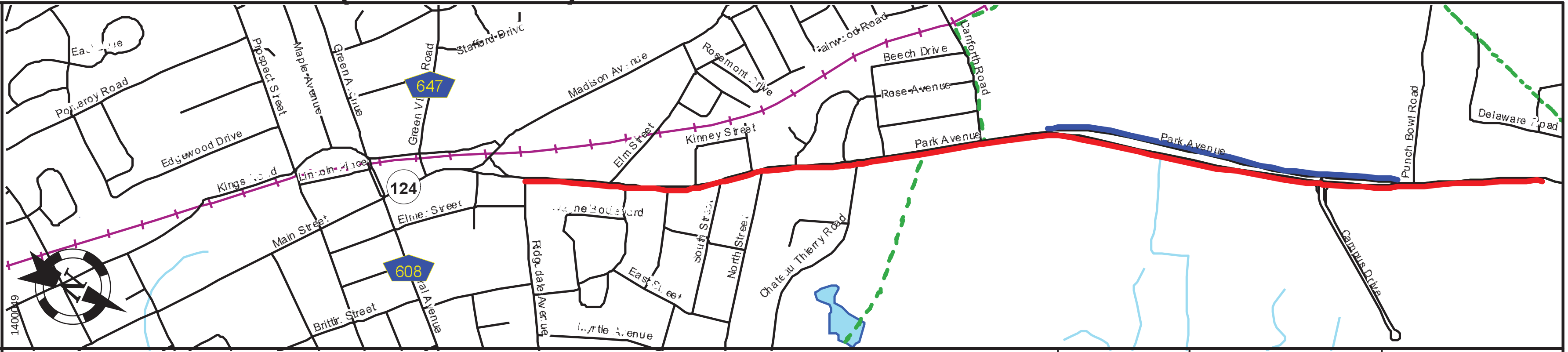
Page Created: June, 2015

MORRIS COUNTY 623 (South to North)

Mile Posts: 0.000 - 2.000

Secondary Direction ▬

Primary Direction ▬



Pavement	14	24
Shoulder	0	
Number of Lanes	1	2
Speed Limit	35	
Street Name	Park Avenue	

Interstate Route 287

US Route 22

NJ Route 33

County Road 689

Interchange Number 2

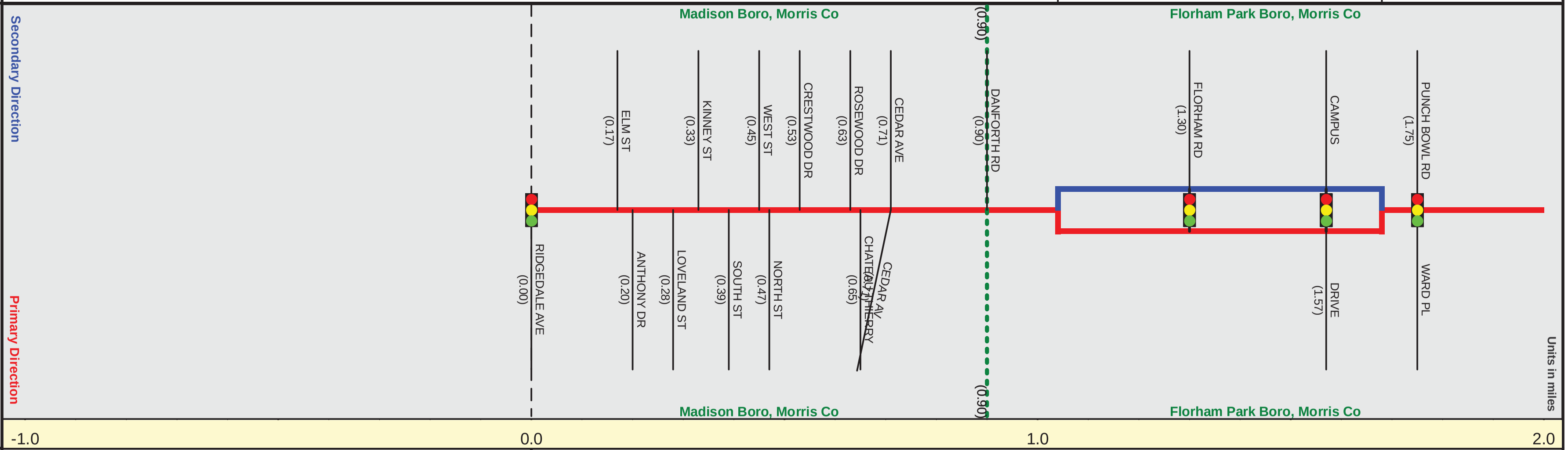
Grade Separated Interchange ◆

Traffic Signal 🚦

Traffic Monitoring Sites WIM AVC VOL

Road Underpass

Road Overpass



Street Name	Park Avenue						
Jurisdiction	County						
Functional Class	Urban Principal Arterial						
Federal Aid - NHS Sy	NHS						
Control Section							
Speed Limit	35						
Number of Lanes	2	1	2	4			
Med. Type	None	Curbed	None				
Med. Width	0	VAR	0				
Pavement	38	28	30	20	24	48	
Shoulder	0	1	0	1	4		
Traffic Volume	13,807 (2014)						
Traffic Sta. ID	111431						
Structure No.							
Enlarged Views							

Begin Morris County 623 MP=0.00

Page Created: June, 2015

SRI = 14000623__

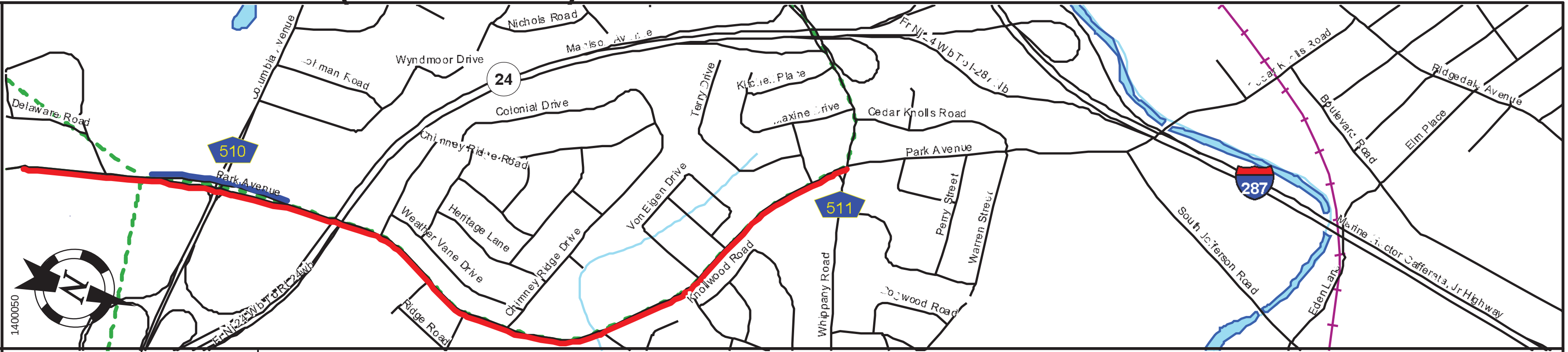
Date last inventoried: May 2011

MORRIS COUNTY 623 (South to North)

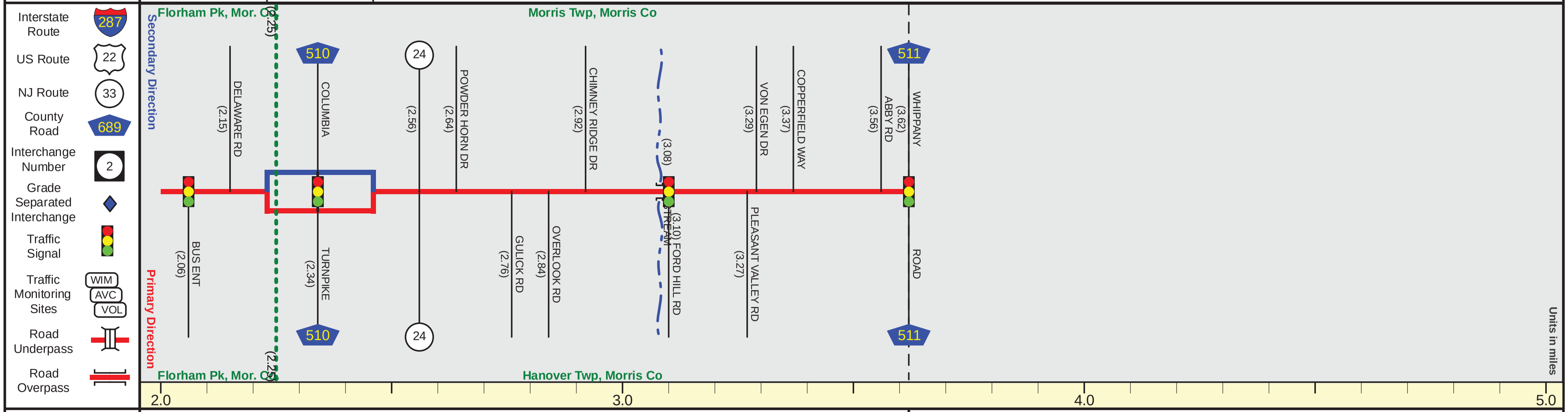
Mile Posts: 2.000 - 3.620

Secondary Direction 🟦

Primary Direction 🟥



Pavement		24
Shoulder		0
Number of Lanes		2
Speed Limit		35
Street Name		Park Avenue



Street Name	Park Avenue			
Jurisdiction	County			
Functional Class	Urban Principal Arterial	Urban Minor Arterial		
Federal Aid - NHS Sy	NHS	STP		
Control Section				
Speed Limit	35	45	40	
Number of Lanes	4	2	4	
Med. Type	None	Curbed	None	
Med. Width	0	VAR	0	
Pavement	48	24	40	
Shoulder	4	0	1	0
Traffic Volume	10,529 (2011)	9,936 (2011)		
Traffic Sta. ID	1-8-211	111432		
Structure No.				
Enlarged Views				

End Morris County 623 MP=3.62

SRI = 14000623__

Date last inventoried: May 2011

Page Created: June, 2015

Appendix “J”

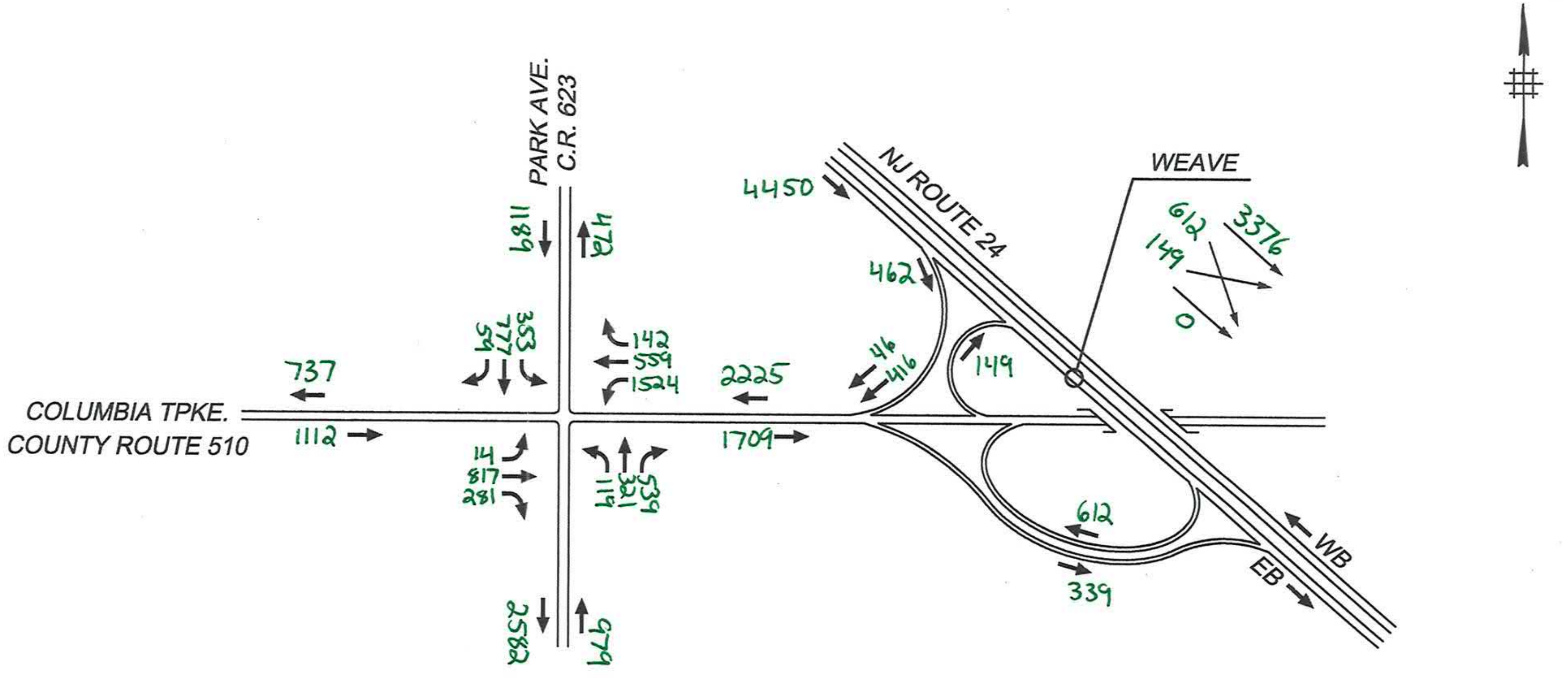
Traffic Volumes

(TRAFFIC VOLUMES FOR ALTERNATIVE 3
AND ALTERNATIVE 3 - REVISED ARE SAME)

Existing and No-Build volume worksheets
and Synchro reports

IH Engineers, P.C.

NJDOT CONCEPT DEVELOPMENT - COLUMBIA TURNPIKE (C.R. 510) AND NJ ROUTE 24
MORRIS COUNTY, NEW JERSEY



SCENARIO: Existing
YEAR: 2019
PEAK HOUR: AM

N.T.S.

Lanes, Volumes, Timings
3: Park Avenue & Columbia Turnpike

AM

12/23/2019

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰↰	↑↑	↱	↰	↑↑	↱↱	↰↰	↑↱	
Traffic Volume (vph)	14	817	281	1524	559	142	119	321	539	353	777	59
Future Volume (vph)	14	817	281	1524	559	142	119	321	539	353	777	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	220		220	0		350	160		175	240		0
Storage Lanes	1		1	2		1	1		2	2		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	0.88	0.97	0.95	0.95
Frt			0.850			0.850			0.850		0.985	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3574	1615	3433	3471	1524	1687	3505	2760	3467	3475	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3574	1615	3433	3471	1524	1687	3505	2760	3467	3475	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			135			178			87		10	
Link Speed (mph)		40			50			35			35	
Link Distance (ft)		841			361			556			1071	
Travel Time (s)		14.3			4.9			10.8			20.9	
Peak Hour Factor	0.77	0.94	0.86	0.89	0.86	0.80	0.85	0.82	0.88	0.88	0.87	0.58
Heavy Vehicles (%)	2%	1%	0%	2%	4%	6%	7%	3%	3%	1%	1%	14%
Adj. Flow (vph)	18	869	327	1712	650	178	140	391	613	401	893	102
Shared Lane Traffic (%)												
Lane Group Flow (vph)	18	869	327	1712	650	178	140	391	613	401	995	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	

```
                        HCS 2010: Freeway Weaving Release 6.65
Phone:                                       Fax:
E-mail:

______________________________Operational Analysis_____________________________

Analyst:                      SMC
Agency/Co.:                   IH
Date Performed:               Dec 2019
Analysis Time Period:         AM Peak
Freeway/Dir of Travel:        NJ 24 EB at CR 510
Weaving Location:             EB
Analysis Year:                2019
Description:                  NJ 24/CR 510 CD

___________________________________Inputs_______________________________________

Segment Type                                 Freeway
Weaving configuration                        One-Sided
Number of lanes, N                           3          ln
Weaving segment length, LS                   600        ft
Freeway free-flow speed, FFS                 65         mi/h
Minimum segment speed, SMIN                  15         mi/h
Freeway maximum capacity, cIFL               2350       pc/h/ln

Terrain type                                 Level
    Grade                                    0.00       %
    Length                                   0.00       mi

___________________Conversion to pc/h Under Base Conditions____________________
                                       Volume Components
                                      VFF     VRF     VFR     VRR
Volume, V                              3376    149     612     0     veh/h
Peak hour factor, PHF                  0.90    0.90    0.90    0.90
Peak 15-min volume, v15                938     41      170     0
Trucks and buses                       5       5       5       0          %
Recreational vehicles                  0       0       0       0          %
Trucks and buses PCE, ET               1.5     1.5     1.5     1.5
Recreational vehicle PCE, ER           1.2     1.2     1.2     1.2
Heavy vehicle adjustment, fHV          0.976   0.976   0.976   1.000
Driver population adjustment, fP       1.00    1.00    1.00    1.00
Flow rate, v                           3845    170     697     0      pc/h

Volume ratio, VR                               0.184

_________________________Configuration Characteristics_________________________
Number of maneuver lanes, NWL              2           ln
Interchange density, ID                    1.0         int/mi
Minimum RF lane changes, LCRF              1           lc/pc
```

```
Minimum FR lane changes, LCFR             1           lc/pc
Minimum RR lane changes, LCRR                         lc/pc

Minimum weaving lane changes, LCMIN       867         lc/h
Weaving lane changes, LCW                 973         lc/h
Non-weaving vehicle index, INW            231
Non-weaving lane change, LCNW             539         lc/h
Total lane changes, LCALL                 1512        lc/h

_______________________Weaving and Non-Weaving Speeds__________________________
Weaving intensity factor, W              0.469
Average weaving speed, SW                49.0        mi/h
Average non-weaving speed, SNW           51.2        mi/h

_________Weaving Segment Speed, Density, Level of Service and Capacity_________
Weaving segment speed, S                  50.8        mi/h
Weaving segment density, D                30.9        pc/mi/ln
Level of service, LOS                    D
Weaving segment v/c ratio                0.762
Weaving segment flow rate, v              4597        veh/h
Weaving segment capacity, cW              6032        veh/h

_______________________Limitations on Weaving Segments_________________________
If limit reached, see note.

                          Minimum       Maximum       Actual       Note
Weaving length (ft)         300           4373          600         a,b
                                        Maximum       Analyzed
Density-based capacty,                    2350          2061         c
cIWL (pc/h/ln)
                                        Maximum       Analyzed
v/c ratio                                 1.00          0.762        d

Notes:
a.  In weaving segments shorter than 300 ft, weaving vehicles are assumed to
    make only necessary lane changes.
b.  Weaving segments longer than the calculated maximum length should be
    treated as isolated merge and diverge areas using the procedures of
    Chapter 13, "Freeway Merge and Diverge Segments."
c.  The density-based capacity exceeds the capacity of a basic freeway segment,
    under equivalent ideal conditions.
d.  Volumes exceed the weaving segment capacity. The level of service is F.

  _____________________________________________________________________________
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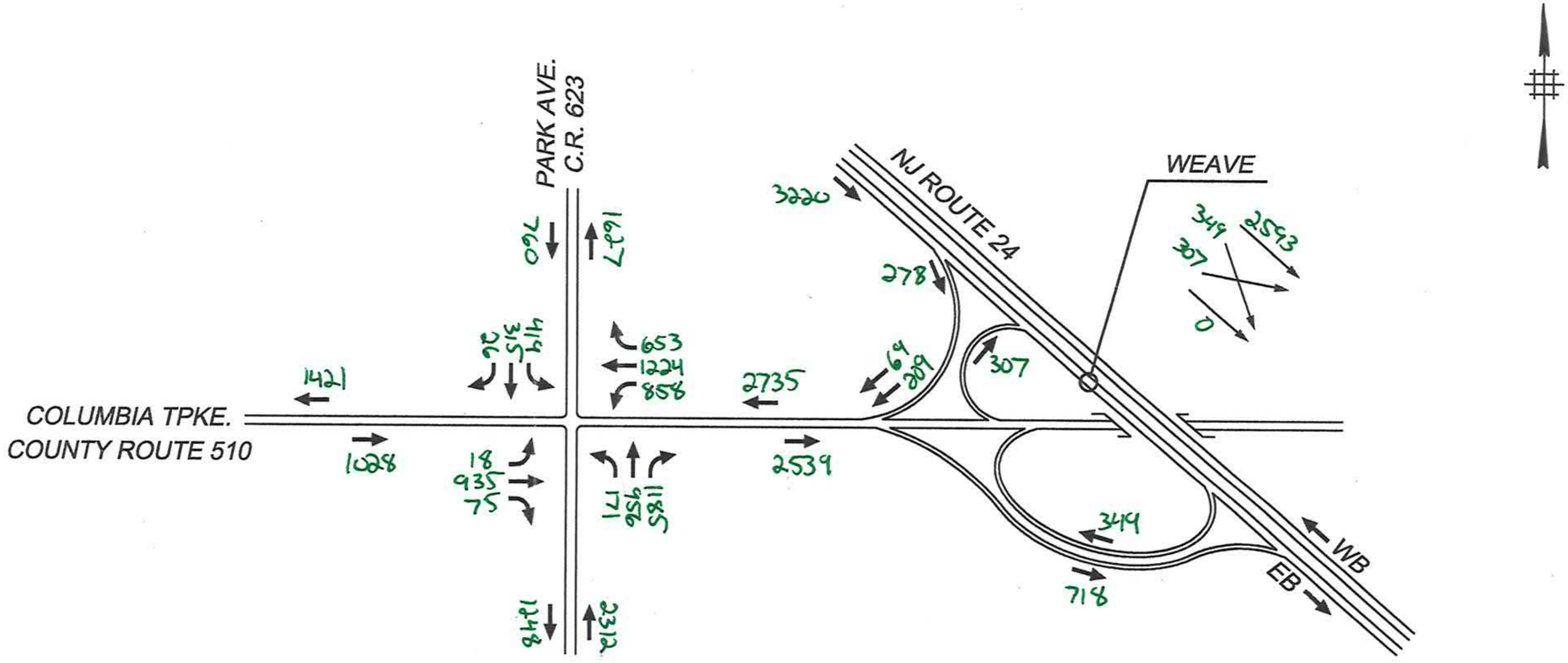
IH Engineers, P.C.

NJDOT CONCEPT DEVELOPMENT - COLUMBIA TURNPIKE (C.R. 510) AND NJ ROUTE 24
MORRIS COUNTY, NEW JERSEY



SCENARIO: Existing
YEAR: 2019
PEAK HOUR: PM

N.T.S.

Lanes, Volumes, Timings
3: Park Avenue & Columbia Turnpike

PM

12/23/2019

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰↰	↑↑	↱	↰	↑↑	↱↱	↰↰	↑↱	
Traffic Volume (vph)	18	935	75	858	1224	653	171	956	1185	419	315	26
Future Volume (vph)	18	935	75	858	1224	653	171	956	1185	419	315	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	220		220	0		350	160		175	240		0
Storage Lanes	1		1	2		1	1		2	2		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	0.88	0.97	0.95	0.95
Frt			0.850			0.850			0.850		0.989	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	3467	3539	1599	1787	3610	2842	3467	3538	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3539	1583	3467	3539	1599	1787	3610	2842	3467	3538	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			135			247			87		6	
Link Speed (mph)		40			50			35			35	
Link Distance (ft)		841			361			556			1071	
Travel Time (s)		14.3			4.9			10.8			20.9	
Peak Hour Factor	0.63	0.92	0.70	0.78	0.73	0.73	0.89	0.93	0.96	0.75	0.86	0.91
Heavy Vehicles (%)	2%	2%	2%	1%	2%	1%	1%	0%	0%	1%	1%	0%
Adj. Flow (vph)	29	1016	107	1100	1677	895	192	1028	1234	559	366	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	29	1016	107	1100	1677	895	192	1028	1234	559	395	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	

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                    HCS 2010: Freeway Weaving Release 6.65
Phone:                                      Fax:
E-mail:

______________________________Operational Analysis______________________________

Analyst:                      SMC
Agency/Co.:                   IH
Date Performed:               Dec 2019
Analysis Time Period:         PM Peak
Freeway/Dir of Travel:        NJ 24 EB at CR 510
Weaving Location:             EB
Analysis Year:                2019
Description:                  NJ 24/CR 510 CD

___________________________________Inputs_______________________________________

Segment Type                                Freeway
Weaving configuration                       One-Sided
Number of lanes, N                          3           ln
Weaving segment length, LS                  600         ft
Freeway free-flow speed, FFS                65          mi/h
Minimum segment speed, SMIN                 15          mi/h
Freeway maximum capacity, cIFL              2350        pc/h/ln

Terrain type                                Level
    Grade                                   0.00        %
    Length                                  0.00        mi

___________________Conversion to pc/h Under Base Conditions____________________
                                               Volume Components
                                          VFF     VRF     VFR     VRR
Volume, V                                  2593    307     349     0     veh/h
Peak hour factor, PHF                      0.90    0.90    0.90    0.90
Peak 15-min volume, v15                    720     85      97      0
Trucks and buses                           5       5       5       0          %
Recreational vehicles                      0       0       0       0          %
Trucks and buses PCE, ET                   1.5     1.5     1.5     1.5
Recreational vehicle PCE, ER               1.2     1.2     1.2     1.2
Heavy vehicle adjustment, fHV              0.976   0.976   0.976   1.000
Driver population adjustment, fP           1.00    1.00    1.00    1.00
Flow rate, v                               2953    350     397     0      pc/h

Volume ratio, VR                                   0.202

_________________________Configuration Characteristics__________________________
Number of maneuver lanes, NWL                   2           ln
Interchange density, ID                         1.0         int/mi
Minimum RF lane changes, LCRF                   1           lc/pc
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Minimum FR lane changes, LCFR              1          lc/pc
Minimum RR lane changes, LCRR                         lc/pc

Minimum weaving lane changes, LCMIN        747        lc/h
Weaving lane changes, LCW                  853        lc/h
Non-weaving vehicle index, INW             177
Non-weaving lane change, LCNW              356        lc/h
Total lane changes, LCALL                  1209       lc/h

_______________________Weaving and Non-Weaving Speeds_________________________
Weaving intensity factor, W               0.393
Average weaving speed, SW                  50.9       mi/h
Average non-weaving speed, SNW             53.7       mi/h

________Weaving Segment Speed, Density, Level of Service and Capacity________
Weaving segment speed, S                   53.1       mi/h
Weaving segment density, D                 23.2       pc/mi/ln
Level of service, LOS                     C
Weaving segment v/c ratio                 0.603
Weaving segment flow rate, v               3610       veh/h
Weaving segment capacity, cW               5991       veh/h

_______________________Limitations on Weaving Segments________________________
If limit reached, see note.

                          Minimum       Maximum       Actual       Note
Weaving length (ft)         300           4556          600         a,b
                                        Maximum       Analyzed
Density-based capacty,                    2350          2047          c
cIWL (pc/h/ln)
                                        Maximum       Analyzed
v/c ratio                                 1.00          0.603         d

Notes:
a.  In weaving segments shorter than 300 ft, weaving vehicles are assumed to
    make only necessary lane changes.
b.  Weaving segments longer than the calculated maximum length should be
    treated as isolated merge and diverge areas using the procedures of
    Chapter 13, "Freeway Merge and Diverge Segments."
c.  The density-based capacity exceeds the capacity of a basic freeway segment,
    under equivalent ideal conditions.
d.  Volumes exceed the weaving segment capacity. The level of service is F.

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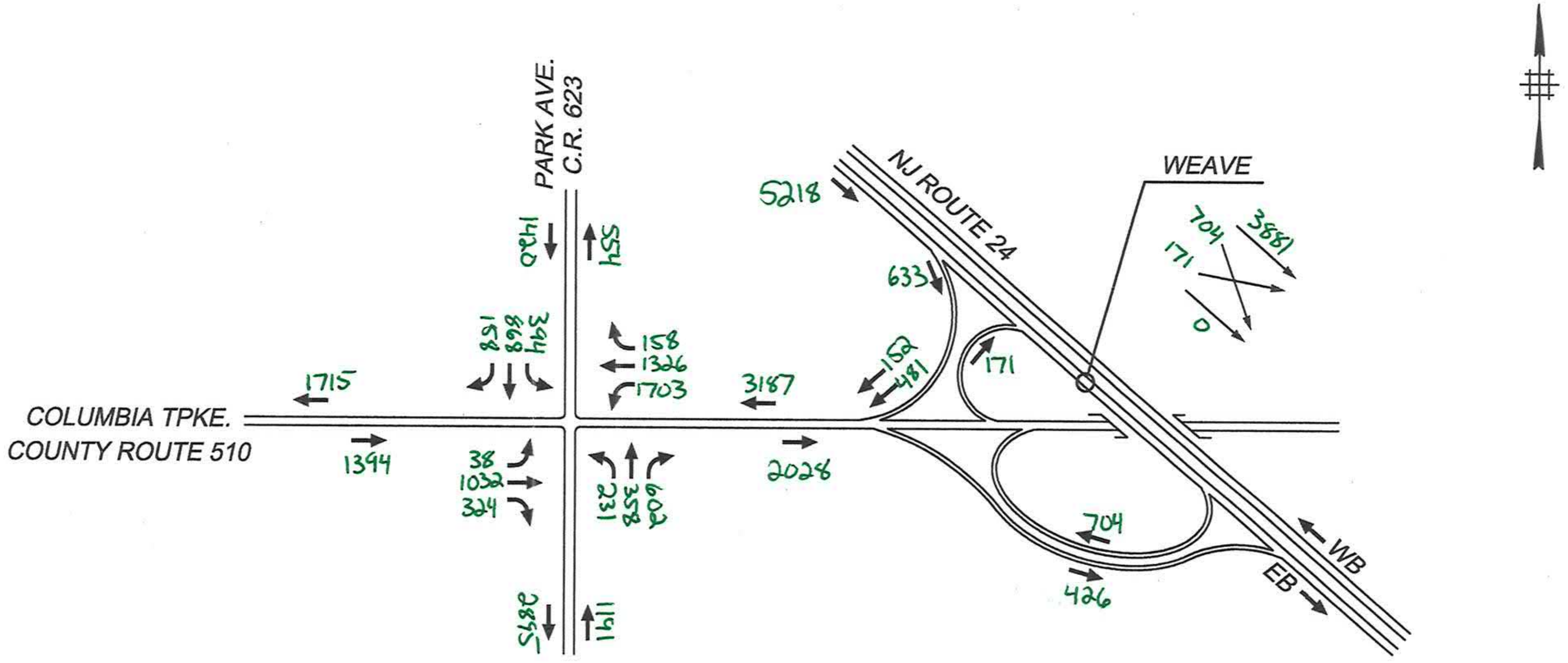
IH Engineers, P.C.

NJDOT CONCEPT DEVELOPMENT - COLUMBIA TURNPIKE (C.R. 510) AND NJ ROUTE 24
MORRIS COUNTY, NEW JERSEY



SCENARIO: No-Build
YEAR: 2040
PEAK HOUR: AM

N.T.S.

HCM 6th Signalized Intersection Summary
3: Park Avenue & Columbia Turnpike

12/23/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰↰	↑↑	↱	↰	↑↑	↱↱	↰↰	↑↱	
Traffic Volume (veh/h)	38	1032	324	1703	1326	159	231	358	602	394	868	158
Future Volume (veh/h)	38	1032	324	1703	1326	159	231	358	602	394	868	158
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1885	1900	1870	1841	1811	1796	1856	1856	1885	1885	1885
Adj Flow Rate, veh/h	49	1098	377	1913	1542	199	272	437	684	448	998	272
Peak Hour Factor	0.77	0.94	0.86	0.89	0.86	0.80	0.85	0.82	0.88	0.88	0.87	0.58
Percent Heavy Veh, %	2	1	0	2	4	6	7	3	3	1	1	1
Cap, veh/h	63	666	385	1193	1733	896	91	593	1421	308	567	154
Arrive On Green	0.04	0.19	0.19	0.35	0.50	0.50	0.05	0.17	0.17	0.09	0.20	0.20
Sat Flow, veh/h	1781	3582	1610	3456	3497	1535	1711	3526	2768	3483	2784	756
Grp Volume(v), veh/h	49	1098	377	1913	1542	199	272	437	684	448	640	630
Grp Sat Flow(s),veh/h/ln	1781	1791	1610	1728	1749	1535	1711	1763	1384	1742	1791	1749
Q Serve(g_s), s	3.1	21.0	21.0	39.0	45.0	7.0	6.0	13.3	18.1	10.0	23.0	23.0
Cycle Q Clear(g_c), s	3.1	21.0	21.0	39.0	45.0	7.0	6.0	13.3	18.1	10.0	23.0	23.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.43
Lane Grp Cap(c), veh/h	63	666	385	1193	1733	896	91	593	1421	308	365	356
V/C Ratio(X)	0.77	1.65	0.98	1.60	0.89	0.22	2.99	0.74	0.48	1.45	1.76	1.77
Avail Cap(c_a), veh/h	158	666	385	1193	1733	896	91	593	1421	308	365	356
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.0	46.0	42.7	37.0	25.7	11.2	53.5	44.6	17.8	51.5	45.0	45.0
Incr Delay (d2), s/veh	18.0	299.0	40.4	275.7	6.2	0.1	926.3	4.8	0.3	221.3	351.6	357.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	36.7	14.2	60.9	18.1	2.1	25.9	6.1	5.3	13.8	45.6	45.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	72.0	345.0	83.1	312.7	31.9	11.4	979.8	49.4	18.0	272.8	396.6	402.1
LnGrp LOS	E	F	F	F	C	B	F	D	B	F	F	F
Approach Vol, veh/h		1524			3654			1393			1718	
Approach Delay, s/veh		271.4			177.8			215.7			366.3	
Approach LOS		F			F			F			F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.0	26.0	44.0	28.0	11.0	30.0	9.0	63.0				
Change Period (Y+Rc), s	5.0	7.0	5.0	7.0	5.0	7.0	5.0	7.0				
Max Green Setting (Gmax), s	10.0	19.0	39.0	21.0	6.0	23.0	10.0	50.0				
Max Q Clear Time (g_c+I1), s	12.0	20.1	41.0	23.0	8.0	25.0	5.1	47.0				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5				
Intersection Summary												
HCM 6th Ctrl Delay			240.5									
HCM 6th LOS			F									

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                        HCS 2010: Freeway Weaving Release 6.65
Phone:                                      Fax:
E-mail:

______________________________Operational Analysis_____________________________

Analyst:                      SMC
Agency/Co.:                   IH
Date Performed:               Dec 2019
Analysis Time Period:         AM Peak
Freeway/Dir of Travel:        NJ 24 EB at CR 510
Weaving Location:             EB
Analysis Year:                2040
Description:                  NJ 24/CR 510 CD

___________________________________Inputs______________________________________

Segment Type                                Freeway
Weaving configuration                       One-Sided
Number of lanes, N                          3           ln
Weaving segment length, LS                  600         ft
Freeway free-flow speed, FFS                65          mi/h
Minimum segment speed, SMIN                 15          mi/h
Freeway maximum capacity, cIFL              2350        pc/h/ln

Terrain type                                Level
    Grade                                   0.00        %
    Length                                  0.00        mi

___________________Conversion to pc/h Under Base Conditions____________________
                                       Volume Components
                                      VFF     VRF     VFR     VRR
Volume, V                              3881    171     704     0    veh/h
Peak hour factor, PHF                  0.90    0.90    0.90    0.90
Peak 15-min volume, v15                1078    48      196     0
Trucks and buses                       5       5       5       0         %
Recreational vehicles                  0       0       0       0         %
Trucks and buses PCE, ET               1.5     1.5     1.5     1.5
Recreational vehicle PCE, ER           1.2     1.2     1.2     1.2
Heavy vehicle adjustment, fHV          0.976   0.976   0.976   1.000
Driver population adjustment, fP       1.00    1.00    1.00    1.00
Flow rate, v                           4420    195     802     0     pc/h

Volume ratio, VR                               0.184

_________________________Configuration Characteristics_________________________
Number of maneuver lanes, NWL              2           ln
Interchange density, ID                    1.0         int/mi
Minimum RF lane changes, LCRF              1           lc/pc
```

```
Minimum FR lane changes, LCFR              1           lc/pc
Minimum RR lane changes, LCRR                          lc/pc

Minimum weaving lane changes, LCMIN        997         lc/h
Weaving lane changes, LCW                  1103        lc/h
Non-weaving vehicle index, INW             265
Non-weaving lane change, LCNW              658         lc/h
Total lane changes, LCALL                  1761        lc/h

_______________________Weaving and Non-Weaving Speeds__________________________
Weaving intensity factor, W                0.529
Average weaving speed, SW                  47.7        mi/h
Average non-weaving speed, SNW             49.2        mi/h

_________Weaving Segment Speed, Density, Level of Service and Capacity_________
Weaving segment speed, S                   48.9        mi/h
Weaving segment density, D                 36.9        pc/mi/ln
Level of service, LOS                      E
Weaving segment v/c ratio                  0.876
Weaving segment flow rate, v               5285        veh/h
Weaving segment capacity, cW               6032        veh/h

_______________________Limitations on Weaving Segments_________________________
If limit reached, see note.

                          Minimum       Maximum       Actual       Note
Weaving length (ft)          300           4374         600          a,b
                                        Maximum       Analyzed
Density-based capacty,                      2350         2061         c
cIWL (pc/h/ln)
                                        Maximum       Analyzed
v/c ratio                                   1.00         0.876        d

Notes:
a.  In weaving segments shorter than 300 ft, weaving vehicles are assumed to
    make only necessary lane changes.
b.  Weaving segments longer than the calculated maximum length should be
    treated as isolated merge and diverge areas using the procedures of
    Chapter 13, "Freeway Merge and Diverge Segments."
c.  The density-based capacity exceeds the capacity of a basic freeway segment,
    under equivalent ideal conditions.
d.  Volumes exceed the weaving segment capacity. The level of service is F.

 ______________________________________________________________________________
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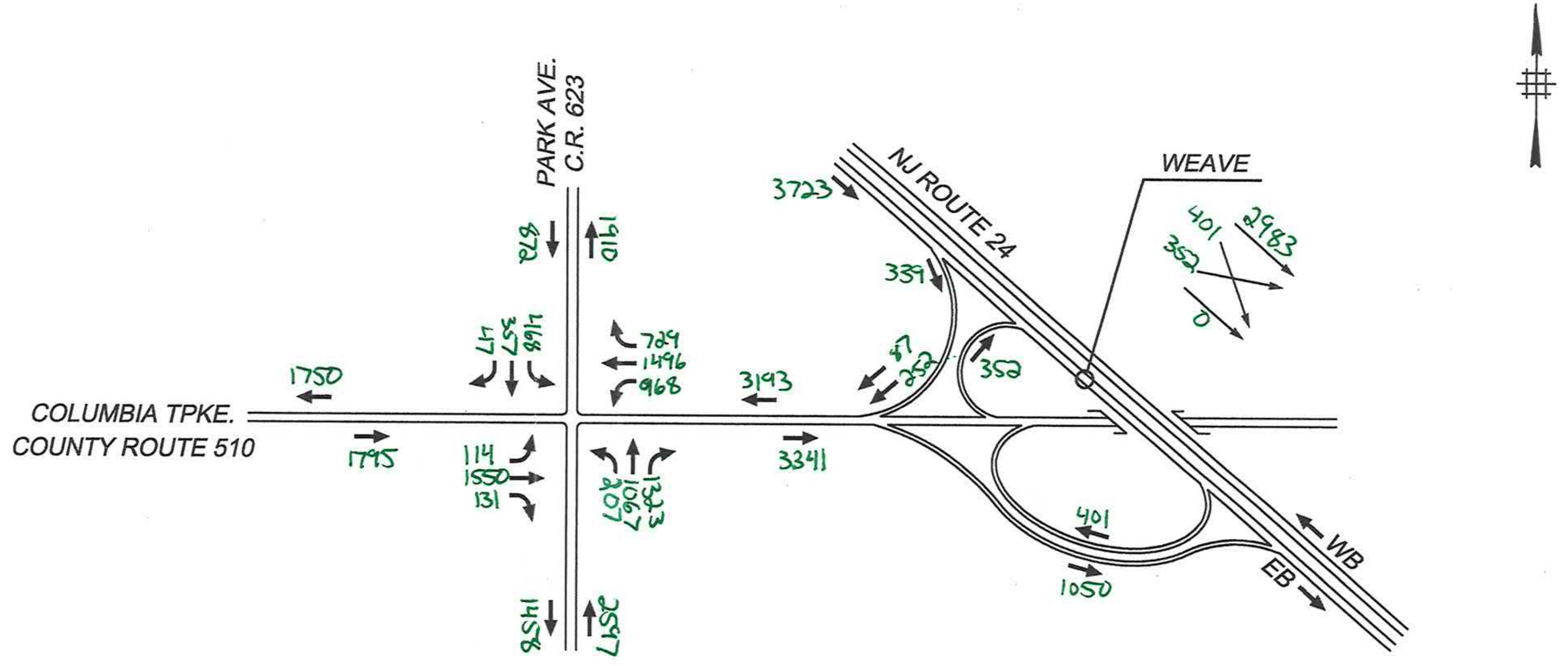
IH Engineers, P.C.

NJDOT CONCEPT DEVELOPMENT - COLUMBIA TURNPIKE (C.R. 510) AND NJ ROUTE 24
MORRIS COUNTY, NEW JERSEY



SCENARIO: No-Build
YEAR: 2040
PEAK HOUR: PM

N.T.S.

HCM 6th Signalized Intersection Summary
3: Park Avenue & Columbia Turnpike

12/23/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰↰	↑↑	↱	↰	↑↑	↱↱	↰↰	↑↱	
Traffic Volume (veh/h)	114	1550	131	968	1496	729	207	1067	1323	468	357	47
Future Volume (veh/h)	114	1550	131	968	1496	729	207	1067	1323	468	357	47
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1885	1870	1885	1885	1900	1900	1885	1885	1885
Adj Flow Rate, veh/h	181	1685	187	1241	2049	999	233	1147	1378	624	415	52
Peak Hour Factor	0.63	0.92	0.70	0.78	0.73	0.73	0.89	0.93	0.96	0.75	0.86	0.91
Percent Heavy Veh, %	2	2	2	1	2	1	1	0	0	1	1	1
Cap, veh/h	158	660	379	1202	1572	848	95	607	1455	308	652	81
Arrive On Green	0.09	0.19	0.19	0.35	0.44	0.44	0.05	0.17	0.17	0.09	0.20	0.20
Sat Flow, veh/h	1781	3554	1585	3483	3554	1598	1795	3610	2834	3483	3205	399
Grp Volume(v), veh/h	181	1685	187	1241	2049	999	233	1147	1378	624	231	236
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1742	1777	1598	1795	1805	1417	1742	1791	1813
Q Serve(g_s), s	10.0	21.0	11.5	39.0	50.0	50.0	6.0	19.0	19.0	10.0	13.3	13.5
Cycle Q Clear(g_c), s	10.0	21.0	11.5	39.0	50.0	50.0	6.0	19.0	19.0	10.0	13.3	13.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.22
Lane Grp Cap(c), veh/h	158	660	379	1202	1572	848	95	607	1455	308	365	369
V/C Ratio(X)	1.15	2.55	0.49	1.03	1.30	1.18	2.44	1.89	0.95	2.02	0.63	0.64
Avail Cap(c_a), veh/h	158	660	379	1202	1572	848	95	607	1455	308	365	369
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.5	46.0	37.1	37.0	31.5	26.5	53.5	47.0	26.1	51.5	41.1	41.2
Incr Delay (d2), s/veh	117.1	702.6	1.0	34.6	141.1	92.2	680.4	406.5	13.1	472.2	3.5	3.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.5	73.4	4.4	21.2	50.2	41.5	20.7	42.7	18.1	24.5	6.2	6.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	168.6	748.6	38.1	71.6	172.6	118.7	733.9	453.5	39.2	523.7	44.7	44.9
LnGrp LOS	F	F	D	F	F	F	F	F	D	F	D	D
Approach Vol, veh/h		2053			4289			2758			1091	
Approach Delay, s/veh		632.7			130.8			270.2			318.7	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	26.0	44.0	28.0	11.0	30.0	15.0	57.0
Change Period (Y+Rc), s	5.0	7.0	5.0	7.0	5.0	7.0	5.0	7.0
Max Green Setting (Gmax), s	10.0	19.0	39.0	21.0	6.0	23.0	10.0	50.0
Max Q Clear Time (g_c+I1), s	12.0	21.0	41.0	23.0	8.0	15.5	12.0	52.0
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	1.6	0.0	0.0

Intersection Summary			
HCM 6th Ctrl Delay			289.8
HCM 6th LOS			F

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                        HCS 2010: Freeway Weaving Release 6.65
Phone:                                      Fax:
E-mail:

______________________________Operational Analysis_____________________________

Analyst:                      SMC
Agency/Co.:                   IH
Date Performed:               Dec 2019
Analysis Time Period:         PM Peak
Freeway/Dir of Travel:        NJ 24 EB at CR 510
Weaving Location:             EB
Analysis Year:                2040
Description:                  NJ 24 EB at CR 510 CD

___________________________________Inputs______________________________________

Segment Type                                Freeway
Weaving configuration                       One-Sided
Number of lanes, N                          3           ln
Weaving segment length, LS                  600         ft
Freeway free-flow speed, FFS                65          mi/h
Minimum segment speed, SMIN                 15          mi/h
Freeway maximum capacity, cIFL              2350        pc/h/ln

Terrain type                                Level
    Grade                                   0.00        %
    Length                                  0.00        mi

___________________Conversion to pc/h Under Base Conditions____________________
                                       Volume Components
                                      VFF     VRF     VFR     VRR
Volume, V                              2983    352     401     0    veh/h
Peak hour factor, PHF                  0.90    0.90    0.90    0.90
Peak 15-min volume, v15                829     98      111     0
Trucks and buses                       5       5       5       0         %
Recreational vehicles                  0       0       0       0         %
Trucks and buses PCE, ET               1.5     1.5     1.5     1.5
Recreational vehicle PCE, ER           1.2     1.2     1.2     1.2
Heavy vehicle adjustment, fHV          0.976   0.976   0.976   1.000
Driver population adjustment, fP       1.00    1.00    1.00    1.00
Flow rate, v                           3397    401     457     0     pc/h

Volume ratio, VR                               0.202

_________________________Configuration Characteristics_________________________
Number of maneuver lanes, NWL              2           ln
Interchange density, ID                    1.0         int/mi
Minimum RF lane changes, LCRF              1           lc/pc
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```
Minimum FR lane changes, LCFR              1           lc/pc
Minimum RR lane changes, LCRR                          lc/pc

Minimum weaving lane changes, LCMIN        858         lc/h
Weaving lane changes, LCW                  964         lc/h
Non-weaving vehicle index, INW             204
Non-weaving lane change, LCNW              447         lc/h
Total lane changes, LCALL                  1411        lc/h

_______________________Weaving and Non-Weaving Speeds__________________________
Weaving intensity factor, W                0.444
Average weaving speed, SW                  49.6        mi/h
Average non-weaving speed, SNW             52.0        mi/h

_________Weaving Segment Speed, Density, Level of Service and Capacity_________
Weaving segment speed, S                   51.5        mi/h
Weaving segment density, D                 27.5        pc/mi/ln
Level of service, LOS                      C
Weaving segment v/c ratio                  0.693
Weaving segment flow rate, v               4152        veh/h
Weaving segment capacity, cW               5994        veh/h

_______________________Limitations on Weaving Segments_________________________
If limit reached, see note.

                          Minimum       Maximum       Actual       Note
Weaving length (ft)          300            4553        600         a,b
                                        Maximum       Analyzed
Density-based capacty,                      2350        2048         c
cIWL (pc/h/ln)

                                        Maximum       Analyzed
v/c ratio                                   1.00       0.693         d

Notes:
a.  In weaving segments shorter than 300 ft, weaving vehicles are assumed to
    make only necessary lane changes.
b.  Weaving segments longer than the calculated maximum length should be
    treated as isolated merge and diverge areas using the procedures of
    Chapter 13, "Freeway Merge and Diverge Segments."
c.  The density-based capacity exceeds the capacity of a basic freeway segment,
    under equivalent ideal conditions.
d.  Volumes exceed the weaving segment capacity. The level of service is F.

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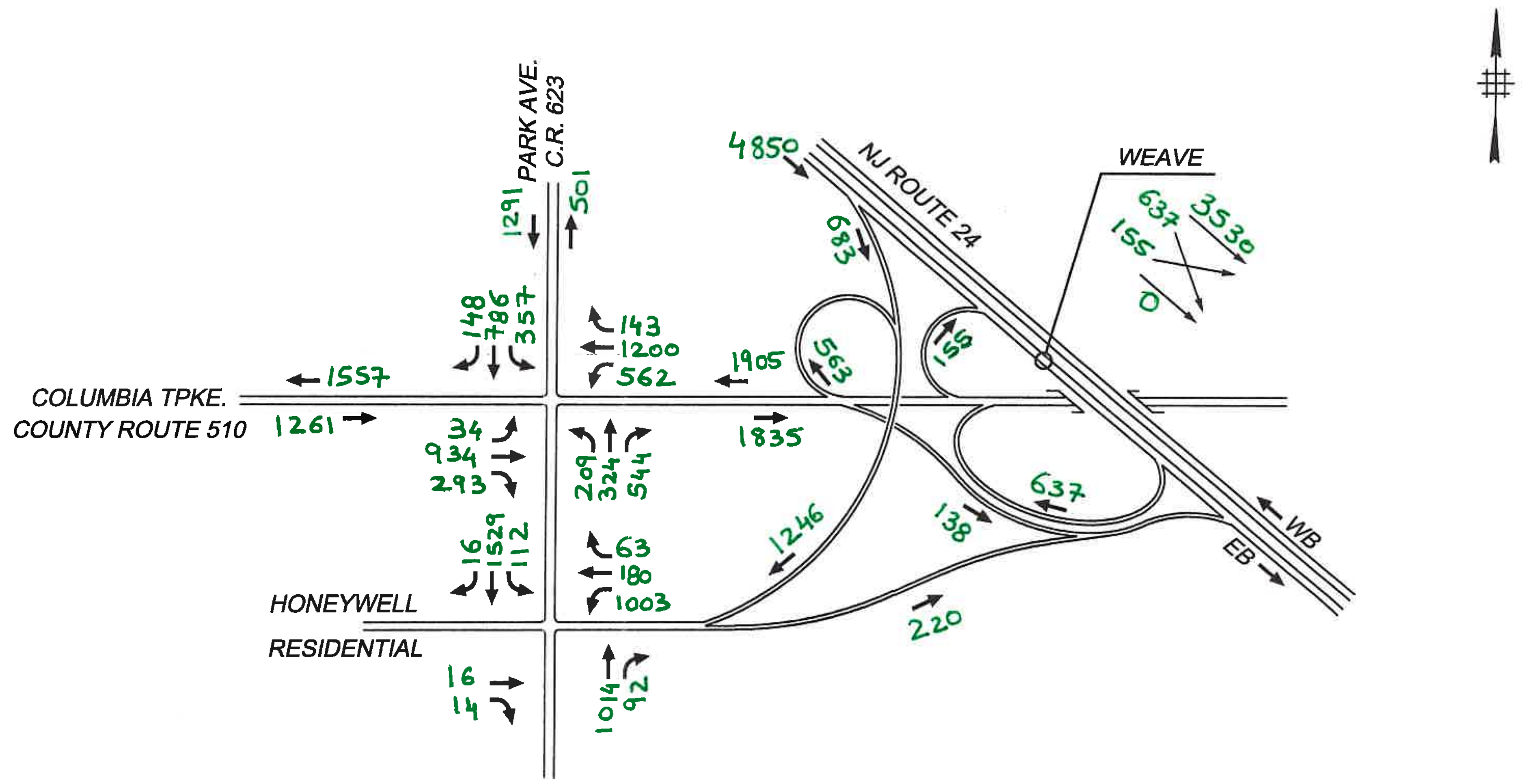
Year 2020 alternatives analysis volume worksheets and Synchro reports

IH Engineers, P.C.

NJDOT CONCEPT DEVELOPMENT - COLUMBIA TURNPIKE (C.R. 510) AND NJ ROUTE 24
MORRIS COUNTY, NEW JERSEY



SCENARIO: Alt. 1
YEAR: 2020
PEAK HOUR: AM

N.T.S.

HCM 6th Signalized Intersection Summary
3: Park Avenue & Columbia Turnpike

02/04/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱↱	↰↰	↑↑	↱	↰	↑↑	↱↱	↰↰	↑↱	
Traffic Volume (veh/h)	34	934	293	562	1200	143	209	324	544	357	786	148
Future Volume (veh/h)	34	934	293	562	1200	143	209	324	544	357	786	148
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1885	1900	1870	1841	1811	1796	1856	1856	1885	1885	1885
Adj Flow Rate, veh/h	54	1015	419	721	1644	196	235	348	567	476	914	163
Peak Hour Factor	0.63	0.92	0.70	0.78	0.73	0.73	0.89	0.93	0.96	0.75	0.86	0.91
Percent Heavy Veh, %	2	1	0	2	4	6	7	3	3	1	1	1
Cap, veh/h	69	764	964	758	1378	839	217	897	1311	533	852	152
Arrive On Green	0.04	0.21	0.21	0.22	0.39	0.39	0.08	0.17	0.17	0.15	0.28	0.28
Sat Flow, veh/h	1781	3582	2834	3456	3497	1535	1711	3526	2768	3483	3037	541
Grp Volume(v), veh/h	54	1015	419	721	1644	196	235	348	567	476	539	538
Grp Sat Flow(s),veh/h/ln	1781	1791	1417	1728	1749	1535	1711	1763	1384	1742	1791	1788
Q Serve(g_s), s	4.5	32.0	17.2	30.9	59.1	10.0	19.0	13.2	20.9	20.1	42.1	42.1
Cycle Q Clear(g_c), s	4.5	32.0	17.2	30.9	59.1	10.0	19.0	13.2	20.9	20.1	42.1	42.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.30
Lane Grp Cap(c), veh/h	69	764	964	758	1378	839	217	897	1311	533	502	502
V/C Ratio(X)	0.78	1.33	0.43	0.95	1.19	0.23	1.08	0.39	0.43	0.89	1.07	1.07
Avail Cap(c_a), veh/h	83	764	964	760	1378	839	217	897	1311	627	502	502
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.53	0.53	0.53	1.00	1.00	1.00
Uniform Delay (d), s/veh	71.5	59.0	38.3	57.7	45.5	17.7	68.6	51.9	29.2	62.3	54.0	54.0
Incr Delay (d2), s/veh	31.6	156.7	0.3	21.4	94.4	0.1	69.1	0.7	0.6	13.7	60.9	61.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	30.9	5.9	15.3	42.5	3.4	12.7	6.1	7.3	9.9	27.3	27.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	103.1	215.7	38.6	79.2	139.8	17.8	137.7	52.5	29.8	76.1	114.9	115.1
LnGrp LOS	F	F	D	E	F	B	F	D	C	E	F	F
Approach Vol, veh/h		1488			2561			1150			1553	
Approach Delay, s/veh		161.8			113.4			58.7			103.1	
Approach LOS		F			F			E			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	27.9	45.1	37.9	39.0	24.0	49.1	10.8	66.1
Change Period (Y+Rc), s	5.0	7.0	5.0	7.0	5.0	7.0	5.0	7.0
Max Green Setting (Gmax), s	27.0	34.0	33.0	32.0	19.0	42.0	7.0	58.0
Max Q Clear Time (g_c+I1), s	22.1	22.9	32.9	34.0	21.0	44.1	6.5	61.1
Green Ext Time (p_c), s	0.8	3.6	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	112.4
HCM 6th LOS	F

HCM 6th Signalized Intersection Summary

5: Park Avenue

02/04/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↱		↰↰	↱			↑↑	↱	↰↰	↑↱	
Traffic Volume (veh/h)	0	16	14	1003	180	63	0	1014	92	112	1529	16
Future Volume (veh/h)	0	16	14	1003	180	63	0	1014	92	112	1529	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.85	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	1870	0	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	17	15	1090	196	68	0	1102	100	122	1662	17
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	2	0	2	2	2	2	2
Cap, veh/h	0	22	20	945	346	120	0	1827	1248	166	2134	22
Arrive On Green	0.00	0.02	0.02	0.27	0.27	0.27	0.00	0.51	0.51	0.10	1.00	1.00
Sat Flow, veh/h	0	916	809	3456	1264	439	0	3647	1585	3456	3604	37
Grp Volume(v), veh/h	0	0	32	1090	0	264	0	1102	100	122	819	860
Grp Sat Flow(s),veh/h/ln	0	0	1725	1728	0	1703	0	1777	1585	1728	1777	1864
Q Serve(g_s), s	0.0	0.0	2.8	41.0	0.0	20.0	0.0	32.8	2.1	5.1	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	2.8	41.0	0.0	20.0	0.0	32.8	2.1	5.1	0.0	0.0
Prop In Lane	0.00		0.47	1.00		0.26	0.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	0	0	42	945	0	465	0	1827	1248	166	1052	1104
V/C Ratio(X)	0.00	0.00	0.76	1.15	0.00	0.57	0.00	0.60	0.08	0.73	0.78	0.78
Avail Cap(c_a), veh/h	0	0	207	945	0	465	0	1827	1248	267	1052	1104
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.28	0.28	0.28
Uniform Delay (d), s/veh	0.0	0.0	72.7	54.5	0.0	46.9	0.0	25.7	3.6	66.8	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	23.4	81.4	0.0	1.6	0.0	1.5	0.1	1.8	1.7	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	1.5	27.9	0.0	8.5	0.0	14.1	1.9	2.2	0.5	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	96.1	135.9	0.0	48.5	0.0	27.2	3.7	68.6	1.7	1.6
LnGrp LOS	A	A	F	F	A	D	A	C	A	E	A	A
Approach Vol, veh/h		32			1354			1202			1801	
Approach Delay, s/veh		96.1			118.9			25.2			6.2	
Approach LOS		F			F			C			A	

Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	11.7	83.1		8.2		94.8		47.0				
Change Period (Y+Rc), s	4.5	6.0		4.5		6.0		6.0				
Max Green Setting (Gmax), s	11.6	58.4		18.0		74.5		41.0				
Max Q Clear Time (g_c+I1), s	7.1	34.8		4.8		2.0		43.0				
Green Ext Time (p_c), s	0.1	8.9		0.1		17.7		0.0				

Intersection Summary			
HCM 6th Ctrl Delay			46.8
HCM 6th LOS			D

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                        HCS 2010: Freeway Weaving Release 6.65
Phone:                                      Fax:
E-mail:

______________________________Operational Analysis_____________________________

Analyst:                      VJS
Agency/Co.:                   IH
Date Performed:               Feb 2020
Analysis Time Period:         AM Peak - Alt 1
Freeway/Dir of Travel:        NJ 24 EB at CR 510
Weaving Location:             EB
Analysis Year:                2020
Description:                  NJ 24/CR 510 CD

___________________________________Inputs______________________________________

Segment Type                                Freeway
Weaving configuration                       One-Sided
Number of lanes, N                          3           ln
Weaving segment length, LS                  600         ft
Freeway free-flow speed, FFS                65          mi/h
Minimum segment speed, SMIN                 15          mi/h
Freeway maximum capacity, cIFL              2350        pc/h/ln

Terrain type                                Level
    Grade                                   0.00        %
    Length                                  0.00        mi

___________________Conversion to pc/h Under Base Conditions____________________
                                       Volume Components
                                      VFF     VRF     VFR     VRR
Volume, V                              3530    155     637     0    veh/h
Peak hour factor, PHF                  0.90    0.90    0.90    0.90
Peak 15-min volume, v15                981     43      177     0
Trucks and buses                       5       5       5       0         %
Recreational vehicles                  0       0       0       0         %
Trucks and buses PCE, ET               1.5     1.5     1.5     1.5
Recreational vehicle PCE, ER           1.2     1.2     1.2     1.2
Heavy vehicle adjustment, fHV          0.976   0.976   0.976   1.000
Driver population adjustment, fP       1.00    1.00    1.00    1.00
Flow rate, v                           4020    177     725     0     pc/h

Volume ratio, VR                               0.183

_________________________Configuration Characteristics_________________________
Number of maneuver lanes, NWL              2           ln
Interchange density, ID                    1.0         int/mi
Minimum RF lane changes, LCRF              1           lc/pc
Minimum FR lane changes, LCFR              1           lc/pc
Minimum RR lane changes, LCRR                          lc/pc

Minimum weaving lane changes, LCMIN        902         lc/h
Weaving lane changes, LCW                  1008        lc/h
Non-weaving vehicle index, INW             241
Non-weaving lane change, LCNW              576         lc/h
Total lane changes, LCALL                  1584        lc/h

_______________________Weaving and Non-Weaving Speeds__________________________
Weaving intensity factor, W                0.486
```

```
Average weaving speed, SW                  48.6       mi/h
Average non-weaving speed, SNW             50.6       mi/h

_________Weaving Segment Speed, Density, Level of Service and Capacity_________
Weaving segment speed, S                   50.3       mi/h
Weaving segment density, D                 32.6       pc/mi/ln
Level of service, LOS                      D
Weaving segment v/c ratio                  0.796
Weaving segment flow rate, v               4803       veh/h
Weaving segment capacity, cW               6035       veh/h

_______________________Limitations on Weaving Segments_________________________
If limit reached, see note.

                          Minimum       Maximum       Actual       Note
Weaving length (ft)          300            4366        600         a,b
                                        Maximum       Analyzed
Density-based capacty,                      2350        2062         c
cIWL (pc/h/ln)
                                        Maximum       Analyzed
v/c ratio                                   1.00        0.796        d

Notes:
a.  In weaving segments shorter than 300 ft, weaving vehicles are assumed to
    make only necessary lane changes.
b.  Weaving segments longer than the calculated maximum length should be
    treated as isolated merge and diverge areas using the procedures of
    Chapter 13, "Freeway Merge and Diverge Segments."
c.  The density-based capacity exceeds the capacity of a basic freeway segment,
    under equivalent ideal conditions.
d.  Volumes exceed the weaving segment capacity. The level of service is F.

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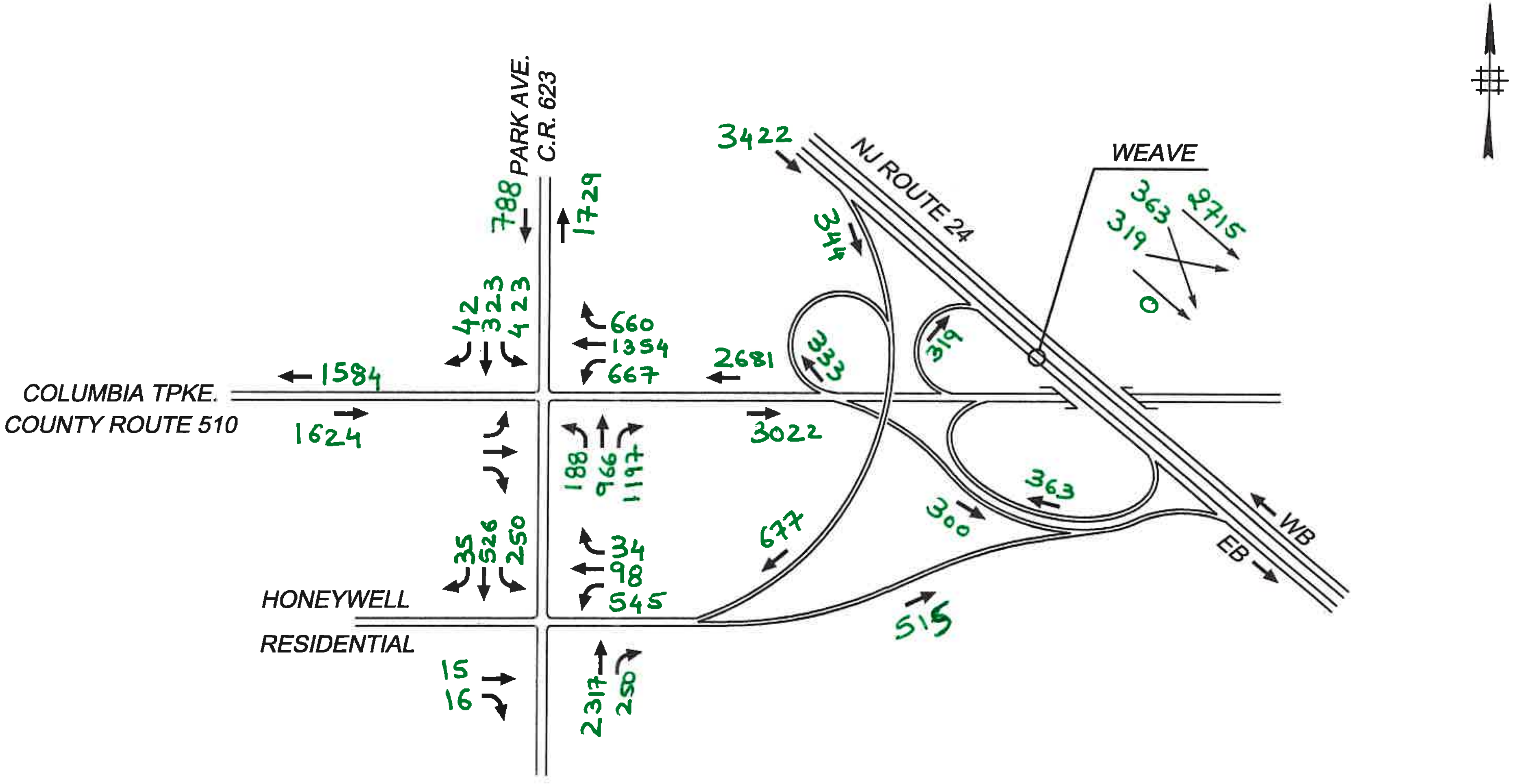
IH Engineers, P.C.

NJDOT CONCEPT DEVELOPMENT - COLUMBIA TURNPIKE (C.R. 510) AND NJ ROUTE 24
MORRIS COUNTY, NEW JERSEY



SCENARIO: Alt. 1
YEAR: 2020
PEAK HOUR: PM

N.T.S.

HCM 6th Signalized Intersection Summary
3: Park Avenue & Columbia Turnpike

02/04/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱↱	↰↰	↑↑	↱	↰	↑↑	↱↱	↰↰	↑↱	
Traffic Volume (veh/h)	103	1402	119	667	1354	660	188	966	1197	423	323	42
Future Volume (veh/h)	103	1402	119	667	1354	660	188	966	1197	423	323	42
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1885	1900	1870	1841	1811	1796	1856	1856	1885	1885	1885
Adj Flow Rate, veh/h	134	1491	138	749	1574	825	221	1178	1360	481	371	72
Peak Hour Factor	0.77	0.94	0.86	0.89	0.86	0.80	0.85	0.82	0.88	0.88	0.87	0.58
Percent Heavy Veh, %	2	1	0	2	4	6	7	3	3	1	1	1
Cap, veh/h	157	1279	1424	173	1116	724	249	947	882	533	827	159
Arrive On Green	0.09	0.36	0.36	0.05	0.32	0.32	0.05	0.09	0.09	0.15	0.28	0.28
Sat Flow, veh/h	1781	3582	2834	3456	3497	1535	1711	3526	2768	3483	2997	576
Grp Volume(v), veh/h	134	1491	138	749	1574	825	221	1178	1360	481	220	223
Grp Sat Flow(s),veh/h/ln	1781	1791	1417	1728	1749	1535	1711	1763	1384	1742	1791	1782
Q Serve(g_s), s	10.4	50.0	3.6	7.0	44.7	44.7	18.0	37.6	37.6	19.0	14.2	14.5
Cycle Q Clear(g_c), s	10.4	50.0	3.6	7.0	44.7	44.7	18.0	37.6	37.6	19.0	14.2	14.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.32
Lane Grp Cap(c), veh/h	157	1279	1424	173	1116	724	249	947	882	533	494	492
V/C Ratio(X)	0.85	1.17	0.10	4.33	1.41	1.14	0.89	1.24	1.54	0.90	0.45	0.45
Avail Cap(c_a), veh/h	165	1279	1424	173	1116	724	342	947	882	572	494	492
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.09	0.09	0.09	1.00	1.00	1.00
Uniform Delay (d), s/veh	62.9	45.0	18.2	66.5	47.7	37.0	65.5	63.8	58.6	58.3	41.8	41.9
Incr Delay (d2), s/veh	31.7	83.3	0.0	1514.1	190.2	78.7	2.2	110.8	244.8	17.0	2.9	3.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.0	36.3	1.1	39.3	48.1	38.8	8.5	32.5	45.6	9.6	6.7	6.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	94.7	128.3	18.2	1580.6	237.9	115.7	67.7	174.6	303.3	75.3	44.7	44.9
LnGrp LOS	F	F	B	F	F	F	E	F	F	E	D	D
Approach Vol, veh/h		1763			3148			2759			924	
Approach Delay, s/veh		117.2			525.3			229.5			60.7	
Approach LOS		F			F			F			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.4	44.6	12.0	57.0	25.4	45.6	17.3	51.7
Change Period (Y+Rc), s	5.0	7.0	5.0	7.0	5.0	7.0	5.0	7.0
Max Green Setting (Gmax), s	23.0	36.0	7.0	50.0	28.0	31.0	13.0	44.0
Max Q Clear Time (g_c+I1), s	21.0	39.6	9.0	52.0	20.0	16.5	12.4	46.7
Green Ext Time (p_c), s	0.4	0.0	0.0	0.0	0.4	2.2	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	296.7
HCM 6th LOS	F

HCM 6th Signalized Intersection Summary
5: Park Avenue & Alt 1 Ramp

02/04/2020

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↱		↰↰	↱			↑↑	↱	↰↰	↑↱	
Traffic Volume (veh/h)	0	15	16	545	98	34	0	2317	250	250	526	35
Future Volume (veh/h)	0	15	16	545	98	34	0	2317	250	250	526	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	1870	0	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	16	17	592	107	37	0	2518	272	272	572	38
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	2	0	2	2	2	2	2
Cap, veh/h	0	21	23	469	180	62	0	2118	1160	320	2437	162
Arrive On Green	0.00	0.03	0.03	0.14	0.14	0.14	0.00	0.60	0.60	0.19	1.00	1.00
Sat Flow, veh/h	0	830	882	3456	1328	459	0	3647	1585	3456	3382	224
Grp Volume(v), veh/h	0	0	33	592	0	144	0	2518	272	272	300	310
Grp Sat Flow(s),veh/h/ln	0	0	1712	1728	0	1788	0	1777	1585	1728	1777	1830
Q Serve(g_s), s	0.0	0.0	2.7	19.0	0.0	10.6	0.0	83.4	7.8	10.7	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	2.7	19.0	0.0	10.6	0.0	83.4	7.8	10.7	0.0	0.0
Prop In Lane	0.00		0.52	1.00		0.26	0.00		1.00	1.00		0.12
Lane Grp Cap(c), veh/h	0	0	44	469	0	243	0	2118	1160	320	1280	1319
V/C Ratio(X)	0.00	0.00	0.75	1.26	0.00	0.59	0.00	1.19	0.23	0.85	0.23	0.24
Avail Cap(c_a), veh/h	0	0	220	469	0	243	0	2118	1160	402	1280	1319
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.09	0.09	0.09
Uniform Delay (d), s/veh	0.0	0.0	67.7	60.5	0.0	56.9	0.0	28.3	6.1	56.1	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	21.8	134.3	0.0	3.8	0.0	90.1	0.5	1.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	1.4	16.8	0.0	4.9	0.0	59.5	4.3	4.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	89.5	194.8	0.0	60.7	0.0	118.4	6.6	57.5	0.0	0.0
LnGrp LOS	A	A	F	F	A	E	A	F	A	E	A	A
Approach Vol, veh/h		33			736			2790			882	
Approach Delay, s/veh		89.5			168.5			107.5			17.8	
Approach LOS		F			F			F			B	

Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	17.5	89.4		8.1		106.9		25.0				
Change Period (Y+Rc), s	4.5	6.0		4.5		6.0		6.0				
Max Green Setting (Gmax), s	16.3	65.7		18.0		86.5		19.0				
Max Q Clear Time (g_c+I1), s	12.7	85.4		4.7		2.0		21.0				
Green Ext Time (p_c), s	0.3	0.0		0.1		3.5		0.0				

Intersection Summary			
HCM 6th Ctrl Delay			99.7
HCM 6th LOS			F

```
                        HCS 2010: Freeway Weaving Release 6.65
Phone:                                      Fax:
E-mail:

______________________________Operational Analysis_____________________________

Analyst:                      VJS
Agency/Co.:                   IH
Date Performed:               Feb 2020
Analysis Time Period:         PM Peak - Alt 1
Freeway/Dir of Travel:        NJ 24 EB at CR 510
Weaving Location:             EB
Analysis Year:                2020
Description:                  NJ 24/CR 510 CD

___________________________________Inputs______________________________________

Segment Type                                Freeway
Weaving configuration                       One-Sided
Number of lanes, N                          3           ln
Weaving segment length, LS                  600         ft
Freeway free-flow speed, FFS                65          mi/h
Minimum segment speed, SMIN                 15          mi/h
Freeway maximum capacity, cIFL              2350        pc/h/ln

Terrain type                                Level
    Grade                                   0.00        %
    Length                                  0.00        mi

___________________Conversion to pc/h Under Base Conditions____________________
                                       Volume Components
                                      VFF     VRF     VFR     VRR
Volume, V                              2715    319     363     0    veh/h
Peak hour factor, PHF                  0.90    0.90    0.90    0.90
Peak 15-min volume, v15                754     89      101     0
Trucks and buses                       5       5       5       0         %
Recreational vehicles                  0       0       0       0         %
Trucks and buses PCE, ET               1.5     1.5     1.5     1.5
Recreational vehicle PCE, ER           1.2     1.2     1.2     1.2
Heavy vehicle adjustment, fHV          0.976   0.976   0.976   1.000
Driver population adjustment, fP       1.00    1.00    1.00    1.00
Flow rate, v                           3092    363     413     0     pc/h

Volume ratio, VR                               0.201

_________________________Configuration Characteristics_________________________
Number of maneuver lanes, NWL              2           ln
Interchange density, ID                    1.0         int/mi
Minimum RF lane changes, LCRF              1           lc/pc
Minimum FR lane changes, LCFR              1           lc/pc
Minimum RR lane changes, LCRR                          lc/pc

Minimum weaving lane changes, LCMIN        776         lc/h
Weaving lane changes, LCW                  882         lc/h
Non-weaving vehicle index, INW             186
Non-weaving lane change, LCNW              384         lc/h
Total lane changes, LCALL                  1266        lc/h

_______________________Weaving and Non-Weaving Speeds__________________________
Weaving intensity factor, W                0.407
```

```
Average weaving speed, SW                  50.5        mi/h
Average non-weaving speed, SNW             53.2        mi/h

_________Weaving Segment Speed, Density, Level of Service and Capacity_________
Weaving segment speed, S                   52.7        mi/h
Weaving segment density, D                 24.5        pc/mi/ln
Level of service, LOS                      C
Weaving segment v/c ratio                  0.630
Weaving segment flow rate, v               3775        veh/h
Weaving segment capacity, cW               5994        veh/h

_______________________Limitations on Weaving Segments_________________________
If limit reached, see note.

                          Minimum       Maximum       Actual       Note
Weaving length (ft)          300            4543        600         a,b
                                        Maximum       Analyzed
Density-based capacty,                      2350        2048         c
cIWL (pc/h/ln)
                                        Maximum       Analyzed
v/c ratio                                   1.00        0.630        d

Notes:
a.  In weaving segments shorter than 300 ft, weaving vehicles are assumed to
    make only necessary lane changes.
b.  Weaving segments longer than the calculated maximum length should be
    treated as isolated merge and diverge areas using the procedures of
    Chapter 13, "Freeway Merge and Diverge Segments."
c.  The density-based capacity exceeds the capacity of a basic freeway segment,
    under equivalent ideal conditions.
d.  Volumes exceed the weaving segment capacity. The level of service is F.

 ______________________________________________________________________________
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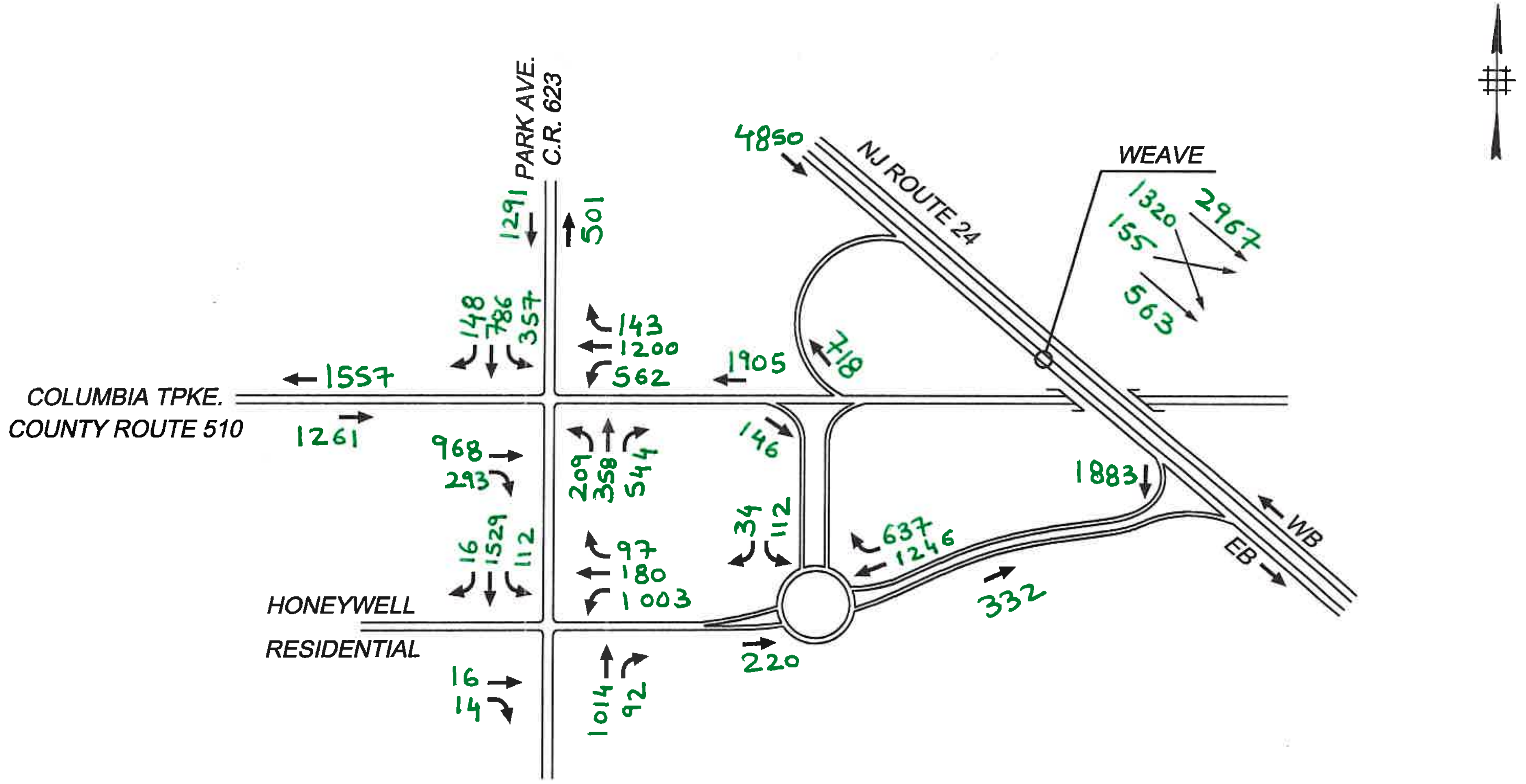
IH Engineers, P.C.

NJDOT CONCEPT DEVELOPMENT - COLUMBIA TURNPIKE (C.R. 510) AND NJ ROUTE 24
MORRIS COUNTY, NEW JERSEY



SCENARIO: Alt. 2
YEAR: 2020
PEAK HOUR: AM

N.T.S.

HCM 6th Signalized Intersection Summary
3: Park Avenue & Columbia Turnpike

02/04/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱↱	↰↰	↑↑	↱	↰	↑↑	↱↱	↰↰	↑↱	
Traffic Volume (veh/h)	0	968	293	562	1200	143	209	358	544	357	786	148
Future Volume (veh/h)	0	968	293	562	1200	143	209	358	544	357	786	148
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1885	1900	1870	1841	1811	1796	1856	1856	1885	1885	1885
Adj Flow Rate, veh/h	0	1052	419	721	1644	196	235	385	567	476	914	163
Peak Hour Factor	0.63	0.92	0.70	0.78	0.73	0.73	0.89	0.93	0.96	0.75	0.86	0.91
Percent Heavy Veh, %	0	1	0	2	4	6	7	3	3	1	1	1
Cap, veh/h	0	788	1039	691	1585	930	251	942	1293	533	830	148
Arrive On Green	0.00	0.22	0.22	0.20	0.45	0.45	0.24	0.45	0.45	0.15	0.27	0.27
Sat Flow, veh/h	0	3676	2834	3456	3497	1535	1711	3526	2768	3483	3037	541
Grp Volume(v), veh/h	0	1052	419	721	1644	196	235	385	567	476	539	538
Grp Sat Flow(s),veh/h/ln	0	1791	1417	1728	1749	1535	1711	1763	1384	1742	1791	1788
Q Serve(g_s), s	0.0	33.0	16.5	30.0	68.0	8.6	20.2	11.1	18.8	20.1	41.0	41.0
Cycle Q Clear(g_c), s	0.0	33.0	16.5	30.0	68.0	8.6	20.2	11.1	18.8	20.1	41.0	41.0
Prop In Lane	0.00		1.00	1.00		1.00	1.00		1.00	1.00		0.30
Lane Grp Cap(c), veh/h	0	788	1039	691	1585	930	251	942	1293	533	490	489
V/C Ratio(X)	0.00	1.34	0.40	1.04	1.04	0.21	0.94	0.41	0.44	0.89	1.10	1.10
Avail Cap(c_a), veh/h	0	788	1039	691	1585	930	251	942	1293	627	490	489
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	1.00	0.77	0.77	0.77	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	58.5	35.3	60.0	41.0	13.3	55.9	33.5	19.9	62.3	54.5	54.5
Incr Delay (d2), s/veh	0.0	159.4	0.3	46.0	32.8	0.1	33.7	1.0	0.8	13.7	71.0	71.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	32.2	5.6	17.2	34.7	2.9	10.4	4.5	4.8	9.9	27.9	27.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	217.9	35.6	106.0	73.8	13.4	89.6	34.5	20.7	76.1	125.5	125.7
LnGrp LOS	A	F	D	F	F	B	F	C	C	E	F	F
Approach Vol, veh/h		1471			2561			1187			1553	
Approach Delay, s/veh		165.9			78.2			38.8			110.4	
Approach LOS		F			E			D			F	

Timer - Assigned Phs	1	2	3	4	5	6		8
Phs Duration (G+Y+Rc), s	27.9	47.1	35.0	40.0	27.0	48.0		75.0
Change Period (Y+Rc), s	5.0	7.0	5.0	7.0	5.0	7.0		7.0
Max Green Setting (Gmax), s	27.0	36.0	30.0	33.0	22.0	41.0		68.0
Max Q Clear Time (g_c+I1), s	22.1	20.8	32.0	35.0	22.2	43.0		70.0
Green Ext Time (p_c), s	0.8	4.4	0.0	0.0	0.0	0.0		0.0

Intersection Summary			
HCM 6th Ctrl Delay			97.8
HCM 6th LOS			F

HCM 6th Signalized Intersection Summary
5: Park Avenue & Alt 2 Ramp

02/04/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↱		↰↰	↱			↑↑	↱	↰↰	↑↱	
Traffic Volume (veh/h)	0	30	9	1033	185	130	0	738	92	138	1745	3
Future Volume (veh/h)	0	30	9	1033	185	130	0	738	92	138	1745	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	1870	0	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	33	10	1123	201	141	0	802	100	150	1897	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	2	0	2	2	2	2	2
Cap, veh/h	0	43	13	991	293	206	0	1726	1224	194	2082	3
Arrive On Green	0.00	0.03	0.03	0.29	0.29	0.29	0.00	0.49	0.49	0.11	1.00	1.00
Sat Flow, veh/h	0	1378	417	3456	1023	718	0	3647	1585	3456	3640	6
Grp Volume(v), veh/h	0	0	43	1123	0	342	0	802	100	150	926	974
Grp Sat Flow(s),veh/h/ln	0	0	1795	1728	0	1741	0	1777	1585	1728	1777	1869
Q Serve(g_s), s	0.0	0.0	3.6	43.0	0.0	26.2	0.0	22.5	2.3	6.3	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	3.6	43.0	0.0	26.2	0.0	22.5	2.3	6.3	0.0	0.0
Prop In Lane	0.00		0.23	1.00		0.41	0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	0	56	991	0	499	0	1726	1224	194	1016	1069
V/C Ratio(X)	0.00	0.00	0.76	1.13	0.00	0.69	0.00	0.46	0.08	0.77	0.91	0.91
Avail Cap(c_a), veh/h	0	0	215	991	0	499	0	1726	1224	267	1016	1069
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.18	0.18	0.18
Uniform Delay (d), s/veh	0.0	0.0	72.1	53.5	0.0	47.5	0.0	25.6	4.1	65.6	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	18.9	72.8	0.0	3.9	0.0	0.9	0.1	1.7	3.0	2.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	1.9	28.0	0.0	11.6	0.0	9.7	2.0	2.7	0.9	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	91.0	126.3	0.0	51.4	0.0	26.5	4.3	67.4	3.0	2.9
LnGrp LOS	A	A	F	F	A	D	A	C	A	E	A	A
Approach Vol, veh/h		43			1465			902			2050	
Approach Delay, s/veh		91.0			108.8			24.0			7.7	
Approach LOS		F			F			C			A	

Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	12.9	78.9		9.2		91.8		49.0				
Change Period (Y+Rc), s	4.5	6.0		4.5		6.0		6.0				
Max Green Setting (Gmax), s	11.6	56.4		18.0		72.5		43.0				
Max Q Clear Time (g_c+I1), s	8.3	24.5		5.6		2.0		45.0				
Green Ext Time (p_c), s	0.1	6.6		0.1		23.9		0.0				

Intersection Summary			
HCM 6th Ctrl Delay			45.0
HCM 6th LOS			D

Intersection	
Intersection Delay, s/veh	73.4
Intersection LOS	F

Approach	EB	WB	SB	SW
Entry Lanes	1	2	1	0
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	239	2046	159	0
Demand Flow Rate, veh/h	244	2087	162	0
Vehicles Circulating, veh/h	124	0	1381	1381
Vehicles Exiting, veh/h	1419	368	0	706
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.8	85.8	15.5	0.0
Approach LOS	A	F	C	-

Lane	Left	Left	Right	Left
Designated Moves	LT	LT	R	LR
Assumed Moves	LT	LT	R	LR
RT Channelized				
Lane Util	1.000	0.662	0.338	1.000
Critical Headway, s	4.113	4.293	4.113	4.113
Entry Flow, veh/h	244	1381	706	162
Cap Entry Lane, veh/h	1036	1130	1130	430
Entry HV Adj Factor	0.980	0.980	0.980	0.981
Flow Entry, veh/h	239	1354	692	159
Cap Entry, veh/h	1016	1108	1108	422
V/C Ratio	0.236	1.222	0.625	0.377
Control Delay, s/veh	5.8	123.7	11.6	15.5
LOS	A	F	B	C
95th %tile Queue, veh	1	43	5	2

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                        HCS 2010: Freeway Weaving Release 6.65
Phone:                                      Fax:
E-mail:

______________________________Operational Analysis_____________________________

Analyst:                      VJS
Agency/Co.:                   IH
Date Performed:               Feb 2020
Analysis Time Period:         AM Peak
Freeway/Dir of Travel:        NJ 24 EB at CR 510
Weaving Location:             EB
Analysis Year:                2020
Description:                  NJ 24/CR 510 CD - ALT 2

___________________________________Inputs______________________________________

Segment Type                                Freeway
Weaving configuration                       One-Sided
Number of lanes, N                          3           ln
Weaving segment length, LS                  1050        ft
Freeway free-flow speed, FFS                65          mi/h
Minimum segment speed, SMIN                 15          mi/h
Freeway maximum capacity, cIFL              2350        pc/h/ln

Terrain type                                Level
    Grade                                   0.00        %
    Length                                  0.00        mi

___________________Conversion to pc/h Under Base Conditions____________________
                                       Volume Components
                                      VFF     VRF     VFR     VRR
Volume, V                              2967    155     1320    563  veh/h
Peak hour factor, PHF                  0.90    0.90    0.90    0.90
Peak 15-min volume, v15                824     43      367     156
Trucks and buses                       5       5       5       0         %
Recreational vehicles                  0       0       0       0         %
Trucks and buses PCE, ET               1.5     1.5     1.5     1.5
Recreational vehicle PCE, ER           1.2     1.2     1.2     1.2
Heavy vehicle adjustment, fHV          0.976   0.976   0.976   1.000
Driver population adjustment, fP       1.00    1.00    1.00    1.00
Flow rate, v                           3379    177     1503    626   pc/h

Volume ratio, VR                               0.296

_________________________Configuration Characteristics_________________________
Number of maneuver lanes, NWL              2           ln
Interchange density, ID                    1.0         int/mi
Minimum RF lane changes, LCRF              1           lc/pc
Minimum FR lane changes, LCFR              1           lc/pc
Minimum RR lane changes, LCRR                          lc/pc

Minimum weaving lane changes, LCMIN        1680        lc/h
Weaving lane changes, LCW                  1847        lc/h
Non-weaving vehicle index, INW             421
Non-weaving lane change, LCNW              816         lc/h
Total lane changes, LCALL                  2663        lc/h

_______________________Weaving and Non-Weaving Speeds__________________________
Weaving intensity factor, W                0.471
```

```
Average weaving speed, SW                  49.0        mi/h
Average non-weaving speed, SNW             43.8        mi/h

_________Weaving Segment Speed, Density, Level of Service and Capacity_________
Weaving segment speed, S                   45.2        mi/h
Weaving segment density, D                 41.9        pc/mi/ln
Level of service, LOS                      E
Weaving segment v/c ratio                  0.947
Weaving segment flow rate, v               5562        veh/h
Weaving segment capacity, cW               5874        veh/h

_______________________Limitations on Weaving Segments_________________________
If limit reached, see note.

                          Minimum       Maximum       Actual       Note
Weaving length (ft)          300            5536        1050        a,b
                                        Maximum       Analyzed
Density-based capacty,                      2350        2007         c
cIWL (pc/h/ln)
                                        Maximum       Analyzed
v/c ratio                                   1.00        0.947        d

Notes:
a.  In weaving segments shorter than 300 ft, weaving vehicles are assumed to
    make only necessary lane changes.
b.  Weaving segments longer than the calculated maximum length should be
    treated as isolated merge and diverge areas using the procedures of
    Chapter 13, "Freeway Merge and Diverge Segments."
c.  The density-based capacity exceeds the capacity of a basic freeway segment,
    under equivalent ideal conditions.
d.  Volumes exceed the weaving segment capacity. The level of service is F.

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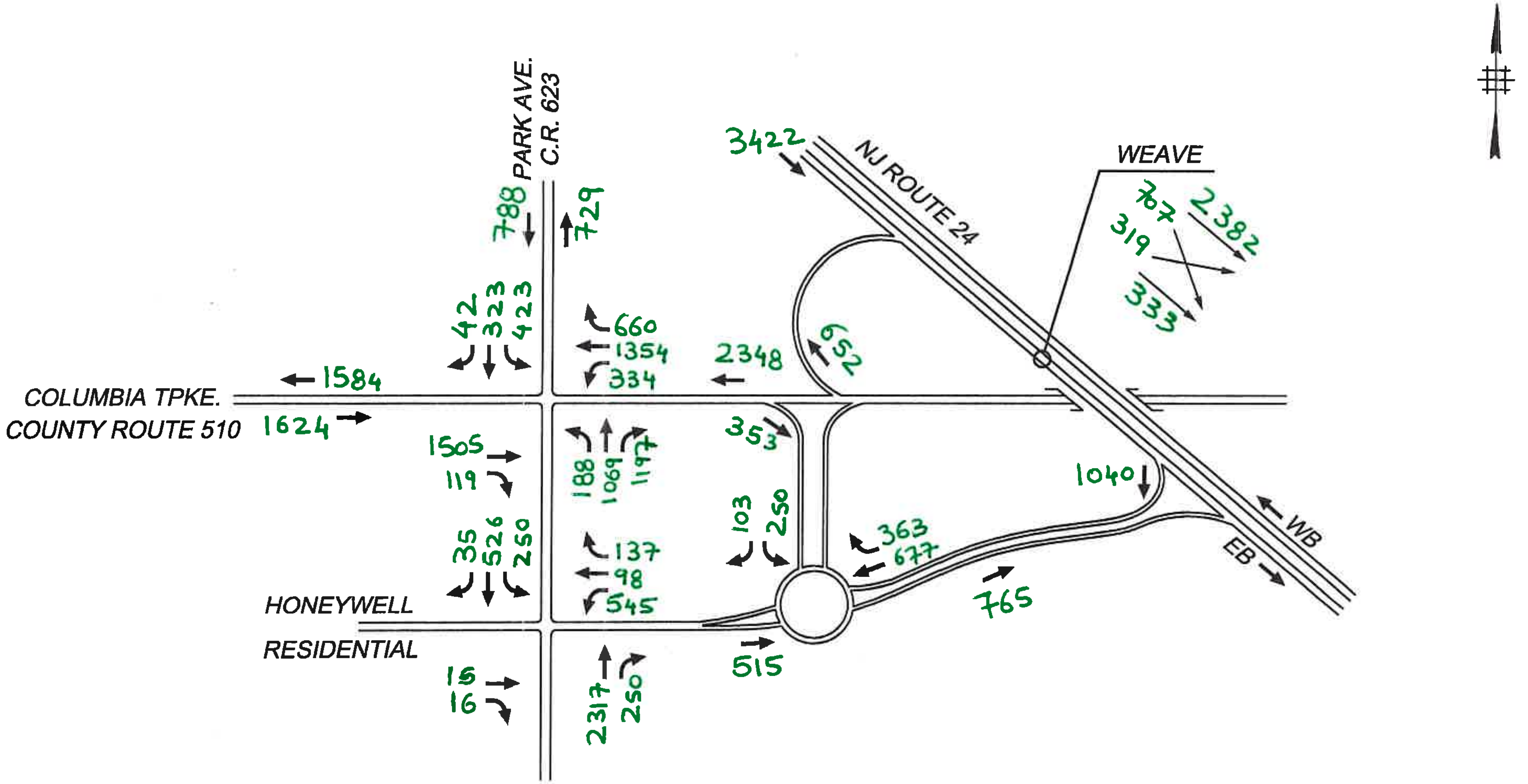
IH Engineers, P.C.

NJDOT CONCEPT DEVELOPMENT - COLUMBIA TURNPIKE (C.R. 510) AND NJ ROUTE 24
MORRIS COUNTY, NEW JERSEY



SCENARIO: Alt-2
YEAR: 2020
PEAK HOUR: PM

N.T.S.

HCM 6th Signalized Intersection Summary
3: Park Avenue & Columbia Turnpike

02/04/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱↱	↰↰	↑↑	↱	↰	↑↑	↱↱	↰↰	↑↱	
Traffic Volume (veh/h)	0	1505	119	334	1354	660	188	1069	1197	423	323	42
Future Volume (veh/h)	0	1505	119	334	1354	660	188	1069	1197	423	323	42
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1885	1900	1870	1841	1811	1796	1856	1856	1885	1885	1885
Adj Flow Rate, veh/h	0	1601	138	375	1574	825	221	1304	1360	481	371	72
Peak Hour Factor	0.77	0.94	0.86	0.89	0.86	0.80	0.85	0.82	0.88	0.88	0.87	0.58
Percent Heavy Veh, %	0	1	0	2	4	6	7	3	3	1	1	1
Cap, veh/h	0	1356	1483	173	1624	877	248	1032	949	373	765	147
Arrive On Green	0.00	0.38	0.38	0.05	0.46	0.46	0.05	0.10	0.10	0.11	0.26	0.26
Sat Flow, veh/h	0	3676	2834	3456	3497	1535	1711	3526	2768	3483	2997	576
Grp Volume(v), veh/h	0	1601	138	375	1574	825	221	1304	1360	481	220	223
Grp Sat Flow(s),veh/h/ln	0	1791	1417	1728	1749	1535	1711	1763	1384	1742	1791	1782
Q Serve(g_s), s	0.0	53.0	3.4	7.0	61.4	65.0	18.0	41.0	41.0	15.0	14.6	14.9
Cycle Q Clear(g_c), s	0.0	53.0	3.4	7.0	61.4	65.0	18.0	41.0	41.0	15.0	14.6	14.9
Prop In Lane	0.00		1.00	1.00		1.00	1.00		1.00	1.00		0.32
Lane Grp Cap(c), veh/h	0	1356	1483	173	1624	877	248	1032	949	373	457	455
V/C Ratio(X)	0.00	1.18	0.09	2.17	0.97	0.94	0.89	1.26	1.43	1.29	0.48	0.49
Avail Cap(c_a), veh/h	0	1356	1483	173	1624	877	305	1032	949	373	457	455
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	1.00	0.09	0.09	0.09	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	43.5	16.7	66.5	36.5	27.8	65.6	63.2	57.8	62.5	44.3	44.4
Incr Delay (d2), s/veh	0.0	89.2	0.0	545.3	15.6	17.7	2.9	119.1	195.5	148.8	3.6	3.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	39.5	1.1	16.1	27.9	27.3	8.5	36.6	42.6	14.3	6.9	7.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	132.7	16.8	611.8	52.2	45.5	68.5	182.3	253.3	211.3	47.9	48.1
LnGrp LOS	A	F	B	F	D	D	E	F	F	F	D	D
Approach Vol, veh/h		1739			2774			2885			924	
Approach Delay, s/veh		123.5			125.8			207.1			133.0	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6		8
Phs Duration (G+Y+Rc), s	20.0	48.0	12.0	60.0	25.3	42.7		72.0
Change Period (Y+Rc), s	5.0	7.0	5.0	7.0	5.0	7.0		7.0
Max Green Setting (Gmax), s	15.0	41.0	7.0	53.0	25.0	31.0		65.0
Max Q Clear Time (g_c+I1), s	17.0	43.0	9.0	55.0	20.0	16.9		67.0
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.3	2.1		0.0

Intersection Summary	
HCM 6th Ctrl Delay	154.3
HCM 6th LOS	F

HCM 6th Signalized Intersection Summary
5: Park Avenue & Alt 2 Ramp

02/04/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↱		↰↰	↱			↑↑	↱	↰↰	↑↱	
Traffic Volume (veh/h)	0	15	16	545	98	137	0	2317	250	250	526	35
Future Volume (veh/h)	0	15	16	545	98	137	0	2317	250	250	526	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	1870	0	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	16	17	592	107	149	0	2518	272	272	572	38
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	2	0	2	2	2	2	2
Cap, veh/h	0	21	23	469	96	134	0	2118	1160	320	2437	162
Arrive On Green	0.00	0.03	0.03	0.14	0.14	0.14	0.00	0.60	0.60	0.19	1.00	1.00
Sat Flow, veh/h	0	830	882	3456	708	985	0	3647	1585	3456	3382	224
Grp Volume(v), veh/h	0	0	33	592	0	256	0	2518	272	272	300	310
Grp Sat Flow(s),veh/h/ln	0	0	1712	1728	0	1693	0	1777	1585	1728	1777	1830
Q Serve(g_s), s	0.0	0.0	2.7	19.0	0.0	19.0	0.0	83.4	7.8	10.7	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	2.7	19.0	0.0	19.0	0.0	83.4	7.8	10.7	0.0	0.0
Prop In Lane	0.00		0.52	1.00		0.58	0.00		1.00	1.00		0.12
Lane Grp Cap(c), veh/h	0	0	44	469	0	230	0	2118	1160	320	1280	1319
V/C Ratio(X)	0.00	0.00	0.75	1.26	0.00	1.11	0.00	1.19	0.23	0.85	0.23	0.24
Avail Cap(c_a), veh/h	0	0	220	469	0	230	0	2118	1160	402	1280	1319
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.09	0.09	0.09
Uniform Delay (d), s/veh	0.0	0.0	67.7	60.5	0.0	60.5	0.0	28.3	6.1	56.1	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	21.8	134.3	0.0	93.4	0.0	90.1	0.5	1.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	1.4	16.8	0.0	13.9	0.0	59.5	4.3	4.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	89.5	194.8	0.0	153.9	0.0	118.4	6.6	57.5	0.0	0.0
LnGrp LOS	A	A	F	F	A	F	A	F	A	E	A	A
Approach Vol, veh/h		33			848			2790			882	
Approach Delay, s/veh		89.5			182.4			107.5			17.8	
Approach LOS		F			F			F			B	

Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	17.5	89.4		8.1		106.9		25.0				
Change Period (Y+Rc), s	4.5	6.0		4.5		6.0		6.0				
Max Green Setting (Gmax), s	16.3	65.7		18.0		86.5		19.0				
Max Q Clear Time (g_c+I1), s	12.7	85.4		4.7		2.0		21.0				
Green Ext Time (p_c), s	0.3	0.0		0.1		3.5		0.0				

Intersection Summary			
HCM 6th Ctrl Delay			104.0
HCM 6th LOS			F

HCM 2010 Roundabout
15: Alt 2 Ramp

02/12/2020

Intersection	
Intersection Delay, s/veh	12.3
Intersection LOS	B

Approach	EB	WB	SB	SW
Entry Lanes	1	2	1	0
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	560	1131	384	0
Demand Flow Rate, veh/h	571	1154	391	0
Vehicles Circulating, veh/h	277	0	751	751
Vehicles Exiting, veh/h	865	848	0	403
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	13.1	10.7	15.9	0.0
Approach LOS	B	B	C	-

Lane	Left	Left	Right	Left
Designated Moves	LT	LT	R	LR
Assumed Moves	LT	LT	R	LR
RT Channelized				
Lane Util	1.000	0.651	0.349	1.000
Critical Headway, s	4.113	4.293	4.113	4.113
Entry Flow, veh/h	571	751	403	391
Cap Entry Lane, veh/h	931	1130	1130	668
Entry HV Adj Factor	0.980	0.980	0.980	0.982
Flow Entry, veh/h	560	736	395	384
Cap Entry, veh/h	913	1108	1108	656
V/C Ratio	0.613	0.665	0.357	0.585
Control Delay, s/veh	13.1	12.8	6.8	15.9
LOS	B	B	A	C
95th %tile Queue, veh	4	5	2	4

```
                        HCS 2010: Freeway Weaving Release 6.65
Phone:                                      Fax:
E-mail:

______________________________Operational Analysis_____________________________

Analyst:                      VJS
Agency/Co.:                   IH
Date Performed:               Feb 2020
Analysis Time Period:         PM Peak
Freeway/Dir of Travel:        NJ 24 EB at CR 510
Weaving Location:             EB
Analysis Year:                2020
Description:                  NJ 24/CR 510 CD - ALT 2

___________________________________Inputs______________________________________

Segment Type                                Freeway
Weaving configuration                       One-Sided
Number of lanes, N                          3           ln
Weaving segment length, LS                  1050        ft
Freeway free-flow speed, FFS                65          mi/h
Minimum segment speed, SMIN                 15          mi/h
Freeway maximum capacity, cIFL              2350        pc/h/ln

Terrain type                                Level
    Grade                                   0.00        %
    Length                                  0.00        mi

___________________Conversion to pc/h Under Base Conditions____________________
                                       Volume Components
                                      VFF     VRF     VFR     VRR
Volume, V                              2382    319     707     333  veh/h
Peak hour factor, PHF                  0.90    0.90    0.90    0.90
Peak 15-min volume, v15                662     89      196     93
Trucks and buses                       5       5       5       0          %
Recreational vehicles                  0       0       0       0          %
Trucks and buses PCE, ET               1.5     1.5     1.5     1.5
Recreational vehicle PCE, ER           1.2     1.2     1.2     1.2
Heavy vehicle adjustment, fHV          0.976   0.976   0.976   1.000
Driver population adjustment, fP       1.00    1.00    1.00    1.00
Flow rate, v                           2713    363     805     370   pc/h

Volume ratio, VR                               0.275

_________________________Configuration Characteristics_________________________
Number of maneuver lanes, NWL              2           ln
Interchange density, ID                    1.0         int/mi
Minimum RF lane changes, LCRF              1           lc/pc
Minimum FR lane changes, LCFR              1           lc/pc
Minimum RR lane changes, LCRR                          lc/pc

Minimum weaving lane changes, LCMIN        1168        lc/h
Weaving lane changes, LCW                  1335        lc/h
Non-weaving vehicle index, INW             324
Non-weaving lane change, LCNW              626         lc/h
Total lane changes, LCALL                  1961        lc/h

_______________________Weaving and Non-Weaving Speeds__________________________
Weaving intensity factor, W                0.370
```

```
Average weaving speed, SW                    51.5        mi/h
Average non-weaving speed, SNW               49.8        mi/h

_________Weaving Segment Speed, Density, Level of Service and Capacity_________
Weaving segment speed, S                     50.2        mi/h
Weaving segment density, D                   28.2        pc/mi/ln
Level of service, LOS                        D
Weaving segment v/c ratio                    0.702
Weaving segment flow rate, v                 4157        veh/h
Weaving segment capacity, cW                 5924        veh/h

_______________________Limitations on Weaving Segments_________________________
If limit reached, see note.

                          Minimum       Maximum       Actual       Note
Weaving length (ft)          300           5315        1050         a,b
                                        Maximum       Analyzed
Density-based capacty,                     2350        2024          c
cIWL (pc/h/ln)
                                        Maximum       Analyzed
v/c ratio                                  1.00        0.702         d

Notes:
a.  In weaving segments shorter than 300 ft, weaving vehicles are assumed to
    make only necessary lane changes.
b.  Weaving segments longer than the calculated maximum length should be
    treated as isolated merge and diverge areas using the procedures of
    Chapter 13, "Freeway Merge and Diverge Segments."
c.  The density-based capacity exceeds the capacity of a basic freeway segment,
    under equivalent ideal conditions.
d.  Volumes exceed the weaving segment capacity. The level of service is F.

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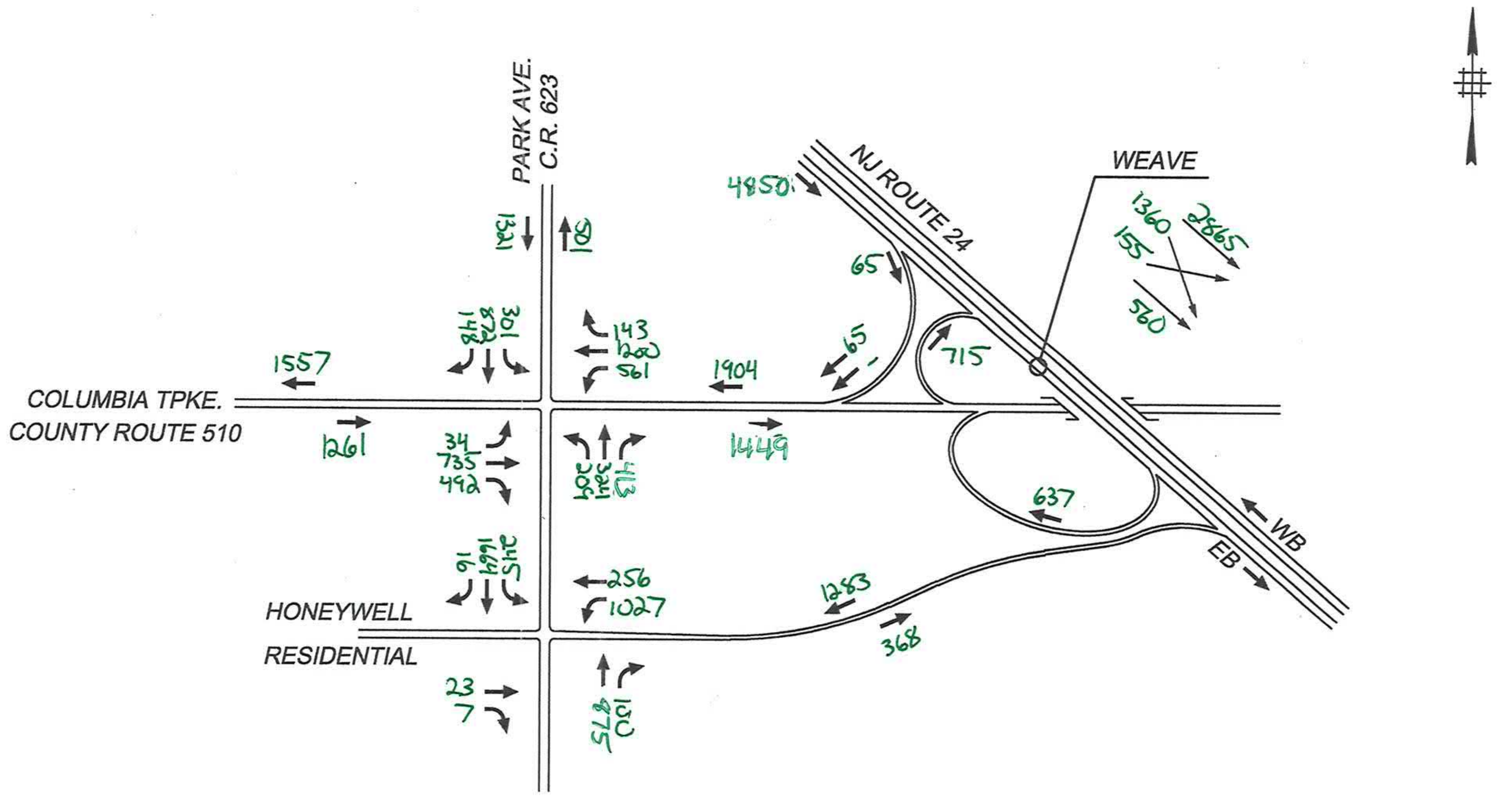
IH Engineers, P.C.

NJDOT CONCEPT DEVELOPMENT - COLUMBIA TURNPIKE (C.R. 510) AND NJ ROUTE 24
MORRIS COUNTY, NEW JERSEY



SCENARIO: Alt. 3
YEAR: 2020
PEAK HOUR: AM

N.T.S.

HCM 6th Signalized Intersection Summary
3: Park Avenue & Columbia Turnpike

01/21/2020

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱↱	↰↰	↑↑	↱	↰	↑↑	↱↱	↰↰	↑↑↱	
Traffic Volume (veh/h)	34	735	492	561	1200	143	209	324	413	301	872	148
Future Volume (veh/h)	34	735	492	561	1200	143	209	324	413	301	872	148
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1885	1900	1870	1841	1811	1796	1856	1856	1885	1885	1885
Adj Flow Rate, veh/h	54	799	703	719	1644	196	235	348	430	401	1014	163
Peak Hour Factor	0.63	0.92	0.70	0.78	0.73	0.73	0.89	0.93	0.96	0.75	0.86	0.91
Percent Heavy Veh, %	2	1	0	2	4	6	7	3	3	1	1	1
Cap, veh/h	69	810	905	781	1446	836	160	904	1335	458	910	146
Arrive On Green	0.04	0.23	0.23	0.23	0.41	0.41	0.09	0.26	0.26	0.13	0.29	0.29
Sat Flow, veh/h	1781	3582	2834	3456	3497	1535	1711	3526	2768	3483	3091	496
Grp Volume(v), veh/h	54	799	703	719	1644	196	235	348	430	401	587	590
Grp Sat Flow(s),veh/h/ln	1781	1791	1417	1728	1749	1535	1711	1763	1384	1742	1791	1796
Q Serve(g_s), s	4.5	33.3	33.7	30.5	62.0	10.0	14.0	12.2	14.3	16.9	44.2	44.2
Cycle Q Clear(g_c), s	4.5	33.3	33.7	30.5	62.0	10.0	14.0	12.2	14.3	16.9	44.2	44.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.28
Lane Grp Cap(c), veh/h	69	810	905	781	1446	836	160	904	1335	458	527	529
V/C Ratio(X)	0.78	0.99	0.78	0.92	1.14	0.23	1.47	0.39	0.32	0.88	1.11	1.12
Avail Cap(c_a), veh/h	95	810	905	875	1446	836	160	904	1335	581	527	529
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	71.4	57.8	46.2	56.7	44.0	17.8	68.0	46.0	23.8	63.9	52.9	52.9
Incr Delay (d2), s/veh	24.0	28.1	4.3	13.8	70.8	0.1	243.0	1.2	0.6	11.8	74.0	74.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	18.0	12.0	14.4	39.6	3.4	16.9	5.5	4.6	8.2	30.5	30.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	95.4	86.0	50.5	70.6	114.8	18.0	311.0	47.3	24.4	75.7	127.0	127.7
LnGrp LOS	F	F	D	E	F	B	F	D	C	E	F	F
Approach Vol, veh/h		1556			2559			1013			1578	
Approach Delay, s/veh		70.3			94.9			98.8			114.2	
Approach LOS		E			F			F			F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	24.7	45.4	38.9	40.9	19.0	51.2	10.8	69.0				
Change Period (Y+Rc), s	5.0	7.0	5.0	7.0	5.0	7.0	5.0	7.0				
Max Green Setting (Gmax), s	25.0	31.0	38.0	32.0	14.0	42.0	8.0	62.0				
Max Q Clear Time (g_c+I1), s	18.9	16.3	32.5	35.7	16.0	46.2	6.5	64.0				
Green Ext Time (p_c), s	0.8	3.5	1.4	0.0	0.0	0.0	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay			94.3									
HCM 6th LOS			F									

HCM 6th Signalized Intersection Summary
12: Park Avenue & Alt 3 Ramp

01/21/2020

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↱		↰↰	↱			↑↑	↱	↰↰	↑↱	
Traffic Volume (veh/h)	0	23	7	1027	256	1	0	875	100	245	1664	16
Future Volume (veh/h)	0	23	7	1027	256	1	0	875	100	245	1664	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	1870	0	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	25	8	1116	278	1	0	951	109	266	1809	17
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	2	0	2	2	2	2	2
Cap, veh/h	0	45	14	1002	658	2	0	1651	1196	319	2116	20
Arrive On Green	0.00	0.03	0.03	0.29	0.35	0.35	0.00	0.46	0.46	0.09	0.59	0.59
Sat Flow, veh/h	0	1358	434	3456	1862	7	0	3647	1585	3456	3607	34
Grp Volume(v), veh/h	0	0	33	1116	0	279	0	951	109	266	890	936
Grp Sat Flow(s),veh/h/ln	0	0	1792	1728	0	1869	0	1777	1585	1728	1777	1864
Q Serve(g_s), s	0.0	0.0	2.7	43.5	0.0	17.0	0.0	29.4	2.7	11.4	62.2	62.5
Cycle Q Clear(g_c), s	0.0	0.0	2.7	43.5	0.0	17.0	0.0	29.4	2.7	11.4	62.2	62.5
Prop In Lane	0.00		0.24	1.00		0.00	0.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	0	0	60	1002	0	660	0	1651	1196	319	1042	1094
V/C Ratio(X)	0.00	0.00	0.55	1.11	0.00	0.42	0.00	0.58	0.09	0.84	0.85	0.86
Avail Cap(c_a), veh/h	0	0	215	1002	0	822	0	1651	1196	463	1042	1094
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	71.4	53.2	0.0	36.9	0.0	29.4	4.9	67.0	25.7	25.7
Incr Delay (d2), s/veh	0.0	0.0	7.7	65.0	0.0	0.4	0.0	1.5	0.2	8.5	8.9	8.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	1.4	27.2	0.0	7.7	0.0	12.8	0.8	5.3	26.5	27.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	79.1	118.2	0.0	37.3	0.0	30.8	5.0	75.5	34.6	34.4
LnGrp LOS	A	A	E	F	A	D	A	C	A	E	C	C
Approach Vol, veh/h		33			1395			1060			2092	
Approach Delay, s/veh		79.1			102.0			28.2			39.7	
Approach LOS		E			F			C			D	
Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	18.3	74.2	48.0	9.5		92.5		57.5				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s	20.1	50.4	43.5	18.0		75.0		66.0				
Max Q Clear Time (g_c+I1), s	13.4	31.4	45.5	4.7		64.5		19.0				
Green Ext Time (p_c), s	0.5	6.9	0.0	0.1		7.7		1.5				
Intersection Summary												
HCM 6th Ctrl Delay			56.3									
HCM 6th LOS			E									

```
                        HCS 2010: Freeway Weaving Release 6.65
Phone:                                      Fax:
E-mail:

______________________________Operational Analysis_____________________________

Analyst:                      SMC
Agency/Co.:                   IH
Date Performed:               Dec 2019
Analysis Time Period:         AM Peak
Freeway/Dir of Travel:        NJ 24 EB at CR 510
Weaving Location:             EB
Analysis Year:                2020
Description:                  NJ 24/CR 510 CD - Alt 3

___________________________________Inputs______________________________________

Segment Type                                Freeway
Weaving configuration                       One-Sided
Number of lanes, N                          3           ln
Weaving segment length, LS                  600         ft
Freeway free-flow speed, FFS                65          mi/h
Minimum segment speed, SMIN                 15          mi/h
Freeway maximum capacity, cIFL              2350        pc/h/ln

Terrain type                                Level
    Grade                                   0.00        %
    Length                                  0.00        mi

___________________Conversion to pc/h Under Base Conditions____________________
                                       Volume Components
                                      VFF     VRF     VFR     VRR
Volume, V                              2865    155     1360    560  veh/h
Peak hour factor, PHF                  0.90    0.90    0.90    0.90
Peak 15-min volume, v15                796     43      378     156
Trucks and buses                       5       5       5       0         %
Recreational vehicles                  0       0       0       0         %
Trucks and buses PCE, ET               1.5     1.5     1.5     1.5
Recreational vehicle PCE, ER           1.2     1.2     1.2     1.2
Heavy vehicle adjustment, fHV          0.976   0.976   0.976   1.000
Driver population adjustment, fP       1.00    1.00    1.00    1.00
Flow rate, v                           3263    177     1549    622   pc/h

Volume ratio, VR                               0.308

_________________________Configuration Characteristics_________________________
Number of maneuver lanes, NWL              2           ln
Interchange density, ID                    1.0         int/mi
Minimum RF lane changes, LCRF              1           lc/pc
```

```
Minimum FR lane changes, LCFR              1           lc/pc
Minimum RR lane changes, LCRR                          lc/pc

Minimum weaving lane changes, LCMIN        1726        lc/h
Weaving lane changes, LCW                  1832        lc/h
Non-weaving vehicle index, INW             233
Non-weaving lane change, LCNW              548         lc/h
Total lane changes, LCALL                  2380        lc/h

_______________________Weaving and Non-Weaving Speeds__________________________
Weaving intensity factor, W               0.670
Average weaving speed, SW                  44.9        mi/h
Average non-weaving speed, SNW             43.6        mi/h

_________Weaving Segment Speed, Density, Level of Service and Capacity_________
Weaving segment speed, S                   44.0        mi/h
Weaving segment density, D                 42.5        pc/mi/ln
Level of service, LOS                      E
Weaving segment v/c ratio                 0.956
Weaving segment flow rate, v               5489        veh/h
Weaving segment capacity, cW               5742        veh/h

_______________________Limitations on Weaving Segments________________________
If limit reached, see note.

                          Minimum       Maximum       Actual       Note
Weaving length (ft)          300           5666         600         a,b
                                        Maximum       Analyzed
Density-based capacty,                     2350         1962         c
cIWL (pc/h/ln)
                                        Maximum       Analyzed
v/c ratio                                  1.00         0.956        d

Notes:
a.  In weaving segments shorter than 300 ft, weaving vehicles are assumed to
    make only necessary lane changes.
b.  Weaving segments longer than the calculated maximum length should be
    treated as isolated merge and diverge areas using the procedures of
    Chapter 13, "Freeway Merge and Diverge Segments."
c.  The density-based capacity exceeds the capacity of a basic freeway segment,
    under equivalent ideal conditions.
d.  Volumes exceed the weaving segment capacity. The level of service is F.

 _____________________________________________________________________________
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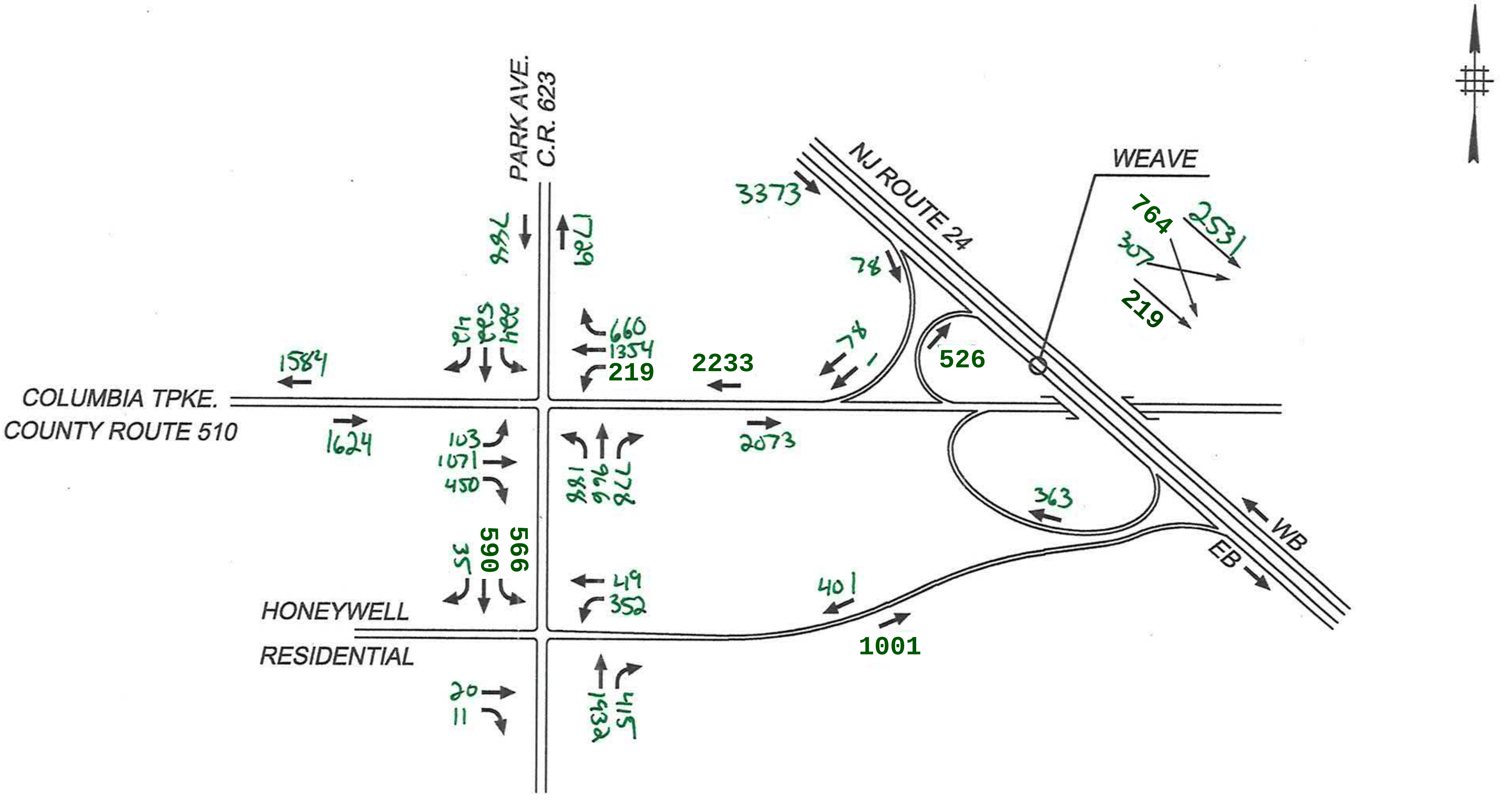
IH Engineers, P.C.

NJDOT CONCEPT DEVELOPMENT - COLUMBIA TURNPIKE (C.R. 510) AND NJ ROUTE 24
MORRIS COUNTY, NEW JERSEY



SCENARIO: A4.3
YEAR: 2020
PEAK HOUR: PM

N.T.S.

HCM 6th Signalized Intersection Summary
3: Park Avenue & Columbia Turnpike

09/22/2020

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱↱	↰↰	↑↑	↱	↰	↑↑	↱↱	↰↰	↑↱	
Traffic Volume (veh/h)	103	1071	450	219	1354	660	188	966	778	224	522	42
Future Volume (veh/h)	103	1071	450	219	1354	660	188	966	778	224	522	42
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1885	1900	1870	1841	1811	1796	1856	1856	1885	1885	1885
Adj Flow Rate, veh/h	134	1139	523	246	1574	825	221	1178	884	255	600	72
Peak Hour Factor	0.77	0.94	0.86	0.89	0.86	0.80	0.85	0.82	0.88	0.88	0.87	0.58
Percent Heavy Veh, %	2	1	0	2	4	6	7	3	3	1	1	1
Cap, veh/h	131	1271	1407	294	1282	695	242	1106	1104	300	833	100
Arrive On Green	0.07	0.35	0.35	0.09	0.37	0.37	0.14	0.31	0.31	0.09	0.26	0.26
Sat Flow, veh/h	1781	3582	2834	3456	3497	1535	1711	3526	2768	3483	3221	386
Grp Volume(v), veh/h	134	1139	523	246	1574	825	221	1178	884	255	333	339
Grp Sat Flow(s),veh/h/ln	1781	1791	1417	1728	1749	1535	1711	1763	1384	1742	1791	1816
Q Serve(g_s), s	11.0	45.1	17.1	10.5	55.0	55.0	19.1	47.1	42.3	10.8	25.4	25.5
Cycle Q Clear(g_c), s	11.0	45.1	17.1	10.5	55.0	55.0	19.1	47.1	42.3	10.8	25.4	25.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.21
Lane Grp Cap(c), veh/h	131	1271	1407	294	1282	695	242	1106	1104	300	463	469
V/C Ratio(X)	1.03	0.90	0.37	0.84	1.23	1.19	0.91	1.06	0.80	0.85	0.72	0.72
Avail Cap(c_a), veh/h	131	1271	1407	369	1282	695	262	1106	1104	325	463	469
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	69.5	45.8	23.3	67.6	47.5	41.0	63.5	51.5	39.8	67.6	50.7	50.7
Incr Delay (d2), s/veh	85.8	8.6	0.2	12.7	109.4	98.2	32.3	46.1	6.1	17.7	9.3	9.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.1	21.2	5.5	5.1	42.4	43.1	10.5	27.6	14.7	5.5	12.6	12.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	155.3	54.4	23.5	80.3	156.9	139.2	95.7	97.6	45.9	85.3	59.9	60.0
LnGrp LOS	F	D	C	F	F	F	F	F	D	F	E	E
Approach Vol, veh/h		1796			2645			2283			927	
Approach Delay, s/veh		52.9			144.3			77.4			66.9	
Approach LOS		D			F			E			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.9	54.1	17.8	60.2	26.2	45.8	16.0	62.0				
Change Period (Y+Rc), s	5.0	7.0	5.0	7.0	5.0	7.0	5.0	7.0				
Max Green Setting (Gmax), s	14.0	46.0	16.0	50.0	23.0	37.0	11.0	55.0				
Max Q Clear Time (g_c+I1), s	12.8	49.1	12.5	47.1	21.1	27.5	13.0	57.0				
Green Ext Time (p_c), s	0.1	0.0	0.3	2.2	0.1	2.8	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay			93.5									
HCM 6th LOS			F									

HCM 6th Signalized Intersection Summary
12: Park Avenue & Alt 3 Ramp

09/24/2020

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↱		↰↰	↱			↑↑	↱	↰↰	↑↱	
Traffic Volume (veh/h)	0	20	11	352	49	1	0	1932	415	566	590	35
Future Volume (veh/h)	0	20	11	352	49	1	0	1932	415	566	590	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	1870	0	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	22	12	383	53	1	0	2100	451	615	641	38
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	2	0	2	2	2	2	2
Cap, veh/h	0	39	21	392	330	6	0	1898	1026	654	2575	153
Arrive On Green	0.00	0.03	0.03	0.11	0.18	0.18	0.00	0.53	0.53	0.19	0.76	0.76
Sat Flow, veh/h	0	1138	621	3456	1830	35	0	3647	1585	3456	3409	202
Grp Volume(v), veh/h	0	0	34	383	0	54	0	2100	451	615	334	345
Grp Sat Flow(s),veh/h/ln	0	0	1759	1728	0	1864	0	1777	1585	1728	1777	1834
Q Serve(g_s), s	0.0	0.0	2.7	15.5	0.0	3.4	0.0	74.8	19.6	24.6	7.9	7.9
Cycle Q Clear(g_c), s	0.0	0.0	2.7	15.5	0.0	3.4	0.0	74.8	19.6	24.6	7.9	7.9
Prop In Lane	0.00		0.35	1.00		0.02	0.00		1.00	1.00		0.11
Lane Grp Cap(c), veh/h	0	0	61	392	0	336	0	1898	1026	654	1342	1386
V/C Ratio(X)	0.00	0.00	0.56	0.98	0.00	0.16	0.00	1.11	0.44	0.94	0.25	0.25
Avail Cap(c_a), veh/h	0	0	226	392	0	511	0	1898	1026	654	1342	1386
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	66.5	61.9	0.0	48.4	0.0	32.6	12.2	56.0	5.2	5.2
Incr Delay (d2), s/veh	0.0	0.0	7.8	38.9	0.0	0.2	0.0	56.3	1.4	21.7	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	1.3	8.7	0.0	1.6	0.0	45.5	6.6	12.3	2.5	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	74.4	100.8	0.0	48.7	0.0	89.0	13.5	77.7	5.6	5.6
LnGrp LOS	A	A	E	F	A	D	A	F	B	E	A	A
Approach Vol, veh/h		34			437			2551			1294	
Approach Delay, s/veh		74.4			94.3			75.6			39.8	
Approach LOS		E			F			E			D	
Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	31.0	79.3	20.4	9.3		110.3		29.7				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s	26.5	61.6	15.9	18.0		92.6		38.4				
Max Q Clear Time (g_c+I1), s	26.6	76.8	17.5	4.7		9.9		5.4				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.1		4.0		0.2				
Intersection Summary												
HCM 6th Ctrl Delay			66.8									
HCM 6th LOS			E									

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                         HCS 2010: Freeway Weaving Release 6.65
Phone:                                     Fax:
E-mail:

______________________________Operational Analysis_____________________________

Analyst:                     BMS
Agency/Co.:                  IH
Date Performed:              2020
Analysis Time Period:        PM Peak
Freeway/Dir of Travel:       NJ 24 EB at CR 510
Weaving Location:            EB
Analysis Year:               2020
Description:                 NJ 24/CR 510 CD - Alt 3

___________________________________Inputs______________________________________

Segment Type                                 Freeway
Weaving configuration                        One-Sided
Number of lanes, N                           3          ln
Weaving segment length, LS                   600        ft
Freeway free-flow speed, FFS                 65         mi/h
Minimum segment speed, SMIN                  15         mi/h
Freeway maximum capacity, cIFL               2350       pc/h/ln

Terrain type                                 Level
    Grade                                    0.00       %
    Length                                   0.00       mi

___________________Conversion to pc/h Under Base Conditions___________________
                                        Volume Components
                                       VFF     VRF     VFR     VRR
Volume, V                               2531    307     764     219   veh/h
Peak hour factor, PHF                   0.90    0.90    0.90    0.90
Peak 15-min volume, v15                 703     85      212     61
Trucks and buses                        5       5       5       0           %
Recreational vehicles                   0       0       0       0           %
Trucks and buses PCE, ET                1.5     1.5     1.5     1.5
Recreational vehicle PCE, ER            1.2     1.2     1.2     1.2
Heavy vehicle adjustment, fHV           0.976   0.976   0.976   1.000
Driver population adjustment, fP        1.00    1.00    1.00    1.00
Flow rate, v                            2883    350     870     243    pc/h

Volume ratio, VR                                0.281

_________________________Configuration Characteristics_________________________
Number of maneuver lanes, NWL                2          ln
Interchange density, ID                      1.0        int/mi
Minimum RF lane changes, LCRF                1          lc/pc
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Minimum FR lane changes, LCFR                1          lc/pc
Minimum RR lane changes, LCRR                           lc/pc

Minimum weaving lane changes, LCMIN          1220       lc/h
Weaving lane changes, LCW                    1326       lc/h
Non-weaving vehicle index, INW               188
Non-weaving lane change, LCNW                391        lc/h
Total lane changes, LCALL                    1717       lc/h

______________________Weaving and Non-Weaving Speeds_________________________
Weaving intensity factor, W                  0.518
Average weaving speed, SW                    47.9       mi/h
Average non-weaving speed, SNW               49.3       mi/h

_________Weaving Segment Speed, Density, Level of Service and Capacity_________
Weaving segment speed, S                     48.9       mi/h
Weaving segment density, D                   29.6       pc/mi/ln
Level of service, LOS                        D
Weaving segment v/c ratio                    0.731
Weaving segment flow rate, v                 4246       veh/h
Weaving segment capacity, cW                 5807       veh/h

______________________Limitations on Weaving Segments_________________________
If limit reached, see note.

                          Minimum       Maximum      Actual       Note
Weaving length (ft)         300           5378        600          a,b
                                        Maximum      Analyzed
Density-based capacty,                    2350        1984          c
cIWL (pc/h/ln)
                                        Maximum      Analyzed
v/c ratio                                 1.00        0.731         d

Notes:
a.  In weaving segments shorter than 300 ft, weaving vehicles are assumed to
    make only necessary lane changes.
b.  Weaving segments longer than the calculated maximum length should be
    treated as isolated merge and diverge areas using the procedures of
    Chapter 13, "Freeway Merge and Diverge Segments."
c.  The density-based capacity exceeds the capacity of a basic freeway segment,
    under equivalent ideal conditions.
d.  Volumes exceed the weaving segment capacity. The level of service is F.

____________________________________________________________________________
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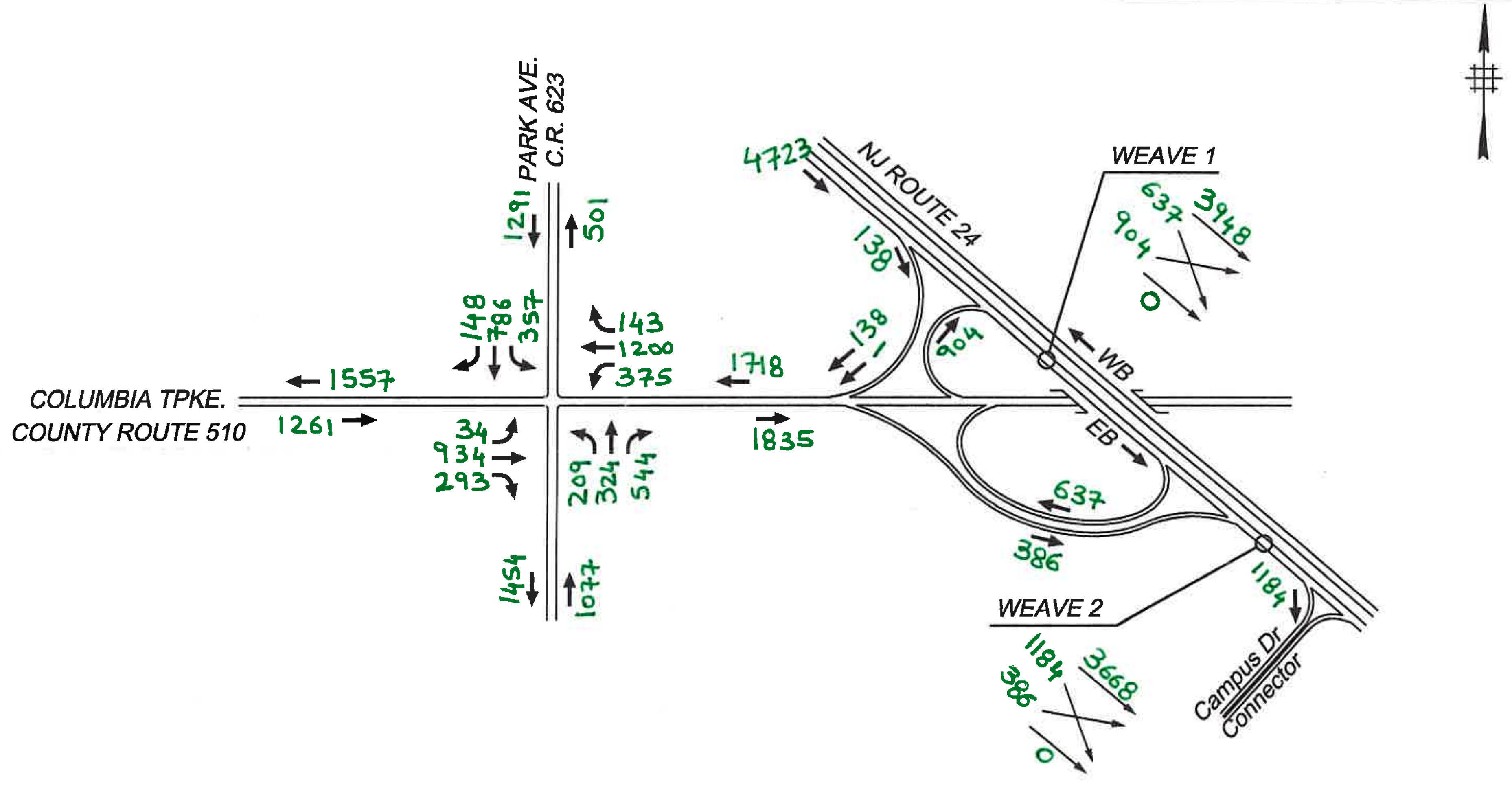
IH Engineers, P.C.

NJDOT CONCEPT DEVELOPMENT - COLUMBIA TURNPIKE (C.R. 510) AND NJ ROUTE 24
MORRIS COUNTY, NEW JERSEY



SCENARIO: Alt-4

YEAR: 2020

PEAK HOUR: AM

N.T.S.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰↰	↑↑	↱	↰	↑↑	↱↱	↰↰	↑↱	
Traffic Volume (veh/h)	34	934	293	375	1200	143	209	324	544	357	786	148
Future Volume (veh/h)	34	934	293	375	1200	143	209	324	544	357	786	148
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1885	1900	1870	1841	1811	1796	1856	1856	1885	1885	1885
Adj Flow Rate, veh/h	54	1015	419	481	1644	196	235	348	567	476	914	163
Peak Hour Factor	0.63	0.92	0.70	0.78	0.73	0.73	0.89	0.93	0.96	0.75	0.86	0.91
Percent Heavy Veh, %	2	1	0	2	4	6	7	3	3	1	1	1
Cap, veh/h	69	1144	679	538	1526	907	175	728	1002	539	787	140
Arrive On Green	0.04	0.32	0.32	0.16	0.44	0.44	0.10	0.21	0.21	0.15	0.26	0.26
Sat Flow, veh/h	1781	3582	1610	3456	3497	1535	1711	3526	2768	3483	3037	541
Grp Volume(v), veh/h	54	1015	419	481	1644	196	235	348	567	476	539	538
Grp Sat Flow(s),veh/h/ln	1781	1791	1610	1728	1749	1535	1711	1763	1384	1742	1791	1788
Q Serve(g_s), s	4.4	39.5	29.8	20.0	64.0	8.8	15.0	12.8	24.1	19.6	38.0	38.0
Cycle Q Clear(g_c), s	4.4	39.5	29.8	20.0	64.0	8.8	15.0	12.8	24.1	19.6	38.0	38.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.30
Lane Grp Cap(c), veh/h	69	1144	679	538	1526	907	175	728	1002	539	464	463
V/C Ratio(X)	0.78	0.89	0.62	0.89	1.08	0.22	1.34	0.48	0.57	0.88	1.16	1.16
Avail Cap(c_a), veh/h	109	1144	679	636	1526	907	175	728	1002	688	464	463
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	69.9	47.4	33.2	60.7	41.4	14.1	65.9	51.3	37.5	60.7	54.4	54.4
Incr Delay (d2), s/veh	16.9	8.7	1.7	13.6	47.1	0.1	187.8	0.5	0.7	10.8	94.2	94.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	18.6	11.5	9.6	36.0	2.9	15.6	5.7	8.0	9.4	29.1	29.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	86.7	56.1	34.9	74.3	88.4	14.2	253.6	51.7	38.3	71.5	148.6	148.9
LnGrp LOS	F	E	C	E	F	B	F	D	D	E	F	F
Approach Vol, veh/h		1488			2321			1150			1553	
Approach Delay, s/veh		51.2			79.2			86.4			125.1	
Approach LOS		D			E			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	27.7	37.3	27.8	53.9	20.0	45.0	10.7	71.0
Change Period (Y+Rc), s	5.0	7.0	5.0	7.0	5.0	7.0	5.0	7.0
Max Green Setting (Gmax), s	29.0	24.0	27.0	46.0	15.0	38.0	9.0	64.0
Max Q Clear Time (g_c+I1), s	21.6	26.1	22.0	41.5	17.0	40.0	6.4	66.0
Green Ext Time (p_c), s	1.1	0.0	0.8	3.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	85.0
HCM 6th LOS	F

```
                        HCS 2010: Freeway Weaving Release 6.65
Phone:                                      Fax:
E-mail:

______________________________Operational Analysis_____________________________

Analyst:                      VJS
Agency/Co.:                   IH
Date Performed:               Feb 2020
Analysis Time Period:         AM Peak
Freeway/Dir of Travel:        NJ 24 EB at CR 510
Weaving Location:             EB
Analysis Year:                2020
Description:                  NJ 24/CR 510 CD - Alt 4

___________________________________Inputs______________________________________

Segment Type                                Freeway
Weaving configuration                       One-Sided
Number of lanes, N                          3           ln
Weaving segment length, LS                  600         ft
Freeway free-flow speed, FFS                65          mi/h
Minimum segment speed, SMIN                 15          mi/h
Freeway maximum capacity, cIFL              2350        pc/h/ln

Terrain type                                Level
    Grade                                   0.00        %
    Length                                  0.00        mi

___________________Conversion to pc/h Under Base Conditions____________________
                                       Volume Components
                                      VFF     VRF     VFR     VRR
Volume, V                              3948    904     637     0    veh/h
Peak hour factor, PHF                  0.90    0.90    0.90    0.90
Peak 15-min volume, v15                1097    251     177     0
Trucks and buses                       5       5       5       0         %
Recreational vehicles                  0       0       0       0         %
Trucks and buses PCE, ET               1.5     1.5     1.5     1.5
Recreational vehicle PCE, ER           1.2     1.2     1.2     1.2
Heavy vehicle adjustment, fHV          0.976   0.976   0.976   1.000
Driver population adjustment, fP       1.00    1.00    1.00    1.00
Flow rate, v                           4496    1030    725     0     pc/h

Volume ratio, VR                               0.281

_________________________Configuration Characteristics_________________________
Number of maneuver lanes, NWL                 2           ln
Interchange density, ID                      1.0          int/mi
Minimum RF lane changes, LCRF                 1           lc/pc
Minimum FR lane changes, LCFR                 1           lc/pc
Minimum RR lane changes, LCRR                             lc/pc

Minimum weaving lane changes, LCMIN                       lc/h
Weaving lane changes, LCW                                 lc/h
Non-weaving vehicle index, INW
Non-weaving lane change, LCNW                             lc/h
Total lane changes, LCALL                                 lc/h

_______________________Weaving and Non-Weaving Speeds__________________________
Weaving intensity factor, W
```

```
Average weaving speed, SW                              mi/h
Average non-weaving speed, SNW                         mi/h

_________Weaving Segment Speed, Density, Level of Service and Capacity_________
Weaving segment speed, S                               mi/h
Weaving segment density, D                             pc/mi/ln
Level of service, LOS                      F
Weaving segment v/c ratio                  1.050
Weaving segment flow rate, v               6099        veh/h
Weaving segment capacity, cW               5807        veh/h

_______________________Limitations on Weaving Segments_________________________
If limit reached, see note.

                          Minimum       Maximum       Actual       Note
Weaving length (ft)          300            5378        600         a,b
                                        Maximum       Analyzed
Density-based capacty,                      2350        1984         c
cIWL (pc/h/ln)
                                        Maximum       Analyzed
v/c ratio                                   1.00        1.050        d

Notes:
a.  In weaving segments shorter than 300 ft, weaving vehicles are assumed to
    make only necessary lane changes.
b.  Weaving segments longer than the calculated maximum length should be
    treated as isolated merge and diverge areas using the procedures of
    Chapter 13, "Freeway Merge and Diverge Segments."
c.  The density-based capacity exceeds the capacity of a basic freeway segment,
    under equivalent ideal conditions.
d.  Volumes exceed the weaving segment capacity. The level of service is F.

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                        HCS 2010: Freeway Weaving Release 6.65
Phone:                                      Fax:
E-mail:

______________________________Operational Analysis_____________________________

Analyst:                      VJS
Agency/Co.:                   IH
Date Performed:               Feb 2020
Analysis Time Period:         AM Peak
Freeway/Dir of Travel:        NJ 24 EB at CR 510
Weaving Location:             EB
Analysis Year:                2020
Description:                  NJ 24/CR 510 CD - Alt 4, Weave 2

___________________________________Inputs______________________________________

Segment Type                                Freeway
Weaving configuration                       One-Sided
Number of lanes, N                          3               ln
Weaving segment length, LS                  900             ft
Freeway free-flow speed, FFS                65              mi/h
Minimum segment speed, SMIN                 15              mi/h
Freeway maximum capacity, cIFL              2350            pc/h/ln

Terrain type                                Level
    Grade                                   0.00            %
    Length                                  0.00            mi

___________________Conversion to pc/h Under Base Conditions____________________
                                       Volume Components
                                      VFF     VRF     VFR     VRR
Volume, V                              3668    386     1184    0    veh/h
Peak hour factor, PHF                  0.90    0.90    0.90    0.90
Peak 15-min volume, v15                1019    107     329     0
Trucks and buses                       5       5       5       0         %
Recreational vehicles                  0       0       0       0         %
Trucks and buses PCE, ET               1.5     1.5     1.5     1.5
Recreational vehicle PCE, ER           1.2     1.2     1.2     1.2
Heavy vehicle adjustment, fHV          0.976   0.976   0.976   1.000
Driver population adjustment, fP       1.00    1.00    1.00    1.00
Flow rate, v                           4177    440     1348    0     pc/h

Volume ratio, VR                               0.300

_________________________Configuration Characteristics_________________________
Number of maneuver lanes, NWL              2           ln
Interchange density, ID                    1.0         int/mi
Minimum RF lane changes, LCRF              1           lc/pc
Minimum FR lane changes, LCFR              1           lc/pc
Minimum RR lane changes, LCRR                          lc/pc

Minimum weaving lane changes, LCMIN                    lc/h
Weaving lane changes, LCW                  1938        lc/h
Non-weaving vehicle index, INW             376
Non-weaving lane change, LCNW              770         lc/h
Total lane changes, LCALL                  2708        lc/h

_______________________Weaving and Non-Weaving Speeds__________________________
Weaving intensity factor, W                0.539
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```
Average weaving speed, SW                  47.5        mi/h
Average non-weaving speed, SNW             42.6        mi/h

_________Weaving Segment Speed, Density, Level of Service and Capacity_________
Weaving segment speed, S                   43.9        mi/h
Weaving segment density, D                 45.2        pc/mi/ln
Level of service, LOS                      F
Weaving segment v/c ratio                  0.998
Weaving segment flow rate, v               5820        veh/h
Weaving segment capacity, cW               5830        veh/h

_______________________Limitations on Weaving Segments_________________________
If limit reached, see note.

                          Minimum       Maximum       Actual       Note
Weaving length (ft)          300           5581         900         a,b
                                        Maximum       Analyzed
Density-based capacty,                     2350         1992         c
cIWL (pc/h/ln)
                                        Maximum       Analyzed
v/c ratio                                  1.00         0.998        d

Notes:
a.  In weaving segments shorter than 300 ft, weaving vehicles are assumed to
    make only necessary lane changes.
b.  Weaving segments longer than the calculated maximum length should be
    treated as isolated merge and diverge areas using the procedures of
    Chapter 13, "Freeway Merge and Diverge Segments."
c.  The density-based capacity exceeds the capacity of a basic freeway segment,
    under equivalent ideal conditions.
d.  Volumes exceed the weaving segment capacity. The level of service is F.

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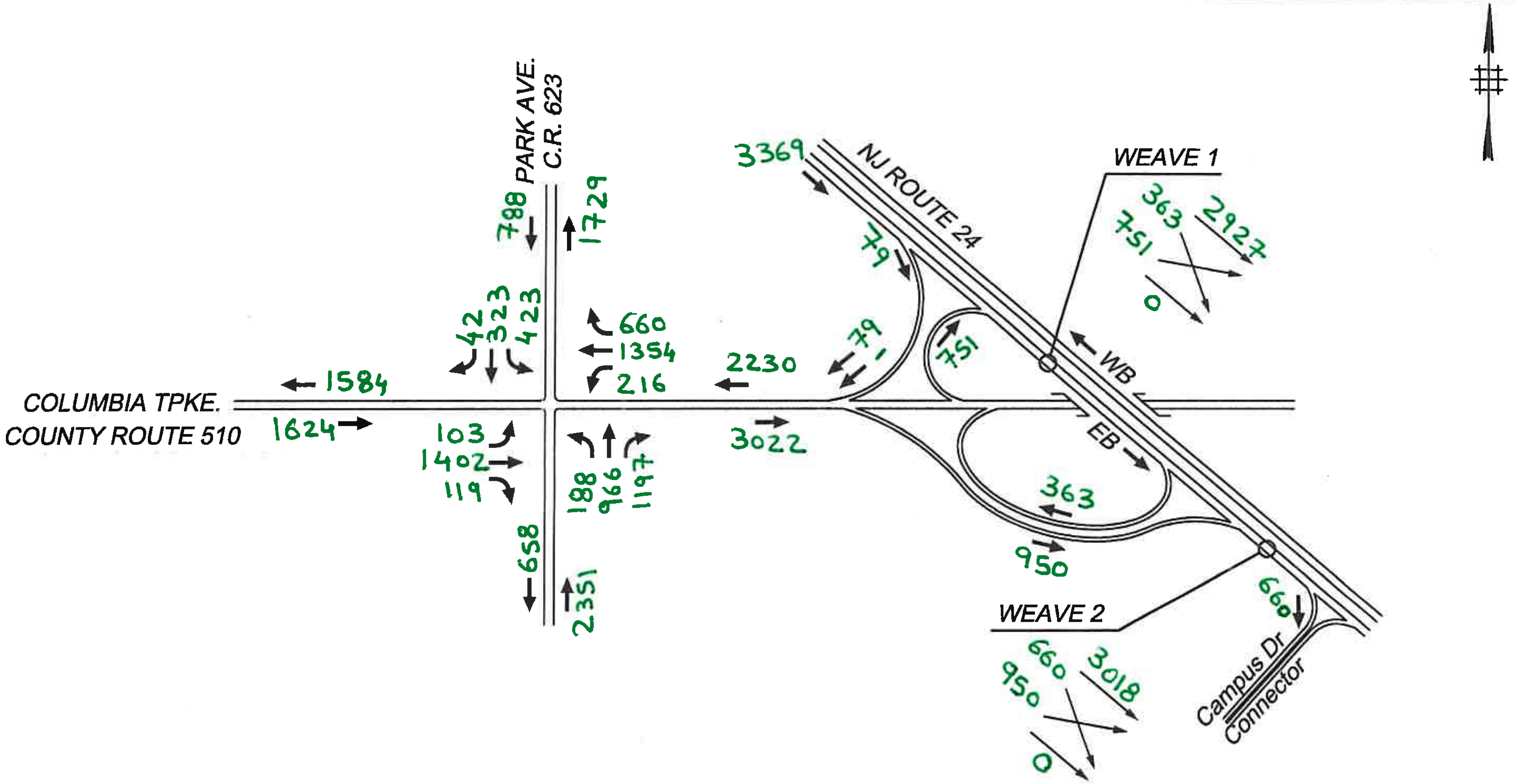
IH Engineers, P.C.

NJDOT CONCEPT DEVELOPMENT - COLUMBIA TURNPIKE (C.R. 510) AND NJ ROUTE 24
MORRIS COUNTY, NEW JERSEY



SCENARIO: Alt-4
YEAR: 2020
PEAK HOUR: PM

N.T.S.

HCM 6th Signalized Intersection Summary
3: Park Avenue & Columbia Turnpike

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰↰	↑↑	↱	↰	↑↑	↱↱	↰↰	↑↱	
Traffic Volume (veh/h)	103	1402	119	216	1354	660	188	966	1197	423	323	42
Future Volume (veh/h)	103	1402	119	216	1354	660	188	966	1197	423	323	42
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1885	1900	1870	1841	1811	1796	1856	1856	1885	1885	1885
Adj Flow Rate, veh/h	163	1524	170	277	1855	904	211	1039	1247	564	376	46
Peak Hour Factor	0.63	0.92	0.70	0.78	0.73	0.73	0.89	0.93	0.96	0.75	0.86	0.91
Percent Heavy Veh, %	2	1	0	2	4	6	7	3	3	1	1	1
Cap, veh/h	109	1428	806	336	1521	940	174	575	720	620	769	93
Arrive On Green	0.06	0.40	0.40	0.10	0.43	0.43	0.10	0.16	0.16	0.18	0.24	0.24
Sat Flow, veh/h	1781	3582	1610	3456	3497	1535	1711	3526	2768	3483	3215	391
Grp Volume(v), veh/h	163	1524	170	277	1855	904	211	1039	1247	564	208	214
Grp Sat Flow(s),veh/h/ln	1781	1791	1610	1728	1749	1535	1711	1763	1384	1742	1791	1815
Q Serve(g_s), s	9.0	58.7	8.7	11.6	64.0	64.0	15.0	24.0	24.0	23.4	14.7	14.9
Cycle Q Clear(g_c), s	9.0	58.7	8.7	11.6	64.0	64.0	15.0	24.0	24.0	23.4	14.7	14.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.22
Lane Grp Cap(c), veh/h	109	1428	806	336	1521	940	174	575	720	620	428	434
V/C Ratio(X)	1.50	1.07	0.21	0.82	1.22	0.96	1.21	1.81	1.73	0.91	0.49	0.49
Avail Cap(c_a), veh/h	109	1428	806	634	1521	940	174	575	720	686	462	469
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	69.1	44.2	20.5	65.2	41.6	26.9	66.1	61.6	54.4	59.3	48.2	48.3
Incr Delay (d2), s/veh	265.4	43.9	0.1	5.1	105.1	20.5	136.0	370.2	334.8	15.4	0.9	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.1	33.9	3.2	5.2	48.2	31.8	13.1	40.2	46.4	11.6	6.7	6.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	334.5	88.2	20.6	70.3	146.7	47.4	202.1	431.8	389.3	74.7	49.1	49.2
LnGrp LOS	F	F	C	E	F	D	F	F	F	E	D	D
Approach Vol, veh/h		1857			3036			2497			986	
Approach Delay, s/veh		103.6			110.1			391.1			63.8	
Approach LOS		F			F			F			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	31.2	31.0	19.3	65.7	20.0	42.2	14.0	71.0
Change Period (Y+Rc), s	5.0	7.0	5.0	7.0	5.0	7.0	5.0	7.0
Max Green Setting (Gmax), s	29.0	24.0	27.0	46.0	15.0	38.0	9.0	64.0
Max Q Clear Time (g_c+I1), s	25.4	26.0	13.6	60.7	17.0	16.9	11.0	66.0
Green Ext Time (p_c), s	0.8	0.0	0.7	0.0	0.0	2.3	0.0	0.0

Intersection Summary			
HCM 6th Ctrl Delay			187.0
HCM 6th LOS			F

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                        HCS 2010: Freeway Weaving Release 6.65
Phone:                                      Fax:
E-mail:

______________________________Operational Analysis_____________________________

Analyst:                      VJS
Agency/Co.:                   IH
Date Performed:               Feb 2020
Analysis Time Period:         PM Peak
Freeway/Dir of Travel:        NJ 24 EB at CR 510
Weaving Location:             EB
Analysis Year:                2020
Description:                  NJ 24/CR 510 CD - Alt 4

___________________________________Inputs______________________________________

Segment Type                                Freeway
Weaving configuration                       One-Sided
Number of lanes, N                          3           ln
Weaving segment length, LS                  600         ft
Freeway free-flow speed, FFS                65          mi/h
Minimum segment speed, SMIN                 15          mi/h
Freeway maximum capacity, cIFL              2350        pc/h/ln

Terrain type                                Level
    Grade                                   0.00        %
    Length                                  0.00        mi

___________________Conversion to pc/h Under Base Conditions____________________
                                       Volume Components
                                      VFF     VRF     VFR     VRR
Volume, V                              2927    751     363     0    veh/h
Peak hour factor, PHF                  0.90    0.90    0.90    0.90
Peak 15-min volume, v15                813     209     101     0
Trucks and buses                       5       5       5       0         %
Recreational vehicles                  0       0       0       0         %
Trucks and buses PCE, ET               1.5     1.5     1.5     1.5
Recreational vehicle PCE, ER           1.2     1.2     1.2     1.2
Heavy vehicle adjustment, fHV          0.976   0.976   0.976   1.000
Driver population adjustment, fP       1.00    1.00    1.00    1.00
Flow rate, v                           3334    855     413     0     pc/h

Volume ratio, VR                               0.276

_________________________Configuration Characteristics_________________________
Number of maneuver lanes, NWL              2           ln
Interchange density, ID                    1.0         int/mi
Minimum RF lane changes, LCRF              1           lc/pc
Minimum FR lane changes, LCFR              1           lc/pc
Minimum RR lane changes, LCRR                          lc/pc

Minimum weaving lane changes, LCMIN        1268        lc/h
Weaving lane changes, LCW                  1374        lc/h
Non-weaving vehicle index, INW             200
Non-weaving lane change, LCNW              434         lc/h
Total lane changes, LCALL                  1808        lc/h

_______________________Weaving and Non-Weaving Speeds__________________________
Weaving intensity factor, W                0.540
```

```
Average weaving speed, SW                  47.5        mi/h
Average non-weaving speed, SNW             48.5        mi/h

_________Weaving Segment Speed, Density, Level of Service and Capacity_________
Weaving segment speed, S                   48.2        mi/h
Weaving segment density, D                 31.8        pc/mi/ln
Level of service, LOS                      D
Weaving segment v/c ratio                  0.771
Weaving segment flow rate, v               4490        veh/h
Weaving segment capacity, cW               5821        veh/h

_______________________Limitations on Weaving Segments_________________________
If limit reached, see note.

                          Minimum       Maximum       Actual       Note
Weaving length (ft)          300            5323        600         a,b
                                        Maximum       Analyzed
Density-based capacty,                      2350        1989         c
cIWL (pc/h/ln)
                                        Maximum       Analyzed
v/c ratio                                   1.00        0.771        d

Notes:
a.  In weaving segments shorter than 300 ft, weaving vehicles are assumed to
    make only necessary lane changes.
b.  Weaving segments longer than the calculated maximum length should be
    treated as isolated merge and diverge areas using the procedures of
    Chapter 13, "Freeway Merge and Diverge Segments."
c.  The density-based capacity exceeds the capacity of a basic freeway segment,
    under equivalent ideal conditions.
d.  Volumes exceed the weaving segment capacity. The level of service is F.

 ______________________________________________________________________________
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                        HCS 2010: Freeway Weaving Release 6.65
Phone:                                      Fax:
E-mail:

______________________________Operational Analysis_____________________________

Analyst:                      VJS
Agency/Co.:                   IH
Date Performed:               Feb 2020
Analysis Time Period:         PM Peak
Freeway/Dir of Travel:        NJ 24 EB at CR 510
Weaving Location:             EB
Analysis Year:                2020
Description:                  NJ 24/CR 510 CD - Alt 4, Weave 2

___________________________________Inputs______________________________________

Segment Type                                Freeway
Weaving configuration                       One-Sided
Number of lanes, N                          3           ln
Weaving segment length, LS                  900         ft
Freeway free-flow speed, FFS                65          mi/h
Minimum segment speed, SMIN                 15          mi/h
Freeway maximum capacity, cIFL              2350        pc/h/ln

Terrain type                                Level
    Grade                                   0.00        %
    Length                                  0.00        mi

___________________Conversion to pc/h Under Base Conditions____________________
                                       Volume Components
                                      VFF     VRF     VFR     VRR
Volume, V                              3018    950     660     0    veh/h
Peak hour factor, PHF                  0.90    0.90    0.90    0.90
Peak 15-min volume, v15                838     264     183     0
Trucks and buses                       5       5       5       0         %
Recreational vehicles                  0       0       0       0         %
Trucks and buses PCE, ET               1.5     1.5     1.5     1.5
Recreational vehicle PCE, ER           1.2     1.2     1.2     1.2
Heavy vehicle adjustment, fHV          0.976   0.976   0.976   1.000
Driver population adjustment, fP       1.00    1.00    1.00    1.00
Flow rate, v                           3437    1082    752     0     pc/h

Volume ratio, VR                               0.348

_________________________Configuration Characteristics_________________________
Number of maneuver lanes, NWL              2           ln
Interchange density, ID                    1.0         int/mi
Minimum RF lane changes, LCRF              1           lc/pc
Minimum FR lane changes, LCFR              1           lc/pc
Minimum RR lane changes, LCRR                          lc/pc

Minimum weaving lane changes, LCMIN        1834        lc/h
Weaving lane changes, LCW                  1984        lc/h
Non-weaving vehicle index, INW             309
Non-weaving lane change, LCNW              618         lc/h
Total lane changes, LCALL                  2602        lc/h

_______________________Weaving and Non-Weaving Speeds__________________________
Weaving intensity factor, W                0.522
```

```
Average weaving speed, SW                  47.8        mi/h
Average non-weaving speed, SNW             43.4        mi/h

_________Weaving Segment Speed, Density, Level of Service and Capacity_________
Weaving segment speed, S                   44.8        mi/h
Weaving segment density, D                 39.2        pc/mi/ln
Level of service, LOS                      E
Weaving segment v/c ratio                  0.900
Weaving segment flow rate, v               5143        veh/h
Weaving segment capacity, cW               5713        veh/h

_______________________Limitations on Weaving Segments_________________________
If limit reached, see note.

                          Minimum       Maximum       Actual       Note
Weaving length (ft)          300            6104        900         a,b
                                        Maximum       Analyzed
Density-based capacty,                      2350        1952         c
cIWL (pc/h/ln)
                                        Maximum       Analyzed
v/c ratio                                   1.00        0.900        d

Notes:
a.  In weaving segments shorter than 300 ft, weaving vehicles are assumed to
    make only necessary lane changes.
b.  Weaving segments longer than the calculated maximum length should be
    treated as isolated merge and diverge areas using the procedures of
    Chapter 13, "Freeway Merge and Diverge Segments."
c.  The density-based capacity exceeds the capacity of a basic freeway segment,
    under equivalent ideal conditions.
d.  Volumes exceed the weaving segment capacity. The level of service is F.

 ______________________________________________________________________________
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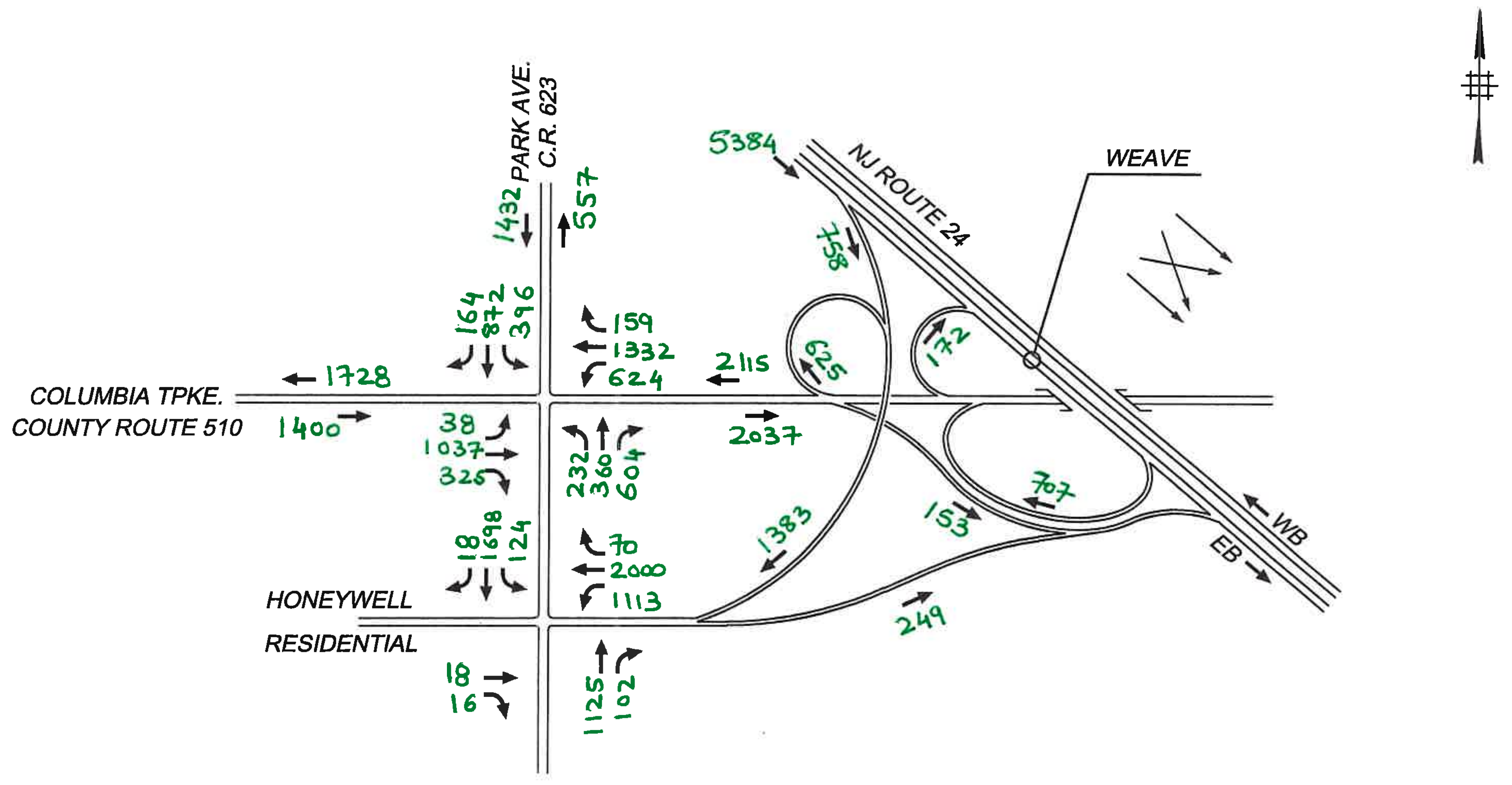
Year 2040 alternatives analysis volume worksheets and Synchro reports

IH Engineers, P.C.

NJDOT CONCEPT DEVELOPMENT - COLUMBIA TURNPIKE (C.R. 510) AND NJ ROUTE 24
MORRIS COUNTY, NEW JERSEY



SCENARIO: Alt.1
YEAR: 2040
PEAK HOUR: AM

N.T.S.

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱↱	↰↰	↑↑	↱	↰	↑↑	↱↱	↰↰	↑↱	
Traffic Volume (veh/h)	38	1037	325	624	1332	159	232	360	604	396	872	164
Future Volume (veh/h)	38	1037	325	624	1332	159	232	360	604	396	872	164
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1885	1900	1870	1841	1811	1796	1856	1856	1885	1885	1885
Adj Flow Rate, veh/h	60	1127	464	800	1825	218	261	387	629	528	1014	180
Peak Hour Factor	0.63	0.92	0.70	0.78	0.73	0.73	0.89	0.93	0.96	0.75	0.86	0.91
Percent Heavy Veh, %	2	1	0	2	4	6	7	3	3	1	1	1
Cap, veh/h	77	836	1058	714	1389	869	240	813	1210	590	790	140
Arrive On Green	0.04	0.23	0.23	0.21	0.40	0.40	0.23	0.38	0.38	0.17	0.26	0.26
Sat Flow, veh/h	1781	3582	2834	3456	3497	1535	1711	3526	2768	3483	3040	539
Grp Volume(v), veh/h	60	1127	464	800	1825	218	261	387	629	528	597	597
Grp Sat Flow(s),veh/h/ln	1781	1791	1417	1728	1749	1535	1711	1763	1384	1742	1791	1788
Q Serve(g_s), s	5.0	35.0	18.4	31.0	59.6	10.8	21.0	12.4	24.7	22.3	39.0	39.0
Cycle Q Clear(g_c), s	5.0	35.0	18.4	31.0	59.6	10.8	21.0	12.4	24.7	22.3	39.0	39.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.30
Lane Grp Cap(c), veh/h	77	836	1058	714	1389	869	240	813	1210	590	466	465
V/C Ratio(X)	0.78	1.35	0.44	1.12	1.31	0.25	1.09	0.48	0.52	0.89	1.28	1.28
Avail Cap(c_a), veh/h	107	836	1058	714	1389	869	240	813	1210	720	466	465
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.36	0.36	0.36	1.00	1.00	1.00
Uniform Delay (d), s/veh	71.1	57.5	35.2	59.5	45.2	16.4	57.5	39.3	24.5	61.0	55.5	55.5
Incr Delay (d2), s/veh	21.8	164.7	0.3	71.8	146.6	0.1	61.8	0.7	0.6	12.0	142.3	143.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	34.7	6.2	20.3	52.9	3.7	12.5	5.0	6.4	10.8	35.8	36.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	92.9	222.2	35.5	131.3	191.9	16.6	119.3	40.0	25.1	73.0	197.8	199.2
LnGrp LOS	F	F	D	F	F	B	F	D	C	E	F	F
Approach Vol, veh/h		1651			2843			1277			1722	
Approach Delay, s/veh		165.1			161.4			48.9			160.0	
Approach LOS		F			F			D			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	30.4	41.6	36.0	42.0	26.0	46.0	11.4	66.6
Change Period (Y+Rc), s	5.0	7.0	5.0	7.0	5.0	7.0	5.0	7.0
Max Green Setting (Gmax), s	31.0	29.0	31.0	35.0	21.0	39.0	9.0	57.0
Max Q Clear Time (g_c+I1), s	24.3	26.7	33.0	37.0	23.0	41.0	7.0	61.6
Green Ext Time (p_c), s	1.2	1.2	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary		
HCM 6th Ctrl Delay		142.7
HCM 6th LOS		F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↱		↰↰	↱			↑↑	↱	↰↰	↑↱	
Traffic Volume (veh/h)	0	18	16	1113	200	70	0	1125	102	124	1698	18
Future Volume (veh/h)	0	18	16	1113	200	70	0	1125	102	124	1698	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.85	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	1870	0	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	20	17	1210	217	76	0	1223	111	135	1846	20
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	2	0	2	2	2	2	2
Cap, veh/h	0	26	22	945	345	121	0	1802	1237	180	2122	23
Arrive On Green	0.00	0.03	0.03	0.27	0.27	0.27	0.00	0.51	0.51	0.10	1.00	1.00
Sat Flow, veh/h	0	934	794	3456	1260	441	0	3647	1585	3456	3601	39
Grp Volume(v), veh/h	0	0	37	1210	0	293	0	1223	111	135	909	957
Grp Sat Flow(s),veh/h/ln	0	0	1727	1728	0	1702	0	1777	1585	1728	1777	1863
Q Serve(g_s), s	0.0	0.0	3.2	41.0	0.0	22.7	0.0	38.8	2.5	5.7	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	3.2	41.0	0.0	22.7	0.0	38.8	2.5	5.7	0.0	0.0
Prop In Lane	0.00		0.46	1.00		0.26	0.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	0	0	48	945	0	465	0	1802	1237	180	1047	1098
V/C Ratio(X)	0.00	0.00	0.78	1.28	0.00	0.63	0.00	0.68	0.09	0.75	0.87	0.87
Avail Cap(c_a), veh/h	0	0	207	945	0	465	0	1802	1237	290	1047	1098
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.09	0.09	0.09
Uniform Delay (d), s/veh	0.0	0.0	72.5	54.5	0.0	47.8	0.0	27.8	3.9	66.2	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	23.2	134.6	0.0	2.7	0.0	2.1	0.1	0.6	1.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	1.7	34.9	0.0	9.7	0.0	16.8	2.1	2.4	0.3	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	95.6	189.1	0.0	50.6	0.0	29.9	4.0	66.8	1.0	1.0
LnGrp LOS	A	A	F	F	A	D	A	C	A	E	A	A
Approach Vol, veh/h		37			1503			1334			2001	
Approach Delay, s/veh		95.6			162.1			27.7			5.4	
Approach LOS		F			F			C			A	
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	12.3	82.1		8.6		94.4		47.0				
Change Period (Y+Rc), s	4.5	6.0		4.5		6.0		6.0				
Max Green Setting (Gmax), s	12.6	57.4		18.0		74.5		41.0				
Max Q Clear Time (g_c+I1), s	7.7	40.8		5.2		2.0		43.0				
Green Ext Time (p_c), s	0.1	8.4		0.1		23.0		0.0				
Intersection Summary												
HCM 6th Ctrl Delay			60.5									
HCM 6th LOS			E									

```
                        HCS 2010: Freeway Weaving Release 6.65
Phone:                                      Fax:
E-mail:

______________________________Operational Analysis_____________________________

Analyst:                      VJS
Agency/Co.:                   IH
Date Performed:               Feb 2020
Analysis Time Period:         AM Peak - Alt 1
Freeway/Dir of Travel:        NJ 24 EB at CR 510
Weaving Location:             EB
Analysis Year:                2040
Description:                  NJ 24/CR 510 CD

___________________________________Inputs______________________________________

Segment Type                                Freeway
Weaving configuration                       One-Sided
Number of lanes, N                          3           ln
Weaving segment length, LS                  600         ft
Freeway free-flow speed, FFS                65          mi/h
Minimum segment speed, SMIN                 15          mi/h
Freeway maximum capacity, cIFL              2350        pc/h/ln

Terrain type                                Level
    Grade                                   0.00        %
    Length                                  0.00        mi

___________________Conversion to pc/h Under Base Conditions____________________
                                       Volume Components
                                      VFF     VRF     VFR     VRR
Volume, V                              3919    172     707     0    veh/h
Peak hour factor, PHF                  0.90    0.90    0.90    0.90
Peak 15-min volume, v15                1089    48      196     0
Trucks and buses                       5       5       5       0         %
Recreational vehicles                  0       0       0       0         %
Trucks and buses PCE, ET               1.5     1.5     1.5     1.5
Recreational vehicle PCE, ER           1.2     1.2     1.2     1.2
Heavy vehicle adjustment, fHV          0.976   0.976   0.976   1.000
Driver population adjustment, fP       1.00    1.00    1.00    1.00
Flow rate, v                           4463    196     805     0     pc/h

Volume ratio, VR                               0.183

_________________________Configuration Characteristics_________________________
Number of maneuver lanes, NWL              2           ln
Interchange density, ID                    1.0         int/mi
Minimum RF lane changes, LCRF              1           lc/pc
Minimum FR lane changes, LCFR              1           lc/pc
Minimum RR lane changes, LCRR                          lc/pc

Minimum weaving lane changes, LCMIN        1001        lc/h
Weaving lane changes, LCW                  1107        lc/h
Non-weaving vehicle index, INW             268
Non-weaving lane change, LCNW              667         lc/h
Total lane changes, LCALL                  1774        lc/h

_______________________Weaving and Non-Weaving Speeds__________________________
Weaving intensity factor, W                0.532
```

```
Average weaving speed, SW                  47.6        mi/h
Average non-weaving speed, SNW             49.1        mi/h

_________Weaving Segment Speed, Density, Level of Service and Capacity_________
Weaving segment speed, S                   48.8        mi/h
Weaving segment density, D                 37.3        pc/mi/ln
Level of service, LOS                      E
Weaving segment v/c ratio                  0.883
Weaving segment flow rate, v               5332        veh/h
Weaving segment capacity, cW               6035        veh/h

_______________________Limitations on Weaving Segments_________________________
If limit reached, see note.

                          Minimum       Maximum      Actual       Note
Weaving length (ft)          300           4365        600         a,b
                                        Maximum      Analyzed
Density-based capacty,                      2350        2062         c
cIWL (pc/h/ln)
                                        Maximum      Analyzed
v/c ratio                                   1.00        0.883        d

Notes:
a.  In weaving segments shorter than 300 ft, weaving vehicles are assumed to
    make only necessary lane changes.
b.  Weaving segments longer than the calculated maximum length should be
    treated as isolated merge and diverge areas using the procedures of
    Chapter 13, "Freeway Merge and Diverge Segments."
c.  The density-based capacity exceeds the capacity of a basic freeway segment,
    under equivalent ideal conditions.
d.  Volumes exceed the weaving segment capacity. The level of service is F.

 ______________________________________________________________________________
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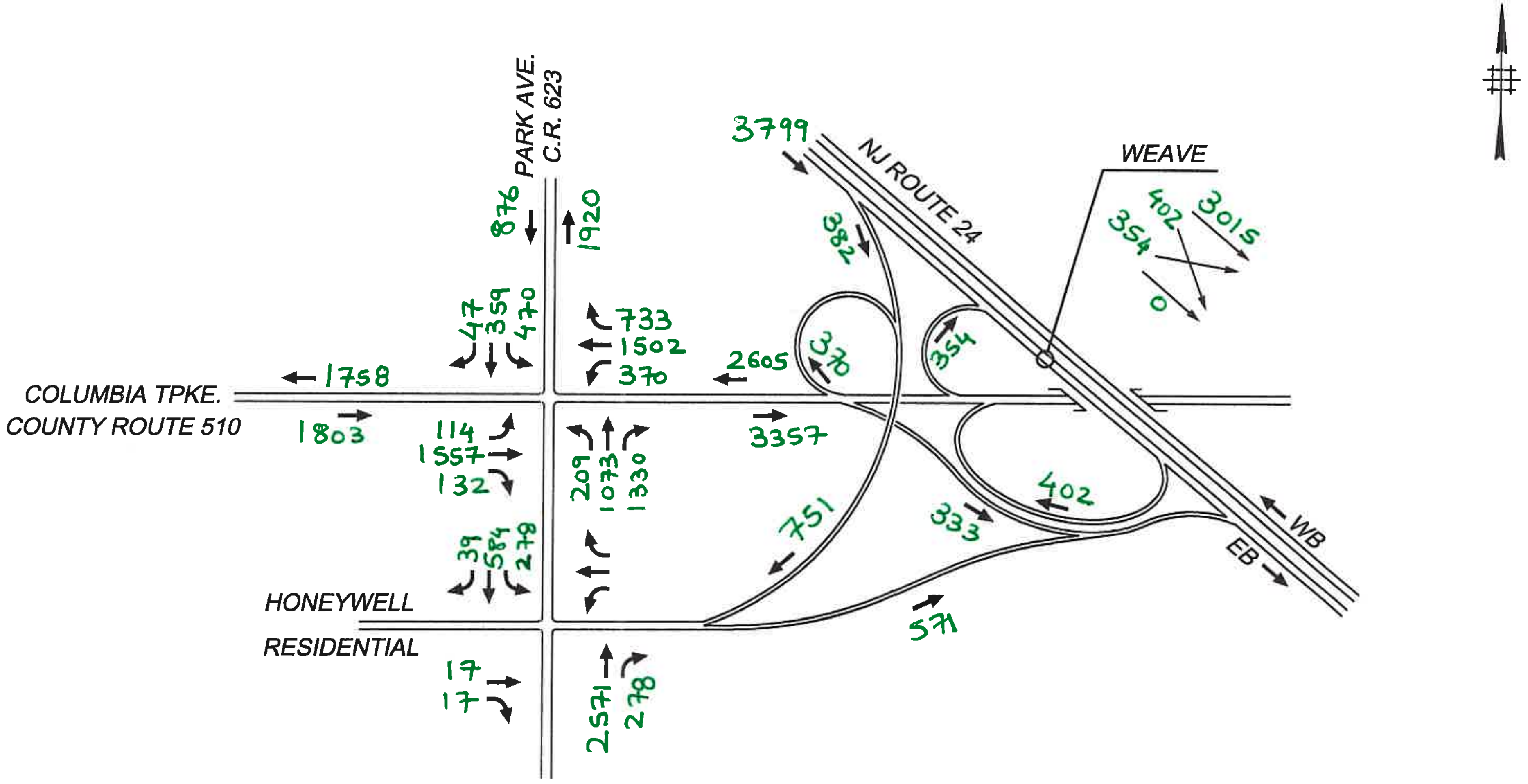
IH Engineers, P.C.

NJDOT CONCEPT DEVELOPMENT - COLUMBIA TURNPIKE (C.R. 510) AND NJ ROUTE 24
MORRIS COUNTY, NEW JERSEY



SCENARIO: Alt-1
YEAR: 2040
PEAK HOUR: PM

N.T.S.

HCM 6th Signalized Intersection Summary
3: Park Avenue & Columbia Turnpike

02/04/2020

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱↱	↰↰	↑↑	↱	↰	↑↑	↱↱	↰↰	↑↱	
Traffic Volume (veh/h)	114	1557	132	370	1502	733	209	1073	1330	470	359	47
Future Volume (veh/h)	114	1557	132	370	1502	733	209	1073	1330	470	359	47
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1885	1900	1870	1841	1811	1796	1856	1856	1885	1885	1885
Adj Flow Rate, veh/h	148	1656	153	416	1747	916	246	1309	1511	534	413	81
Peak Hour Factor	0.77	0.94	0.86	0.89	0.86	0.80	0.85	0.82	0.88	0.88	0.87	0.58
Percent Heavy Veh, %	2	1	0	2	4	6	7	3	3	1	1	1
Cap, veh/h	163	1254	1447	173	1078	691	275	911	853	493	715	139
Arrive On Green	0.09	0.35	0.35	0.05	0.31	0.31	0.05	0.09	0.09	0.14	0.24	0.24
Sat Flow, veh/h	1781	3582	2834	3456	3497	1535	1711	3526	2768	3483	2990	582
Grp Volume(v), veh/h	148	1656	153	416	1747	916	246	1309	1511	534	246	248
Grp Sat Flow(s),veh/h/ln	1781	1791	1417	1728	1749	1535	1711	1763	1384	1742	1791	1780
Q Serve(g_s), s	9.9	42.0	3.4	6.0	37.0	37.0	17.2	31.0	31.0	17.0	14.5	14.8
Cycle Q Clear(g_c), s	9.9	42.0	3.4	6.0	37.0	37.0	17.2	31.0	31.0	17.0	14.5	14.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.33
Lane Grp Cap(c), veh/h	163	1254	1447	173	1078	691	275	911	853	493	429	426
V/C Ratio(X)	0.91	1.32	0.11	2.41	1.62	1.33	0.89	1.44	1.77	1.08	0.57	0.58
Avail Cap(c_a), veh/h	163	1254	1447	173	1078	691	299	911	853	493	429	426
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.09	0.09	0.09	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.0	39.0	15.2	57.0	41.5	33.0	55.8	54.9	50.5	51.5	40.3	40.3
Incr Delay (d2), s/veh	44.4	150.1	0.0	650.8	283.3	156.7	3.4	197.3	347.2	64.5	5.5	5.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.4	43.8	1.0	18.1	57.5	48.3	8.2	39.6	54.1	11.7	7.0	7.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	98.3	189.1	15.2	707.8	324.8	189.7	59.2	252.2	397.7	116.0	45.8	46.0
LnGrp LOS	F	F	B	F	F	F	E	F	F	F	D	D
Approach Vol, veh/h		1957			3079			3066			1028	
Approach Delay, s/veh		168.7			336.4			308.4			82.3	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.0	38.0	11.0	49.0	24.3	35.7	16.0	44.0
Change Period (Y+Rc), s	5.0	7.0	5.0	7.0	5.0	7.0	5.0	7.0
Max Green Setting (Gmax), s	17.0	31.0	6.0	42.0	21.0	27.0	11.0	37.0
Max Q Clear Time (g_c+I1), s	19.0	33.0	8.0	44.0	19.2	16.8	11.9	39.0
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.1	2.1	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	262.4
HCM 6th LOS	F

HCM 6th Signalized Intersection Summary
5: Park Avenue & Alt 1 Ramp

02/04/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↱		↰↰	↱			↑↑	↱	↰↰	↑↱	
Traffic Volume (veh/h)	0	17	17	605	109	38	0	2571	278	278	584	39
Future Volume (veh/h)	0	17	17	605	109	38	0	2571	278	278	584	39
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	1870	0	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	18	18	658	118	41	0	2795	302	302	635	42
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	2	0	2	2	2	2	2
Cap, veh/h	0	25	25	518	199	69	0	1955	1110	331	2312	153
Arrive On Green	0.00	0.03	0.03	0.15	0.15	0.15	0.00	0.55	0.55	0.10	0.68	0.68
Sat Flow, veh/h	0	858	858	3456	1326	461	0	3647	1585	3456	3383	224
Grp Volume(v), veh/h	0	0	36	658	0	159	0	2795	302	302	333	344
Grp Sat Flow(s),veh/h/ln	0	0	1716	1728	0	1787	0	1777	1585	1728	1777	1830
Q Serve(g_s), s	0.0	0.0	2.5	18.0	0.0	10.0	0.0	66.0	8.5	10.4	8.8	8.8
Cycle Q Clear(g_c), s	0.0	0.0	2.5	18.0	0.0	10.0	0.0	66.0	8.5	10.4	8.8	8.8
Prop In Lane	0.00		0.50	1.00		0.26	0.00		1.00	1.00		0.12
Lane Grp Cap(c), veh/h	0	0	50	518	0	268	0	1955	1110	331	1214	1251
V/C Ratio(X)	0.00	0.00	0.72	1.27	0.00	0.59	0.00	1.43	0.27	0.91	0.27	0.27
Avail Cap(c_a), veh/h	0	0	257	518	0	268	0	1955	1110	331	1214	1251
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.09	0.09	0.09
Uniform Delay (d), s/veh	0.0	0.0	57.8	51.0	0.0	47.6	0.0	27.0	6.7	53.7	7.4	7.4
Incr Delay (d2), s/veh	0.0	0.0	17.6	135.8	0.0	3.5	0.0	196.5	0.6	4.0	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	1.3	17.3	0.0	4.5	0.0	79.2	4.6	4.5	2.8	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	75.4	186.8	0.0	51.1	0.0	223.5	7.3	57.7	7.5	7.5
LnGrp LOS	A	A	E	F	A	D	A	F	A	E	A	A
Approach Vol, veh/h		36			817			3097			979	
Approach Delay, s/veh		75.4			160.4			202.4			23.0	
Approach LOS		E			F			F			C	
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	16.0	72.0		8.0		88.0		24.0				
Change Period (Y+Rc), s	4.5	6.0		4.5		6.0		6.0				
Max Green Setting (Gmax), s	11.5	51.5		18.0		67.5		18.0				
Max Q Clear Time (g_c+I1), s	12.4	68.0		4.5		10.8		20.0				
Green Ext Time (p_c), s	0.0	0.0		0.1		4.0		0.0				

Intersection Summary			
HCM 6th Ctrl Delay			158.9
HCM 6th LOS			F

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                        HCS 2010: Freeway Weaving Release 6.65
Phone:                                      Fax:
E-mail:

______________________________Operational Analysis_____________________________

Analyst:                      VJS
Agency/Co.:                   IH
Date Performed:               Feb 2020
Analysis Time Period:         PM Peak - Alt 1
Freeway/Dir of Travel:        NJ 24 EB at CR 510
Weaving Location:             EB
Analysis Year:                2040
Description:                  NJ 24/CR 510 CD

___________________________________Inputs______________________________________

Segment Type                                Freeway
Weaving configuration                       One-Sided
Number of lanes, N                          3           ln
Weaving segment length, LS                  600         ft
Freeway free-flow speed, FFS                65          mi/h
Minimum segment speed, SMIN                 15          mi/h
Freeway maximum capacity, cIFL              2350        pc/h/ln

Terrain type                                Level
    Grade                                   0.00        %
    Length                                  0.00        mi

___________________Conversion to pc/h Under Base Conditions____________________
                                       Volume Components
                                      VFF     VRF     VFR     VRR
Volume, V                              3015    354     402     0    veh/h
Peak hour factor, PHF                  0.90    0.90    0.90    0.90
Peak 15-min volume, v15                838     98      112     0
Trucks and buses                       5       5       5       0         %
Recreational vehicles                  0       0       0       0         %
Trucks and buses PCE, ET               1.5     1.5     1.5     1.5
Recreational vehicle PCE, ER           1.2     1.2     1.2     1.2
Heavy vehicle adjustment, fHV          0.976   0.976   0.976   1.000
Driver population adjustment, fP       1.00    1.00    1.00    1.00
Flow rate, v                           3434    403     458     0     pc/h

Volume ratio, VR                               0.200

_________________________Configuration Characteristics_________________________
Number of maneuver lanes, NWL              2           ln
Interchange density, ID                    1.0         int/mi
Minimum RF lane changes, LCRF              1           lc/pc
Minimum FR lane changes, LCFR              1           lc/pc
Minimum RR lane changes, LCRR                          lc/pc

Minimum weaving lane changes, LCMIN        861         lc/h
Weaving lane changes, LCW                  967         lc/h
Non-weaving vehicle index, INW             206
Non-weaving lane change, LCNW              455         lc/h
Total lane changes, LCALL                  1422        lc/h

_______________________Weaving and Non-Weaving Speeds__________________________
Weaving intensity factor, W                0.446
```

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Average weaving speed, SW                  49.6        mi/h
Average non-weaving speed, SNW             51.9        mi/h

_________Weaving Segment Speed, Density, Level of Service and Capacity_________
Weaving segment speed, S                   51.4        mi/h
Weaving segment density, D                 27.8        pc/mi/ln
Level of service, LOS                      C
Weaving segment v/c ratio                  0.699
Weaving segment flow rate, v               4190        veh/h
Weaving segment capacity, cW               5997        veh/h

_______________________Limitations on Weaving Segments_________________________
If limit reached, see note.

                          Minimum       Maximum       Actual       Note
Weaving length (ft)          300            4541        600         a,b
                                        Maximum       Analyzed
Density-based capacty,                      2350        2049         c
cIWL (pc/h/ln)
                                        Maximum       Analyzed
v/c ratio                                   1.00        0.699        d

Notes:
a.  In weaving segments shorter than 300 ft, weaving vehicles are assumed to
    make only necessary lane changes.
b.  Weaving segments longer than the calculated maximum length should be
    treated as isolated merge and diverge areas using the procedures of
    Chapter 13, "Freeway Merge and Diverge Segments."
c.  The density-based capacity exceeds the capacity of a basic freeway segment,
    under equivalent ideal conditions.
d.  Volumes exceed the weaving segment capacity. The level of service is F.

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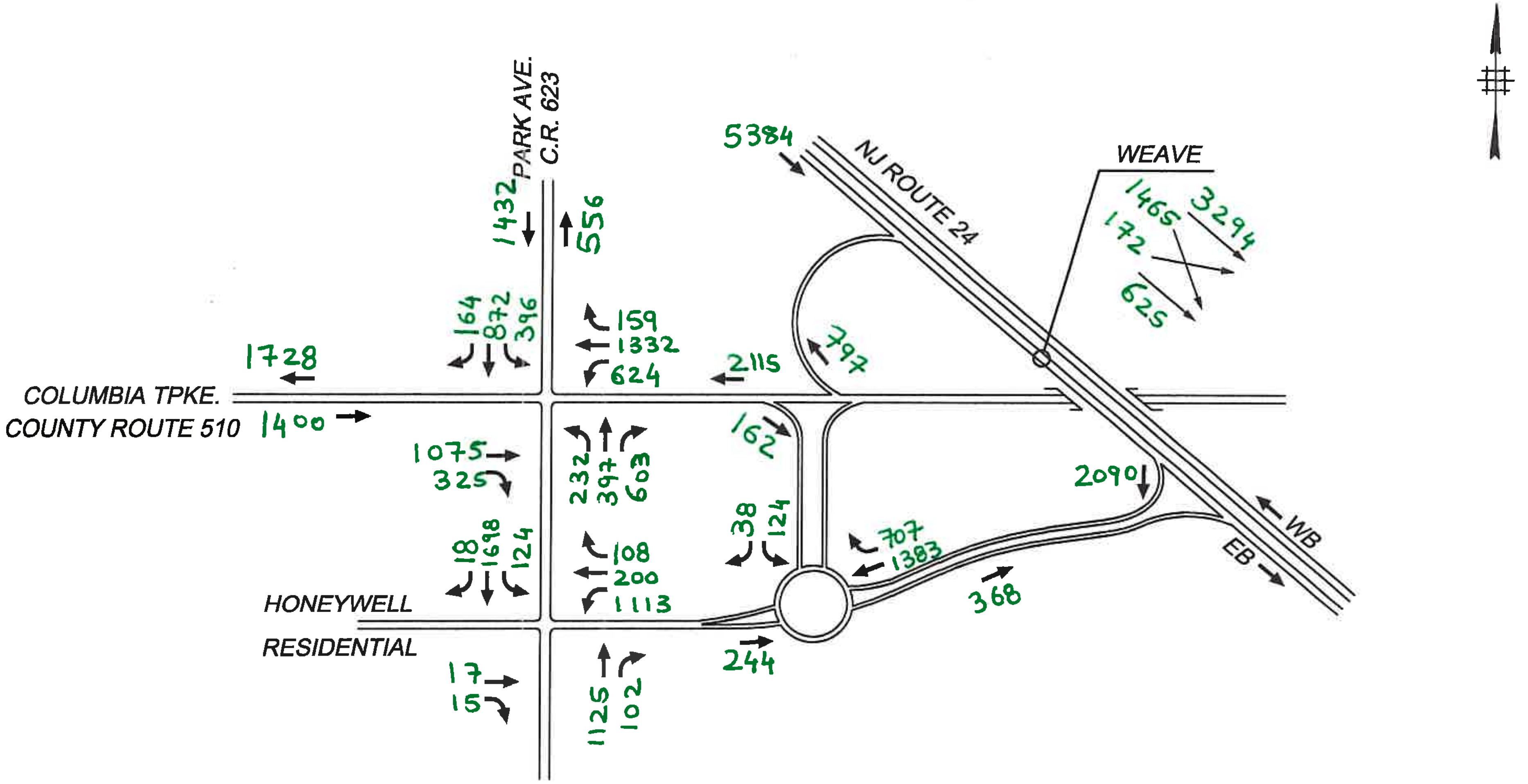
IH Engineers, P.C.

NJDOT CONCEPT DEVELOPMENT - COLUMBIA TURNPIKE (C.R. 510) AND NJ ROUTE 24
MORRIS COUNTY, NEW JERSEY



SCENARIO: Alt-2
YEAR: 2040
PEAK HOUR: AM

N.T.S.

HCM 6th Signalized Intersection Summary
3: Park Avenue & Columbia Turnpike

02/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱↱	↰↰	↑↑	↱	↰	↑↑	↱↱	↰↰	↑↱	
Traffic Volume (veh/h)	0	1075	325	624	1332	159	232	397	603	396	872	164
Future Volume (veh/h)	0	1075	325	624	1332	159	232	397	603	396	872	164
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1885	1900	1870	1841	1811	1796	1856	1856	1885	1885	1885
Adj Flow Rate, veh/h	0	1168	464	800	1825	218	261	427	628	528	1014	180
Peak Hour Factor	0.63	0.92	0.70	0.78	0.73	0.73	0.89	0.93	0.96	0.75	0.86	0.91
Percent Heavy Veh, %	0	1	0	2	4	6	7	3	3	1	1	1
Cap, veh/h	0	812	1058	714	1632	976	251	836	1228	590	790	140
Arrive On Green	0.00	0.23	0.23	0.21	0.47	0.47	0.24	0.40	0.40	0.17	0.26	0.26
Sat Flow, veh/h	0	3676	2834	3456	3497	1535	1711	3526	2768	3483	3040	539
Grp Volume(v), veh/h	0	1168	464	800	1825	218	261	427	628	528	597	597
Grp Sat Flow(s),veh/h/ln	0	1791	1417	1728	1749	1535	1711	1763	1384	1742	1791	1788
Q Serve(g_s), s	0.0	34.0	18.4	31.0	70.0	9.0	22.0	13.8	24.1	22.3	39.0	39.0
Cycle Q Clear(g_c), s	0.0	34.0	18.4	31.0	70.0	9.0	22.0	13.8	24.1	22.3	39.0	39.0
Prop In Lane	0.00		1.00	1.00		1.00	1.00		1.00	1.00		0.30
Lane Grp Cap(c), veh/h	0	812	1058	714	1632	976	251	836	1228	590	466	465
V/C Ratio(X)	0.00	1.44	0.44	1.12	1.12	0.22	1.04	0.51	0.51	0.89	1.28	1.28
Avail Cap(c_a), veh/h	0	812	1058	714	1632	976	251	836	1228	720	466	465
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	1.00	0.30	0.30	0.30	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	58.0	35.2	59.5	40.0	11.6	56.6	38.7	23.7	61.0	55.5	55.5
Incr Delay (d2), s/veh	0.0	204.4	0.3	71.8	62.1	0.1	42.1	0.7	0.5	12.0	142.3	143.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	38.2	6.2	20.3	42.3	2.9	11.7	5.4	6.2	10.8	35.8	36.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	262.4	35.5	131.3	102.1	11.7	98.7	39.4	24.1	73.0	197.8	199.2
LnGrp LOS	A	F	D	F	F	B	F	D	C	E	F	F
Approach Vol, veh/h		1632			2843			1316			1722	
Approach Delay, s/veh		197.9			103.4			43.9			160.0	
Approach LOS		F			F			D			F	

Timer - Assigned Phs	1	2	3	4	5	6		8
Phs Duration (G+Y+Rc), s	30.4	42.6	36.0	41.0	27.0	46.0		77.0
Change Period (Y+Rc), s	5.0	7.0	5.0	7.0	5.0	7.0		7.0
Max Green Setting (Gmax), s	31.0	30.0	31.0	34.0	22.0	39.0		70.0
Max Q Clear Time (g_c+I1), s	24.3	26.1	33.0	36.0	24.0	41.0		72.0
Green Ext Time (p_c), s	1.2	2.0	0.0	0.0	0.0	0.0		0.0

Intersection Summary			
HCM 6th Ctrl Delay			126.5
HCM 6th LOS			F

HCM 6th Signalized Intersection Summary
5: Park Avenue & Alt 2 Ramp

02/10/2020

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↱		↰↰	↱			↑↑	↱	↰↰	↑↱	
Traffic Volume (veh/h)	0	17	15	1113	200	108	0	1125	102	124	1698	18
Future Volume (veh/h)	0	17	15	1113	200	108	0	1125	102	124	1698	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	1870	0	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	18	16	1210	217	117	0	1223	111	135	1846	20
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	2	0	2	2	2	2	2
Cap, veh/h	0	23	20	991	328	177	0	1763	1241	180	2082	23
Arrive On Green	0.00	0.03	0.03	0.29	0.29	0.29	0.00	0.50	0.50	0.10	1.00	1.00
Sat Flow, veh/h	0	913	811	3456	1143	616	0	3647	1585	3456	3601	39
Grp Volume(v), veh/h	0	0	34	1210	0	334	0	1223	111	135	909	957
Grp Sat Flow(s),veh/h/ln	0	0	1724	1728	0	1759	0	1777	1585	1728	1777	1863
Q Serve(g_s), s	0.0	0.0	2.9	43.0	0.0	25.1	0.0	39.7	2.5	5.7	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	2.9	43.0	0.0	25.1	0.0	39.7	2.5	5.7	0.0	0.0
Prop In Lane	0.00		0.47	1.00		0.35	0.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	0	0	44	991	0	504	0	1763	1241	180	1027	1077
V/C Ratio(X)	0.00	0.00	0.78	1.22	0.00	0.66	0.00	0.69	0.09	0.75	0.89	0.89
Avail Cap(c_a), veh/h	0	0	207	991	0	504	0	1763	1241	290	1027	1077
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.09	0.09	0.09
Uniform Delay (d), s/veh	0.0	0.0	72.7	53.5	0.0	47.1	0.0	29.0	3.8	66.2	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	25.3	108.8	0.0	3.2	0.0	2.3	0.1	0.6	1.2	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	1.6	33.0	0.0	11.1	0.0	17.2	2.2	2.4	0.3	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	98.0	162.3	0.0	50.3	0.0	31.3	4.0	66.8	1.2	1.2
LnGrp LOS	A	A	F	F	A	D	A	C	A	E	A	A
Approach Vol, veh/h		34			1544			1334			2001	
Approach Delay, s/veh		98.0			138.1			29.0			5.6	
Approach LOS		F			F			C			A	

Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	12.3	80.4		8.3		92.7		49.0				
Change Period (Y+Rc), s	4.5	6.0		4.5		6.0		6.0				
Max Green Setting (Gmax), s	12.6	55.4		18.0		72.5		43.0				
Max Q Clear Time (g_c+I1), s	7.7	41.7		4.9		2.0		45.0				
Green Ext Time (p_c), s	0.1	7.5		0.1		22.9		0.0				

Intersection Summary			
HCM 6th Ctrl Delay			54.2
HCM 6th LOS			D

Intersection	
Intersection Delay, s/veh	105.7
Intersection LOS	F

Approach	EB	WB	SB	SW
Entry Lanes	1	2	1	0
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	265	2271	176	0
Demand Flow Rate, veh/h	270	2316	180	0
Vehicles Circulating, veh/h	138	0	1533	1533
Vehicles Exiting, veh/h	1575	408	0	783
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	6.2	124.0	19.9	0.0
Approach LOS	A	F	C	-

Lane	Left	Left	Right	Left
Designated Moves	LT	LT	R	LR
Assumed Moves	LT	LT	R	LR
RT Channelized				
Lane Util	1.000	0.662	0.338	1.000
Critical Headway, s	4.113	4.293	4.113	4.113
Entry Flow, veh/h	270	1533	783	180
Cap Entry Lane, veh/h	1026	1130	1130	386
Entry HV Adj Factor	0.980	0.980	0.981	0.978
Flow Entry, veh/h	265	1503	768	176
Cap Entry, veh/h	1006	1108	1108	378
V/C Ratio	0.263	1.357	0.693	0.466
Control Delay, s/veh	6.2	180.3	13.7	19.9
LOS	A	F	B	C
95th %tile Queue, veh	1	59	6	2

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                        HCS 2010: Freeway Weaving Release 6.65
Phone:                                      Fax:
E-mail:

______________________________Operational Analysis_____________________________

Analyst:                      VJS
Agency/Co.:                   IH
Date Performed:               Feb 2020
Analysis Time Period:         AM Peak
Freeway/Dir of Travel:        NJ 24 EB at CR 510
Weaving Location:             EB
Analysis Year:                2040
Description:                  NJ 24/CR 510 CD - ALT 2

___________________________________Inputs______________________________________

Segment Type                                Freeway
Weaving configuration                       One-Sided
Number of lanes, N                          3           ln
Weaving segment length, LS                  1050        ft
Freeway free-flow speed, FFS                65          mi/h
Minimum segment speed, SMIN                 15          mi/h
Freeway maximum capacity, cIFL              2350        pc/h/ln

Terrain type                                Level
    Grade                                   0.00        %
    Length                                  0.00        mi

___________________Conversion to pc/h Under Base Conditions____________________
                                       Volume Components
                                      VFF     VRF     VFR     VRR
Volume, V                              3294    172     1465    625  veh/h
Peak hour factor, PHF                  0.90    0.90    0.90    0.90
Peak 15-min volume, v15                915     48      407     174
Trucks and buses                       5       5       5       0         %
Recreational vehicles                  0       0       0       0         %
Trucks and buses PCE, ET               1.5     1.5     1.5     1.5
Recreational vehicle PCE, ER           1.2     1.2     1.2     1.2
Heavy vehicle adjustment, fHV          0.976   0.976   0.976   1.000
Driver population adjustment, fP       1.00    1.00    1.00    1.00
Flow rate, v                           3752    196     1668    694   pc/h

Volume ratio, VR                               0.295

_________________________Configuration Characteristics_________________________
Number of maneuver lanes, NWL              2           ln
Interchange density, ID                   1.0          int/mi
Minimum RF lane changes, LCRF              1           lc/pc
Minimum FR lane changes, LCFR              1           lc/pc
Minimum RR lane changes, LCRR                          lc/pc

Minimum weaving lane changes, LCMIN                    lc/h
Weaving lane changes, LCW                              lc/h
Non-weaving vehicle index, INW
Non-weaving lane change, LCNW                          lc/h
Total lane changes, LCALL                              lc/h

_______________________Weaving and Non-Weaving Speeds__________________________
Weaving intensity factor, W
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Average weaving speed, SW                                    mi/h
Average non-weaving speed, SNW                               mi/h

_________Weaving Segment Speed, Density, Level of Service and Capacity_________
Weaving segment speed, S                                     mi/h
Weaving segment density, D                                   pc/mi/ln
Level of service, LOS                        F
Weaving segment v/c ratio                    1.051
Weaving segment flow rate, v                 6174        veh/h
Weaving segment capacity, cW                 5874        veh/h

_______________________Limitations on Weaving Segments_________________________
If limit reached, see note.

                          Minimum       Maximum       Actual       Note
Weaving length (ft)          300           5535         1050        a,b
                                        Maximum       Analyzed
Density-based capacty,                     2350         2007         c
cIWL (pc/h/ln)
                                        Maximum       Analyzed
v/c ratio                                  1.00         1.051        d

Notes:
a.  In weaving segments shorter than 300 ft, weaving vehicles are assumed to
    make only necessary lane changes.
b.  Weaving segments longer than the calculated maximum length should be
    treated as isolated merge and diverge areas using the procedures of
    Chapter 13, "Freeway Merge and Diverge Segments."
c.  The density-based capacity exceeds the capacity of a basic freeway segment,
    under equivalent ideal conditions.
d.  Volumes exceed the weaving segment capacity. The level of service is F.

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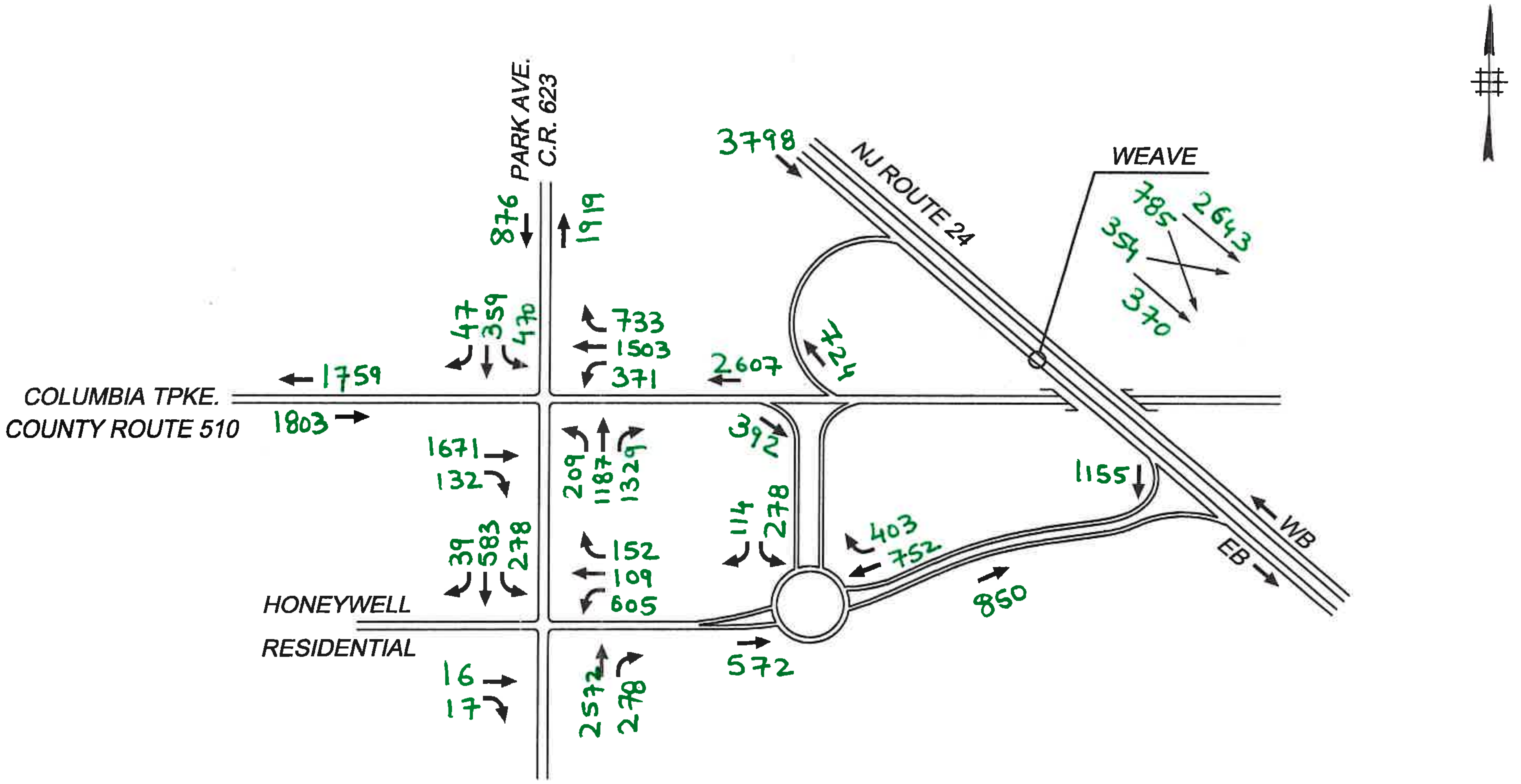
IH Engineers, P.C.

NJDOT CONCEPT DEVELOPMENT - COLUMBIA TURNPIKE (C.R. 510) AND NJ ROUTE 24
MORRIS COUNTY, NEW JERSEY



SCENARIO: Alt. 2
YEAR: 2040
PEAK HOUR: PM

N.T.S.

HCM 6th Signalized Intersection Summary
3: Park Avenue & Columbia Turnpike

02/04/2020

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱↱	↰↰	↑↑	↱	↰	↑↑	↱↱	↰↰	↑↱	
Traffic Volume (veh/h)	0	1671	132	371	1503	733	209	1187	1329	470	359	47
Future Volume (veh/h)	0	1671	132	371	1503	733	209	1187	1329	470	359	47
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1885	1900	1870	1841	1811	1796	1856	1856	1885	1885	1885
Adj Flow Rate, veh/h	0	1778	153	417	1748	916	246	1448	1510	534	413	81
Peak Hour Factor	0.77	0.94	0.86	0.89	0.86	0.80	0.85	0.82	0.88	0.88	0.87	0.58
Percent Heavy Veh, %	0	1	0	2	4	6	7	3	3	1	1	1
Cap, veh/h	0	1323	1498	159	1587	850	272	1058	958	348	720	140
Arrive On Green	0.00	0.37	0.37	0.05	0.45	0.45	0.05	0.10	0.10	0.10	0.24	0.24
Sat Flow, veh/h	0	3676	2834	3456	3497	1535	1711	3526	2768	3483	2990	582
Grp Volume(v), veh/h	0	1778	153	417	1748	916	246	1448	1510	534	246	248
Grp Sat Flow(s),veh/h/ln	0	1791	1417	1728	1749	1535	1711	1763	1384	1742	1791	1780
Q Serve(g_s), s	0.0	48.0	3.5	6.0	59.0	59.0	18.6	39.0	39.0	13.0	15.7	16.0
Cycle Q Clear(g_c), s	0.0	48.0	3.5	6.0	59.0	59.0	18.6	39.0	39.0	13.0	15.7	16.0
Prop In Lane	0.00		1.00	1.00		1.00	1.00		1.00	1.00		0.33
Lane Grp Cap(c), veh/h	0	1323	1498	159	1587	850	272	1058	958	348	431	429
V/C Ratio(X)	0.00	1.34	0.10	2.61	1.10	1.08	0.90	1.37	1.58	1.53	0.57	0.58
Avail Cap(c_a), veh/h	0	1323	1498	159	1587	850	290	1058	958	348	431	429
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	1.00	0.09	0.09	0.09	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	41.0	15.3	62.0	35.5	29.0	60.6	58.6	53.8	58.5	43.4	43.5
Incr Delay (d2), s/veh	0.0	160.1	0.0	744.4	55.7	53.9	3.9	166.6	259.7	253.9	5.4	5.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	49.8	1.1	19.0	35.4	36.2	8.9	43.0	50.3	18.0	7.6	7.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	201.1	15.3	806.4	91.2	82.9	64.5	225.2	313.6	312.4	48.8	49.1
LnGrp LOS	A	F	B	F	F	F	E	F	F	F	D	D
Approach Vol, veh/h		1931			3081			3204			1028	
Approach Delay, s/veh		186.4			185.5			254.5			185.8	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6		8				
Phs Duration (G+Y+Rc), s	18.0	46.0	11.0	55.0	25.7	38.3		66.0				
Change Period (Y+Rc), s	5.0	7.0	5.0	7.0	5.0	7.0		7.0				
Max Green Setting (Gmax), s	13.0	39.0	6.0	48.0	22.0	30.0		59.0				
Max Q Clear Time (g_c+I1), s	15.0	41.0	8.0	50.0	20.6	18.0		61.0				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.1	2.3		0.0				

Intersection Summary			
HCM 6th Ctrl Delay			209.7
HCM 6th LOS			F

HCM 6th Signalized Intersection Summary
5: Park Avenue & Alt 2 Ramp

02/04/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↱		↰↰	↱			↑↑	↱	↰↰	↑↱	
Traffic Volume (veh/h)	0	16	17	605	109	152	0	2572	278	278	583	39
Future Volume (veh/h)	0	16	17	605	109	152	0	2572	278	278	583	39
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	1870	0	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	17	18	658	118	165	0	2796	302	302	634	42
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	2	0	2	2	2	2	2
Cap, veh/h	0	23	24	478	98	137	0	2032	1126	348	2392	158
Arrive On Green	0.00	0.03	0.03	0.14	0.14	0.14	0.00	0.57	0.57	0.20	1.00	1.00
Sat Flow, veh/h	0	831	880	3456	706	987	0	3647	1585	3456	3383	224
Grp Volume(v), veh/h	0	0	35	658	0	283	0	2796	302	302	333	343
Grp Sat Flow(s),veh/h/ln	0	0	1712	1728	0	1693	0	1777	1585	1728	1777	1830
Q Serve(g_s), s	0.0	0.0	2.6	18.0	0.0	18.0	0.0	74.3	8.9	11.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	2.6	18.0	0.0	18.0	0.0	74.3	8.9	11.0	0.0	0.0
Prop In Lane	0.00		0.51	1.00		0.58	0.00		1.00	1.00		0.12
Lane Grp Cap(c), veh/h	0	0	47	478	0	234	0	2032	1126	348	1256	1294
V/C Ratio(X)	0.00	0.00	0.74	1.38	0.00	1.21	0.00	1.38	0.27	0.87	0.26	0.27
Avail Cap(c_a), veh/h	0	0	237	478	0	234	0	2032	1126	364	1256	1294
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.09	0.09	0.09
Uniform Delay (d), s/veh	0.0	0.0	62.7	56.0	0.0	56.0	0.0	27.8	6.7	51.1	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	20.1	181.6	0.0	126.4	0.0	172.4	0.6	2.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	1.4	19.7	0.0	15.7	0.0	78.0	4.8	4.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	82.8	237.6	0.0	182.4	0.0	200.2	7.3	53.3	0.0	0.0
LnGrp LOS	A	A	F	F	A	F	A	F	A	D	A	A
Approach Vol, veh/h		35			941			3098			978	
Approach Delay, s/veh		82.8			221.0			181.4			16.5	
Approach LOS		F			F			F			B	

Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	17.6	80.3		8.1		97.9		24.0				
Change Period (Y+Rc), s	4.5	6.0		4.5		6.0		6.0				
Max Green Setting (Gmax), s	13.7	59.3		18.0		77.5		18.0				
Max Q Clear Time (g_c+I1), s	13.0	76.3		4.6		2.0		20.0				
Green Ext Time (p_c), s	0.1	0.0		0.1		4.0		0.0				

Intersection Summary			
HCM 6th Ctrl Delay			156.2
HCM 6th LOS			F

Intersection	
Intersection Delay, s/veh	15.1
Intersection LOS	C

Approach	EB	WB	SB	SW
Entry Lanes	1	2	1	0
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	622	1255	426	0
Demand Flow Rate, veh/h	634	1280	434	0
Vehicles Circulating, veh/h	308	0	833	833
Vehicles Exiting, veh/h	959	942	0	447
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	16.2	12.6	21.1	0.0
Approach LOS	C	B	C	-

Lane	Left	Left	Right	Left
Designated Moves	LT	LT	R	LR
Assumed Moves	LT	LT	R	LR
RT Channelized				
Lane Util	1.000	0.651	0.349	1.000
Critical Headway, s	4.113	4.293	4.113	4.113
Entry Flow, veh/h	634	833	447	434
Cap Entry Lane, veh/h	911	1130	1130	631
Entry HV Adj Factor	0.980	0.980	0.980	0.982
Flow Entry, veh/h	622	817	438	426
Cap Entry, veh/h	893	1108	1107	619
V/C Ratio	0.696	0.737	0.396	0.688
Control Delay, s/veh	16.2	15.4	7.3	21.1
LOS	C	C	A	C
95th %tile Queue, veh	6	7	2	5

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                        HCS 2010: Freeway Weaving Release 6.65
Phone:                                      Fax:
E-mail:

______________________________Operational Analysis_____________________________

Analyst:                      VJS
Agency/Co.:                   IH
Date Performed:               Feb 2020
Analysis Time Period:         PM Peak
Freeway/Dir of Travel:        NJ 24 EB at CR 510
Weaving Location:             EB
Analysis Year:                2040
Description:                  NJ 24/CR 510 CD - ALT 2

___________________________________Inputs______________________________________

Segment Type                                Freeway
Weaving configuration                       One-Sided
Number of lanes, N                          3           ln
Weaving segment length, LS                  1050        ft
Freeway free-flow speed, FFS                65          mi/h
Minimum segment speed, SMIN                 15          mi/h
Freeway maximum capacity, cIFL              2350        pc/h/ln

Terrain type                                Level
    Grade                                   0.00        %
    Length                                  0.00        mi

___________________Conversion to pc/h Under Base Conditions____________________
                                       Volume Components
                                      VFF     VRF     VFR     VRR
Volume, V                              2643    354     785     370  veh/h
Peak hour factor, PHF                  0.90    0.90    0.90    0.90
Peak 15-min volume, v15                734     98      218     103
Trucks and buses                       5       5       5       0          %
Recreational vehicles                  0       0       0       0          %
Trucks and buses PCE, ET               1.5     1.5     1.5     1.5
Recreational vehicle PCE, ER           1.2     1.2     1.2     1.2
Heavy vehicle adjustment, fHV          0.976   0.976   0.976   1.000
Driver population adjustment, fP       1.00    1.00    1.00    1.00
Flow rate, v                           3010    403     894     411   pc/h

Volume ratio, VR                               0.275

_________________________Configuration Characteristics_________________________
Number of maneuver lanes, NWL             2           ln
Interchange density, ID                   1.0         int/mi
Minimum RF lane changes, LCRF             1           lc/pc
Minimum FR lane changes, LCFR             1           lc/pc
Minimum RR lane changes, LCRR                         lc/pc

Minimum weaving lane changes, LCMIN       1297        lc/h
Weaving lane changes, LCW                 1464        lc/h
Non-weaving vehicle index, INW            359
Non-weaving lane change, LCNW             696         lc/h
Total lane changes, LCALL                 2160        lc/h

_______________________Weaving and Non-Weaving Speeds__________________________
Weaving intensity factor, W               0.399
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Average weaving speed, SW                  50.7        mi/h
Average non-weaving speed, SNW             48.1        mi/h

_________Weaving Segment Speed, Density, Level of Service and Capacity_________
Weaving segment speed, S                   48.8        mi/h
Weaving segment density, D                 32.2        pc/mi/ln
Level of service, LOS                      D
Weaving segment v/c ratio                  0.779
Weaving segment flow rate, v               4614        veh/h
Weaving segment capacity, cW               5924        veh/h

_______________________Limitations on Weaving Segments_________________________
If limit reached, see note.

                          Minimum       Maximum       Actual       Note
Weaving length (ft)          300           5316        1050         a,b
                                        Maximum       Analyzed
Density-based capacty,                      2350        2024         c
cIWL (pc/h/ln)
                                        Maximum       Analyzed
v/c ratio                                   1.00        0.779        d

Notes:
a.  In weaving segments shorter than 300 ft, weaving vehicles are assumed to
    make only necessary lane changes.
b.  Weaving segments longer than the calculated maximum length should be
    treated as isolated merge and diverge areas using the procedures of
    Chapter 13, "Freeway Merge and Diverge Segments."
c.  The density-based capacity exceeds the capacity of a basic freeway segment,
    under equivalent ideal conditions.
d.  Volumes exceed the weaving segment capacity. The level of service is F.

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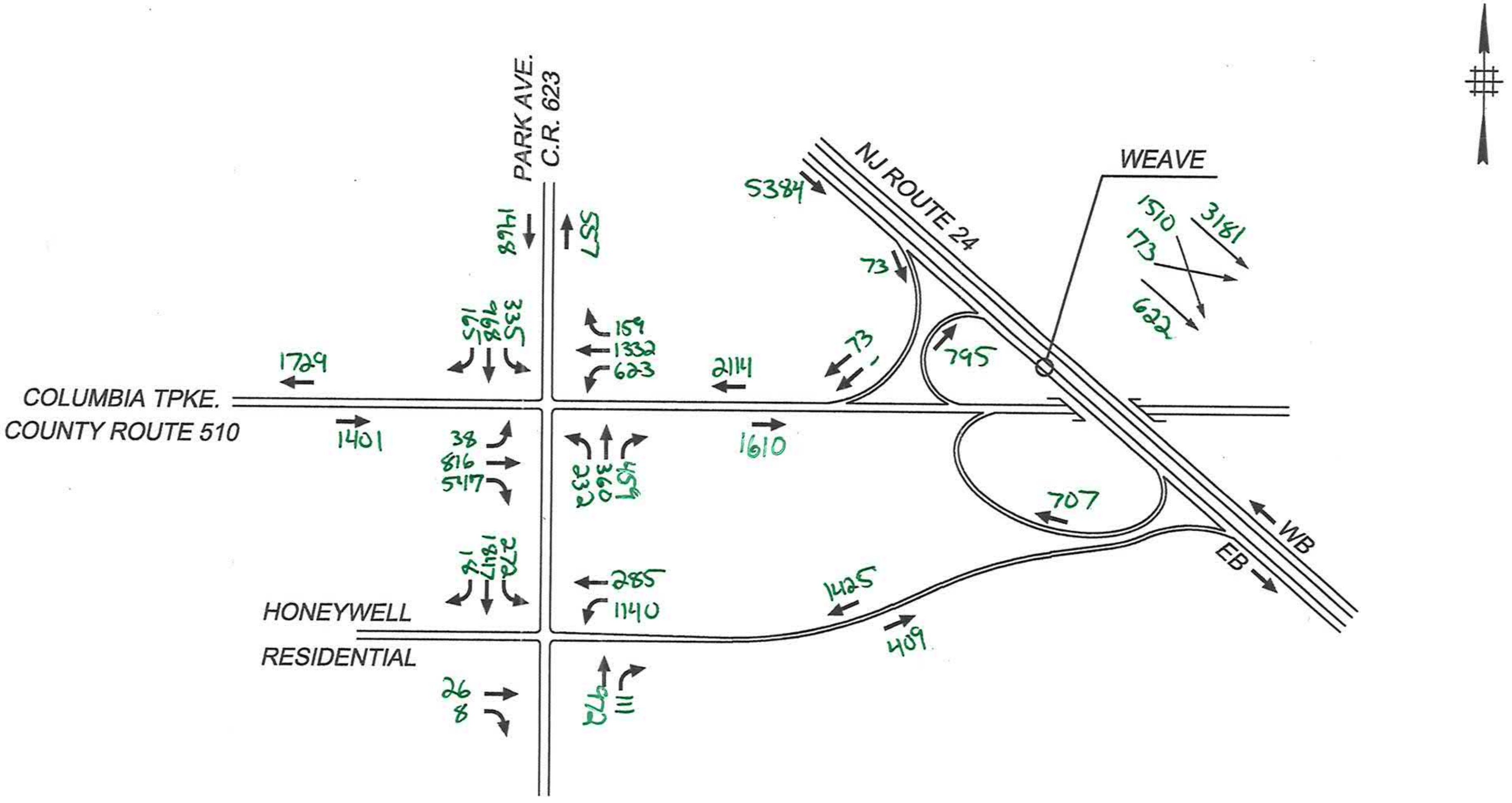
IH Engineers, P.C.

NJDOT CONCEPT DEVELOPMENT - COLUMBIA TURNPIKE (C.R. 510) AND NJ ROUTE 24
MORRIS COUNTY, NEW JERSEY



SCENARIO: Alt. 3
YEAR: 2040
PEAK HOUR: AM

N.T.S.

HCM 6th Signalized Intersection Summary
3: Park Avenue & Columbia Turnpike

01/21/2020

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱↱	↰↰	↑↑	↱	↰	↑↑	↱↱	↰↰	↑↱	
Traffic Volume (veh/h)	38	816	547	623	1332	159	232	360	459	335	968	165
Future Volume (veh/h)	38	816	547	623	1332	159	232	360	459	335	968	165
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1885	1900	1870	1841	1811	1796	1856	1856	1885	1885	1885
Adj Flow Rate, veh/h	60	887	781	799	1825	218	261	387	478	447	1126	181
Peak Hour Factor	0.63	0.92	0.70	0.78	0.73	0.73	0.89	0.93	0.96	0.75	0.86	0.91
Percent Heavy Veh, %	2	1	0	2	4	6	7	3	3	1	1	1
Cap, veh/h	76	764	869	847	1453	858	160	838	1336	501	891	143
Arrive On Green	0.04	0.21	0.21	0.25	0.42	0.42	0.09	0.24	0.24	0.14	0.29	0.29
Sat Flow, veh/h	1781	3582	2834	3456	3497	1535	1711	3526	2768	3483	3092	495
Grp Volume(v), veh/h	60	887	781	799	1825	218	261	387	478	447	651	656
Grp Sat Flow(s),veh/h/ln	1781	1791	1417	1728	1749	1535	1711	1763	1384	1742	1791	1796
Q Serve(g_s), s	5.0	32.0	32.0	34.1	62.3	10.9	14.0	14.1	16.2	18.9	43.2	43.2
Cycle Q Clear(g_c), s	5.0	32.0	32.0	34.1	62.3	10.9	14.0	14.1	16.2	18.9	43.2	43.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.28
Lane Grp Cap(c), veh/h	76	764	869	847	1453	858	160	838	1336	501	516	518
V/C Ratio(X)	0.78	1.16	0.90	0.94	1.26	0.25	1.63	0.46	0.36	0.89	1.26	1.27
Avail Cap(c_a), veh/h	95	764	869	875	1453	858	160	838	1336	581	516	518
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	71.1	59.0	49.8	55.6	43.8	17.0	68.0	48.9	24.2	63.1	53.4	53.4
Incr Delay (d2), s/veh	28.1	86.6	12.2	18.0	121.0	0.2	312.2	1.8	0.7	14.6	132.1	135.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	23.5	15.0	16.5	50.0	3.7	19.9	6.4	5.3	9.4	38.2	38.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	99.2	145.6	62.0	73.6	164.9	17.1	380.2	50.8	25.0	77.7	185.5	188.4
LnGrp LOS	F	F	E	E	F	B	F	D	C	E	F	F
Approach Vol, veh/h		1728			2842			1126			1754	
Approach Delay, s/veh		106.2			127.9			116.2			159.1	
Approach LOS		F			F			F			F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	26.6	42.7	41.8	39.0	19.0	50.2	11.4	69.3				
Change Period (Y+Rc), s	5.0	7.0	5.0	7.0	5.0	7.0	5.0	7.0				
Max Green Setting (Gmax), s	25.0	31.0	38.0	32.0	14.0	42.0	8.0	62.0				
Max Q Clear Time (g_c+I1), s	20.9	18.2	36.1	34.0	16.0	45.2	7.0	64.3				
Green Ext Time (p_c), s	0.7	3.7	0.7	0.0	0.0	0.0	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay			128.4									
HCM 6th LOS			F									

HCM 6th Signalized Intersection Summary
12: Park Avenue & Alt 3 Ramp

01/21/2020

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↱		↰↰	↱			↑↑	↱	↰↰	↑↱	
Traffic Volume (veh/h)	0	26	8	1140	285	1	0	972	111	272	1847	18
Future Volume (veh/h)	0	26	8	1140	285	1	0	972	111	272	1847	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	1870	0	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	28	9	1239	310	1	0	1057	121	296	2008	20
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	2	0	2	2	2	2	2
Cap, veh/h	0	46	15	1002	660	2	0	1618	1181	348	2112	21
Arrive On Green	0.00	0.03	0.03	0.29	0.35	0.35	0.00	0.46	0.46	0.10	0.59	0.59
Sat Flow, veh/h	0	1356	436	3456	1863	6	0	3647	1585	3456	3605	36
Grp Volume(v), veh/h	0	0	37	1239	0	311	0	1057	121	296	988	1040
Grp Sat Flow(s),veh/h/ln	0	0	1792	1728	0	1869	0	1777	1585	1728	1777	1864
Q Serve(g_s), s	0.0	0.0	3.1	43.5	0.0	19.3	0.0	34.6	3.2	12.6	77.8	78.4
Cycle Q Clear(g_c), s	0.0	0.0	3.1	43.5	0.0	19.3	0.0	34.6	3.2	12.6	77.8	78.4
Prop In Lane	0.00		0.24	1.00		0.00	0.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	0	0	61	1002	0	662	0	1618	1181	348	1041	1092
V/C Ratio(X)	0.00	0.00	0.60	1.24	0.00	0.47	0.00	0.65	0.10	0.85	0.95	0.95
Avail Cap(c_a), veh/h	0	0	215	1002	0	822	0	1618	1181	463	1041	1092
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	71.4	53.2	0.0	37.5	0.0	31.7	5.3	66.3	29.0	29.1
Incr Delay (d2), s/veh	0.0	0.0	9.3	115.0	0.0	0.5	0.0	2.1	0.2	11.0	18.0	17.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	1.5	34.2	0.0	8.7	0.0	15.2	1.0	6.0	35.2	37.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	80.7	168.3	0.0	38.0	0.0	33.8	5.4	77.3	47.0	47.0
LnGrp LOS	A	A	F	F	A	D	A	C	A	E	D	D
Approach Vol, veh/h		37			1550			1178			2324	
Approach Delay, s/veh		80.7			142.2			30.9			50.9	
Approach LOS		F			F			C			D	
Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	19.6	72.8	48.0	9.6		92.4		57.6				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s	20.1	50.4	43.5	18.0		75.0		66.0				
Max Q Clear Time (g_c+I1), s	14.6	36.6	45.5	5.1		80.4		21.3				
Green Ext Time (p_c), s	0.5	6.5	0.0	0.1		0.0		1.7				
Intersection Summary												
HCM 6th Ctrl Delay			74.3									
HCM 6th LOS			E									

```
                    HCS 2010: Freeway Weaving Release 6.65
Phone:                                       Fax:
E-mail:

______________________________Operational Analysis_____________________________

Analyst:                      SMC
Agency/Co.:                   IH
Date Performed:               Dec 2019
Analysis Time Period:         AM Peak
Freeway/Dir of Travel:        NJ 24 EB at CR 510
Weaving Location:             EB
Analysis Year:                2040
Description:                  NJ 24/CR 510 CD - Alt 3

___________________________________Inputs_______________________________________

Segment Type                                Freeway
Weaving configuration                       One-Sided
Number of lanes, N                          3            ln
Weaving segment length, LS                  600          ft
Freeway free-flow speed, FFS                65           mi/h
Minimum segment speed, SMIN                 15           mi/h
Freeway maximum capacity, cIFL              2350         pc/h/ln

Terrain type                                Level
    Grade                                   0.00         %
    Length                                  0.00         mi

___________________Conversion to pc/h Under Base Conditions____________________
                                         Volume Components
                                        VFF     VRF     VFR     VRR
Volume, V                                3181    173     1510    622  veh/h
Peak hour factor, PHF                    0.90    0.90    0.90    0.90
Peak 15-min volume, v15                  884     48      419     173
Trucks and buses                         5       5       5       0         %
Recreational vehicles                    0       0       0       0         %
Trucks and buses PCE, ET                 1.5     1.5     1.5     1.5
Recreational vehicle PCE, ER             1.2     1.2     1.2     1.2
Heavy vehicle adjustment, fHV            0.976   0.976   0.976   1.000
Driver population adjustment, fP         1.00    1.00    1.00    1.00
Flow rate, v                             3623    197     1720    691   pc/h

Volume ratio, VR                                 0.308

_________________________Configuration Characteristics__________________________
Number of maneuver lanes, NWL                2           ln
Interchange density, ID                      1.0         int/mi
Minimum RF lane changes, LCRF                1           lc/pc
```

```
Minimum FR lane changes, LCFR              1           lc/pc
Minimum RR lane changes, LCRR                          lc/pc

Minimum weaving lane changes, LCMIN                    lc/h
Weaving lane changes, LCW                              lc/h
Non-weaving vehicle index, INW
Non-weaving lane change, LCNW                          lc/h
Total lane changes, LCALL                              lc/h

_______________________Weaving and Non-Weaving Speeds__________________________
Weaving intensity factor, W
Average weaving speed, SW                              mi/h
Average non-weaving speed, SNW                         mi/h

_________Weaving Segment Speed, Density, Level of Service and Capacity_________
Weaving segment speed, S                               mi/h
Weaving segment density, D                             pc/mi/ln
Level of service, LOS                      F
Weaving segment v/c ratio                  1.062
Weaving segment flow rate, v               6096        veh/h
Weaving segment capacity, cW               5742        veh/h

_______________________Limitations on Weaving Segments_________________________
If limit reached, see note.

                          Minimum       Maximum       Actual       Note
Weaving length (ft)          300            5666        600         a,b
                                        Maximum       Analyzed
Density-based capacty,                      2350        1962         c
cIWL (pc/h/ln)
                                        Maximum       Analyzed
v/c ratio                                   1.00        1.062        d

Notes:
a.  In weaving segments shorter than 300 ft, weaving vehicles are assumed to
    make only necessary lane changes.
b.  Weaving segments longer than the calculated maximum length should be
    treated as isolated merge and diverge areas using the procedures of
    Chapter 13, "Freeway Merge and Diverge Segments."
c.  The density-based capacity exceeds the capacity of a basic freeway segment,
    under equivalent ideal conditions.
d.  Volumes exceed the weaving segment capacity. The level of service is F.

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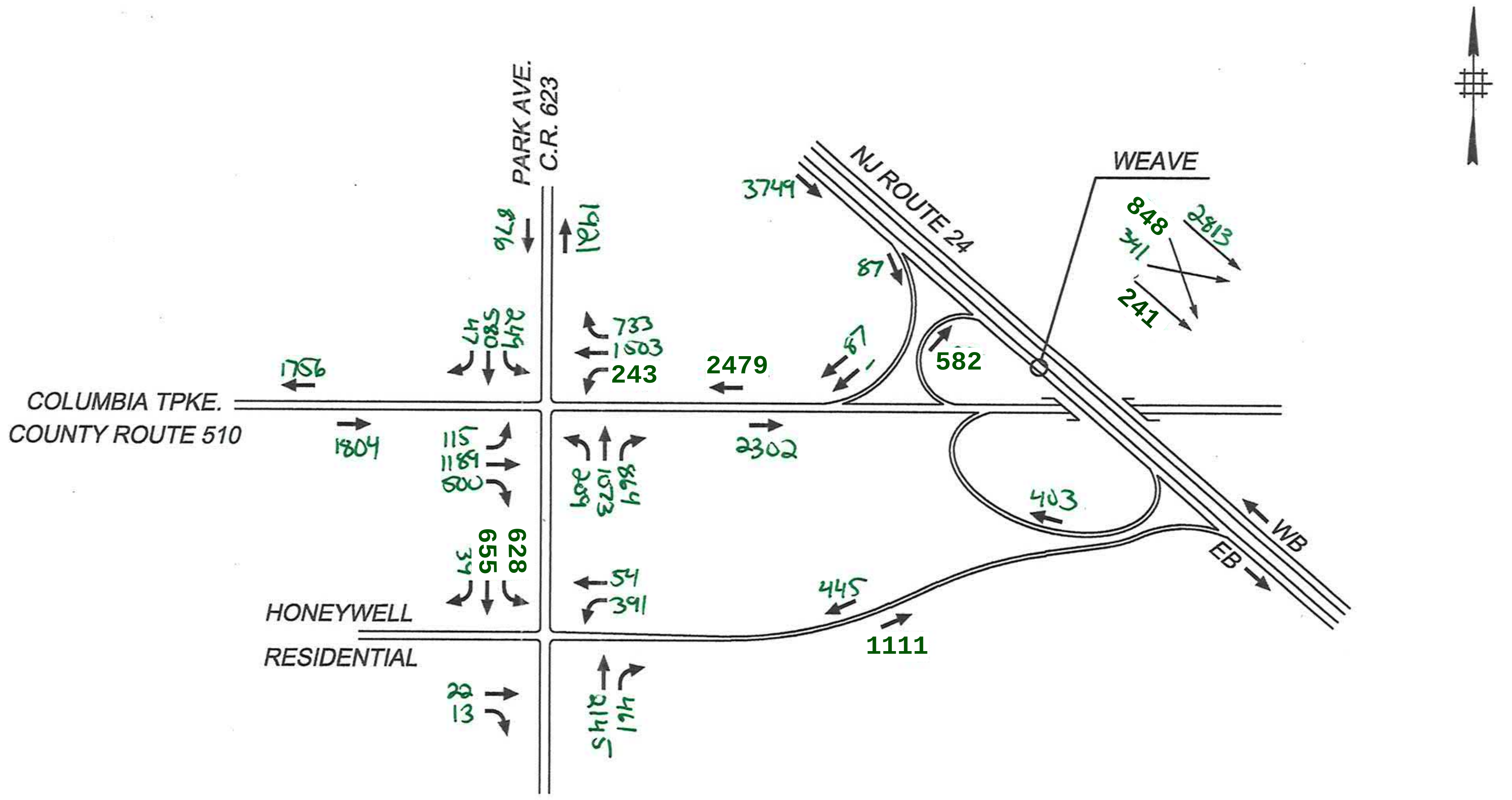
IH Engineers, P.C.

NJDOT CONCEPT DEVELOPMENT - COLUMBIA TURNPIKE (C.R. 510) AND NJ ROUTE 24
MORRIS COUNTY, NEW JERSEY



SCENARIO: Alt.3
YEAR: 2040
PEAK HOUR: PM

N.T.S.

HCM 6th Signalized Intersection Summary
3: Park Avenue & Columbia Turnpike

09/22/2020

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱↱	↰↰	↑↑	↱	↰	↑↑	↱↱	↰↰	↑↱	
Traffic Volume (veh/h)	115	1189	500	243	1503	733	209	1073	864	249	580	47
Future Volume (veh/h)	115	1189	500	243	1503	733	209	1073	864	249	580	47
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1885	1900	1870	1841	1811	1796	1856	1856	1885	1885	1885
Adj Flow Rate, veh/h	149	1265	581	273	1748	916	246	1309	982	283	667	81
Peak Hour Factor	0.77	0.94	0.86	0.89	0.86	0.80	0.85	0.82	0.88	0.88	0.87	0.58
Percent Heavy Veh, %	2	1	0	2	4	6	7	3	3	1	1	1
Cap, veh/h	131	1244	1419	320	1282	706	262	1081	1105	325	793	96
Arrive On Green	0.07	0.35	0.35	0.09	0.37	0.37	0.15	0.31	0.31	0.09	0.25	0.25
Sat Flow, veh/h	1781	3582	2834	3456	3497	1535	1711	3526	2768	3483	3216	390
Grp Volume(v), veh/h	149	1265	581	273	1748	916	246	1309	982	283	371	377
Grp Sat Flow(s),veh/h/ln	1781	1791	1417	1728	1749	1535	1711	1763	1384	1742	1791	1815
Q Serve(g_s), s	11.0	52.1	19.3	11.7	55.0	55.0	21.3	46.0	46.0	12.0	29.5	29.6
Cycle Q Clear(g_c), s	11.0	52.1	19.3	11.7	55.0	55.0	21.3	46.0	46.0	12.0	29.5	29.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.21
Lane Grp Cap(c), veh/h	131	1244	1419	320	1282	706	262	1081	1105	325	442	448
V/C Ratio(X)	1.14	1.02	0.41	0.85	1.36	1.30	0.94	1.21	0.89	0.87	0.84	0.84
Avail Cap(c_a), veh/h	131	1244	1419	369	1282	706	262	1081	1105	325	442	448
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	69.5	48.9	23.5	67.1	47.5	40.5	62.8	52.0	42.0	67.1	53.7	53.7
Incr Delay (d2), s/veh	121.5	29.7	0.2	15.7	168.5	144.2	39.0	103.6	10.7	21.6	17.3	17.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.4	27.9	6.3	5.7	52.9	52.7	12.1	35.6	17.8	6.3	15.4	15.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	191.0	78.6	23.7	82.8	216.0	184.7	101.8	155.6	52.7	88.7	71.0	70.9
LnGrp LOS	F	F	C	F	F	F	F	F	D	F	E	E
Approach Vol, veh/h		1995			2937			2537			1031	
Approach Delay, s/veh		71.0			193.8			110.5			75.8	
Approach LOS		E			F			F			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	19.0	53.0	18.9	59.1	28.0	44.0	16.0	62.0				
Change Period (Y+Rc), s	5.0	7.0	5.0	7.0	5.0	7.0	5.0	7.0				
Max Green Setting (Gmax), s	14.0	46.0	16.0	50.0	23.0	37.0	11.0	55.0				
Max Q Clear Time (g_c+I1), s	14.0	48.0	13.7	54.1	23.3	31.6	13.0	57.0				
Green Ext Time (p_c), s	0.0	0.0	0.2	0.0	0.0	2.1	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay			125.8									
HCM 6th LOS			F									

HCM 6th Signalized Intersection Summary
12: Park Avenue & Alt 3 Ramp

09/24/2020

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↱		↰↰	↱			↑↑	↱	↰↰	↑↱	
Traffic Volume (veh/h)	0	22	13	391	52	2	0	2145	461	628	655	39
Future Volume (veh/h)	0	22	13	391	52	2	0	2145	461	628	655	39
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	1870	0	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	24	14	425	57	2	0	2332	501	683	712	42
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	2	0	2	2	2	2	2
Cap, veh/h	0	39	23	392	325	11	0	1895	1025	654	2573	152
Arrive On Green	0.00	0.04	0.04	0.11	0.18	0.18	0.00	0.53	0.53	0.19	0.75	0.75
Sat Flow, veh/h	0	1108	646	3456	1796	63	0	3647	1585	3456	3410	201
Grp Volume(v), veh/h	0	0	38	425	0	59	0	2332	501	683	371	383
Grp Sat Flow(s),veh/h/ln	0	0	1754	1728	0	1859	0	1777	1585	1728	1777	1834
Q Serve(g_s), s	0.0	0.0	3.0	15.9	0.0	3.8	0.0	74.7	22.9	26.5	9.1	9.1
Cycle Q Clear(g_c), s	0.0	0.0	3.0	15.9	0.0	3.8	0.0	74.7	22.9	26.5	9.1	9.1
Prop In Lane	0.00		0.37	1.00		0.03	0.00		1.00	1.00		0.11
Lane Grp Cap(c), veh/h	0	0	62	392	0	337	0	1895	1025	654	1341	1384
V/C Ratio(X)	0.00	0.00	0.61	1.08	0.00	0.18	0.00	1.23	0.49	1.04	0.28	0.28
Avail Cap(c_a), veh/h	0	0	226	392	0	510	0	1895	1025	654	1341	1384
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	66.6	62.0	0.0	48.5	0.0	32.7	12.8	56.8	5.3	5.3
Incr Delay (d2), s/veh	0.0	0.0	9.5	69.5	0.0	0.2	0.0	108.6	1.7	47.2	0.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	1.5	10.6	0.0	1.7	0.0	59.1	7.8	15.5	2.9	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	76.0	131.5	0.0	48.7	0.0	141.3	14.4	104.0	5.8	5.8
LnGrp LOS	A	A	E	F	A	D	A	F	B	F	A	A
Approach Vol, veh/h		38			484			2833			1437	
Approach Delay, s/veh		76.0			121.4			118.8			52.5	
Approach LOS		E			F			F			D	
Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	31.0	79.2	20.4	9.4		110.2		29.8				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s	26.5	61.6	15.9	18.0		92.6		38.4				
Max Q Clear Time (g_c+I1), s	28.5	76.7	17.9	5.0		11.1		5.8				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.1		4.6		0.2				
Intersection Summary												
HCM 6th Ctrl Delay			98.9									
HCM 6th LOS			F									

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                    HCS 2010: Freeway Weaving Release 6.65
Phone:                                          Fax:
E-mail:

____________________________Operational Analysis___________________________

Analyst:                      SMC
Agency/Co.:                   IH
Date Performed:               2020
Analysis Time Period:         PM Peak
Freeway/Dir of Travel:        NJ 24 EB at CR 510
Weaving Location:             EB
Analysis Year:                2040
Description:                  NJ 24/CR 510 CD - Alt 3

________________________________Inputs______________________________________

Segment Type                                 Freeway
Weaving configuration                        One-Sided
Number of lanes, N                           3           ln
Weaving segment length, LS                   600         ft
Freeway free-flow speed, FFS                 65          mi/h
Minimum segment speed, SMIN                  15          mi/h
Freeway maximum capacity, cIFL               2350        pc/h/ln

Terrain type                                 Level
    Grade                                    0.00        %
    Length                                   0.00        mi

__________________Conversion to pc/h Under Base Conditions_________________
                                       Volume Components
                                     VFF     VRF     VFR     VRR
Volume, V                             2813    341     848     241   veh/h
Peak hour factor, PHF                 0.90    0.90    0.90    0.90
Peak 15-min volume, v15               781     95      236     67
Trucks and buses                      5       5       5       0        %
Recreational vehicles                 0       0       0       0        %
Trucks and buses PCE, ET              1.5     1.5     1.5     1.5
Recreational vehicle PCE, ER          1.2     1.2     1.2     1.2
Heavy vehicle adjustment, fHV         0.976   0.976   0.976   1.000
Driver population adjustment, fP      1.00    1.00    1.00    1.00
Flow rate, v                          3204    388     966     268    pc/h

Volume ratio, VR                              0.281

_______________________Configuration Characteristics_______________________
Number of maneuver lanes, NWL                2           ln
Interchange density, ID                      1.0         int/mi
Minimum RF lane changes, LCRF                1           lc/pc
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Minimum FR lane changes, LCFR              1           lc/pc
Minimum RR lane changes, LCRR                          lc/pc

Minimum weaving lane changes, LCMIN        1354        lc/h
Weaving lane changes, LCW                  1460        lc/h
Non-weaving vehicle index, INW             208
Non-weaving lane change, LCNW              463         lc/h
Total lane changes, LCALL                  1923        lc/h

_______________________Weaving and Non-Weaving Speeds__________________________
Weaving intensity factor, W                0.567
Average weaving speed, SW                  46.9        mi/h
Average non-weaving speed, SNW             47.5        mi/h

_________Weaving Segment Speed, Density, Level of Service and Capacity_________
Weaving segment speed, S                   47.4        mi/h
Weaving segment density, D                 34.0        pc/mi/ln
Level of service, LOS                      D
Weaving segment v/c ratio                  0.811
Weaving segment flow rate, v               4715        veh/h
Weaving segment capacity, cW               5810        veh/h

_______________________Limitations on Weaving Segments_________________________
If limit reached, see note.

                         Minimum       Maximum       Actual       Note
Weaving length (ft)         300           5376         600         a,b
                                       Maximum       Analyzed
Density-based capacty,                    2350         1985          c
cIWL (pc/h/ln)
                                       Maximum       Analyzed
v/c ratio                                 1.00         0.811         d

Notes:
a.  In weaving segments shorter than 300 ft, weaving vehicles are assumed to
    make only necessary lane changes.
b.  Weaving segments longer than the calculated maximum length should be
    treated as isolated merge and diverge areas using the procedures of
    Chapter 13, "Freeway Merge and Diverge Segments."
c.  The density-based capacity exceeds the capacity of a basic freeway segment,
    under equivalent ideal conditions.
d.  Volumes exceed the weaving segment capacity. The level of service is F.

 ______________________________________________________________________________
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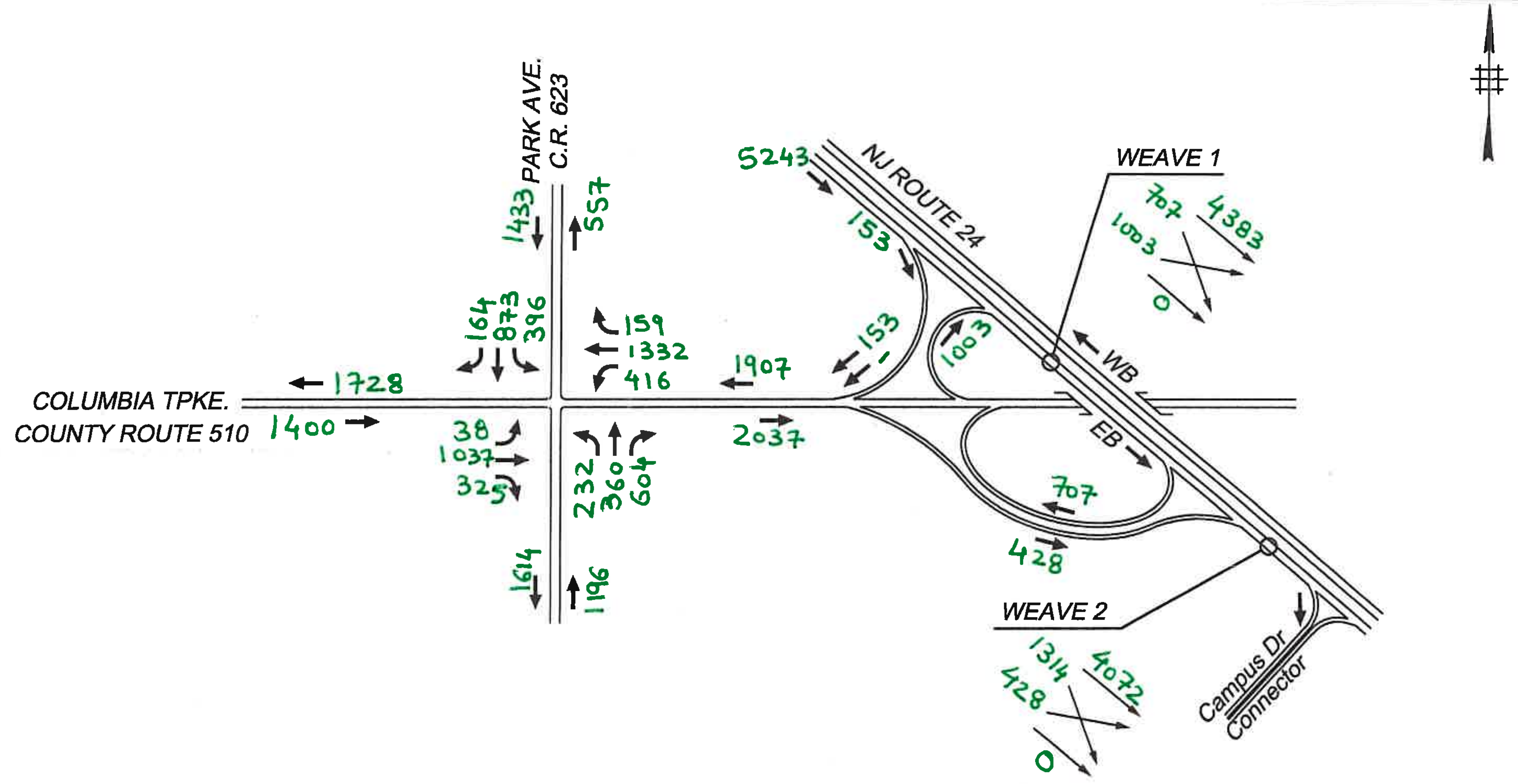
IH Engineers P.C.

NJDOT CONCEPT DEVELOPMENT - COLUMBIA TURNPIKE (C.R. 510) AND NJ ROUTE 24
MORRIS COUNTY, NEW JERSEY



SCENARIO: Alt-4
YEAR: 2040
PEAK HOUR: AM

N.T.S.

HCM 6th Signalized Intersection Summary
3: Park Avenue & Columbia Turnpike

02/04/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰↰	↑↑	↱	↰	↑↑	↱↱	↰↰	↑↱	
Traffic Volume (veh/h)	38	1037	325	416	1332	159	232	360	604	396	873	164
Future Volume (veh/h)	38	1037	325	416	1332	159	232	360	604	396	873	164
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1885	1900	1870	1841	1811	1796	1856	1856	1885	1885	1885
Adj Flow Rate, veh/h	60	1127	464	533	1825	218	261	387	629	528	1015	180
Peak Hour Factor	0.63	0.92	0.70	0.78	0.73	0.73	0.89	0.93	0.96	0.75	0.86	0.91
Percent Heavy Veh, %	2	1	0	2	4	6	7	3	3	1	1	1
Cap, veh/h	77	1113	664	583	1527	929	173	669	992	587	781	138
Arrive On Green	0.04	0.31	0.31	0.17	0.44	0.44	0.10	0.19	0.19	0.17	0.26	0.26
Sat Flow, veh/h	1781	3582	1610	3456	3497	1535	1711	3526	2768	3483	3041	538
Grp Volume(v), veh/h	60	1127	464	533	1825	218	261	387	629	528	597	598
Grp Sat Flow(s),veh/h/ln	1781	1791	1610	1728	1749	1535	1711	1763	1384	1742	1791	1788
Q Serve(g_s), s	4.9	46.0	35.2	22.4	64.6	9.7	15.0	14.8	27.9	22.0	38.0	38.0
Cycle Q Clear(g_c), s	4.9	46.0	35.2	22.4	64.6	9.7	15.0	14.8	27.9	22.0	38.0	38.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.30
Lane Grp Cap(c), veh/h	77	1113	664	583	1527	929	173	669	992	587	460	459
V/C Ratio(X)	0.78	1.01	0.70	0.91	1.19	0.23	1.51	0.58	0.63	0.90	1.30	1.30
Avail Cap(c_a), veh/h	108	1113	664	631	1527	929	173	669	992	683	460	459
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	70.1	51.0	35.9	60.4	41.7	13.4	66.5	54.6	39.4	60.3	55.0	55.0
Incr Delay (d2), s/veh	21.0	30.0	3.2	17.2	94.5	0.1	254.9	1.2	1.3	13.6	149.6	151.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	24.8	13.9	11.0	46.3	3.2	18.8	6.7	9.4	10.8	36.1	36.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	91.1	81.0	39.2	77.6	136.1	13.6	321.4	55.8	40.7	73.9	204.6	206.1
LnGrp LOS	F	F	D	E	F	B	F	E	D	E	F	F
Approach Vol, veh/h		1651			2576			1277			1723	
Approach Delay, s/veh		69.6			113.7			102.7			165.1	
Approach LOS		E			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	29.9	35.1	30.0	53.0	20.0	45.0	11.4	71.6
Change Period (Y+Rc), s	5.0	7.0	5.0	7.0	5.0	7.0	5.0	7.0
Max Green Setting (Gmax), s	29.0	24.0	27.0	46.0	15.0	38.0	9.0	64.0
Max Q Clear Time (g_c+I1), s	24.0	29.9	24.4	48.0	17.0	40.0	6.9	66.6
Green Ext Time (p_c), s	1.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	113.9
HCM 6th LOS	F

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                        HCS 2010: Freeway Weaving Release 6.65
Phone:                                      Fax:
E-mail:

______________________________Operational Analysis_____________________________

Analyst:                      VJS
Agency/Co.:                   IH
Date Performed:               Feb 2020
Analysis Time Period:         AM Peak
Freeway/Dir of Travel:        NJ 24 EB at CR 510
Weaving Location:             EB
Analysis Year:                2040
Description:                  NJ 24/CR 510 CD - Alt 4

___________________________________Inputs______________________________________

Segment Type                                Freeway
Weaving configuration                       One-Sided
Number of lanes, N                          3           ln
Weaving segment length, LS                  600         ft
Freeway free-flow speed, FFS                65          mi/h
Minimum segment speed, SMIN                 15          mi/h
Freeway maximum capacity, cIFL              2350        pc/h/ln

Terrain type                                Level
    Grade                                   0.00        %
    Length                                  0.00        mi

___________________Conversion to pc/h Under Base Conditions____________________
                                       Volume Components
                                      VFF     VRF     VFR     VRR
Volume, V                              4383    1003    707     0    veh/h
Peak hour factor, PHF                  0.90    0.90    0.90    0.90
Peak 15-min volume, v15                1218    279     196     0
Trucks and buses                       5       5       5       0         %
Recreational vehicles                  0       0       0       0         %
Trucks and buses PCE, ET               1.5     1.5     1.5     1.5
Recreational vehicle PCE, ER           1.2     1.2     1.2     1.2
Heavy vehicle adjustment, fHV          0.976   0.976   0.976   1.000
Driver population adjustment, fP       1.00    1.00    1.00    1.00
Flow rate, v                           4992    1142    805     0     pc/h

Volume ratio, VR                               0.281

_________________________Configuration Characteristics_________________________
Number of maneuver lanes, NWL              2           ln
Interchange density, ID                   1.0          int/mi
Minimum RF lane changes, LCRF              1           lc/pc
Minimum FR lane changes, LCFR              1           lc/pc
Minimum RR lane changes, LCRR                          lc/pc

Minimum weaving lane changes, LCMIN                    lc/h
Weaving lane changes, LCW                              lc/h
Non-weaving vehicle index, INW
Non-weaving lane change, LCNW                          lc/h
Total lane changes, LCALL                              lc/h

_______________________Weaving and Non-Weaving Speeds__________________________
Weaving intensity factor, W
```

```
Average weaving speed, SW                                    mi/h
Average non-weaving speed, SNW                               mi/h

_________Weaving Segment Speed, Density, Level of Service and Capacity_________
Weaving segment speed, S                                     mi/h
Weaving segment density, D                                   pc/mi/ln
Level of service, LOS                       F
Weaving segment v/c ratio                   1.165
Weaving segment flow rate, v                6770         veh/h
Weaving segment capacity, cW                5810         veh/h

_______________________Limitations on Weaving Segments_________________________
If limit reached, see note.

                          Minimum       Maximum       Actual       Note
Weaving length (ft)          300           5377         600          a,b
                                        Maximum       Analyzed
Density-based capacty,                     2350         1985         c
cIWL (pc/h/ln)
                                        Maximum       Analyzed
v/c ratio                                  1.00         1.165        d

Notes:
a.  In weaving segments shorter than 300 ft, weaving vehicles are assumed to
    make only necessary lane changes.
b.  Weaving segments longer than the calculated maximum length should be
    treated as isolated merge and diverge areas using the procedures of
    Chapter 13, "Freeway Merge and Diverge Segments."
c.  The density-based capacity exceeds the capacity of a basic freeway segment,
    under equivalent ideal conditions.
d.  Volumes exceed the weaving segment capacity. The level of service is F.

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                        HCS 2010: Freeway Weaving Release 6.65
Phone:                                      Fax:
E-mail:

______________________________Operational Analysis_____________________________

Analyst:                      VJS
Agency/Co.:                   IH
Date Performed:               Feb 2020
Analysis Time Period:         AM Peak
Freeway/Dir of Travel:        NJ 24 EB at CR 510
Weaving Location:             EB
Analysis Year:                2040
Description:                  NJ 24/CR 510 CD - Alt 4, Weave 2

___________________________________Inputs______________________________________

Segment Type                                Freeway
Weaving configuration                       One-Sided
Number of lanes, N                          3           ln
Weaving segment length, LS                  900         ft
Freeway free-flow speed, FFS                65          mi/h
Minimum segment speed, SMIN                 15          mi/h
Freeway maximum capacity, cIFL              2350        pc/h/ln

Terrain type                                Level
    Grade                                   0.00        %
    Length                                  0.00        mi

___________________Conversion to pc/h Under Base Conditions____________________
                                       Volume Components
                                      VFF     VRF     VFR     VRR
Volume, V                              4072    428     1314    0    veh/h
Peak hour factor, PHF                  0.90    0.90    0.90    0.90
Peak 15-min volume, v15                1131    119     365     0
Trucks and buses                       5       5       5       0         %
Recreational vehicles                  0       0       0       0         %
Trucks and buses PCE, ET               1.5     1.5     1.5     1.5
Recreational vehicle PCE, ER           1.2     1.2     1.2     1.2
Heavy vehicle adjustment, fHV          0.976   0.976   0.976   1.000
Driver population adjustment, fP       1.00    1.00    1.00    1.00
Flow rate, v                           4638    487     1497    0     pc/h

Volume ratio, VR                               0.300

_________________________Configuration Characteristics_________________________
Number of maneuver lanes, NWL              2           ln
Interchange density, ID                    1.0         int/mi
Minimum RF lane changes, LCRF              1           lc/pc
Minimum FR lane changes, LCFR              1           lc/pc
Minimum RR lane changes, LCRR                          lc/pc

Minimum weaving lane changes, LCMIN                    lc/h
Weaving lane changes, LCW                              lc/h
Non-weaving vehicle index, INW
Non-weaving lane change, LCNW                          lc/h
Total lane changes, LCALL                              lc/h

_______________________Weaving and Non-Weaving Speeds__________________________
Weaving intensity factor, W
```

```
Average weaving speed, SW                                 mi/h
Average non-weaving speed, SNW                            mi/h

_________Weaving Segment Speed, Density, Level of Service and Capacity_________
Weaving segment speed, S                                  mi/h
Weaving segment density, D                                pc/mi/ln
Level of service, LOS                     F
Weaving segment v/c ratio                 1.108
Weaving segment flow rate, v              6460        veh/h
Weaving segment capacity, cW              5830        veh/h

_______________________Limitations on Weaving Segments_________________________
If limit reached, see note.

                          Minimum       Maximum       Actual       Note
Weaving length (ft)          300           5580         900          a,b
                                        Maximum       Analyzed
Density-based capacty,                     2350        1992          c
cIWL (pc/h/ln)
                                        Maximum       Analyzed
v/c ratio                                  1.00        1.108         d

Notes:
a.  In weaving segments shorter than 300 ft, weaving vehicles are assumed to
    make only necessary lane changes.
b.  Weaving segments longer than the calculated maximum length should be
    treated as isolated merge and diverge areas using the procedures of
    Chapter 13, "Freeway Merge and Diverge Segments."
c.  The density-based capacity exceeds the capacity of a basic freeway segment,
    under equivalent ideal conditions.
d.  Volumes exceed the weaving segment capacity. The level of service is F.

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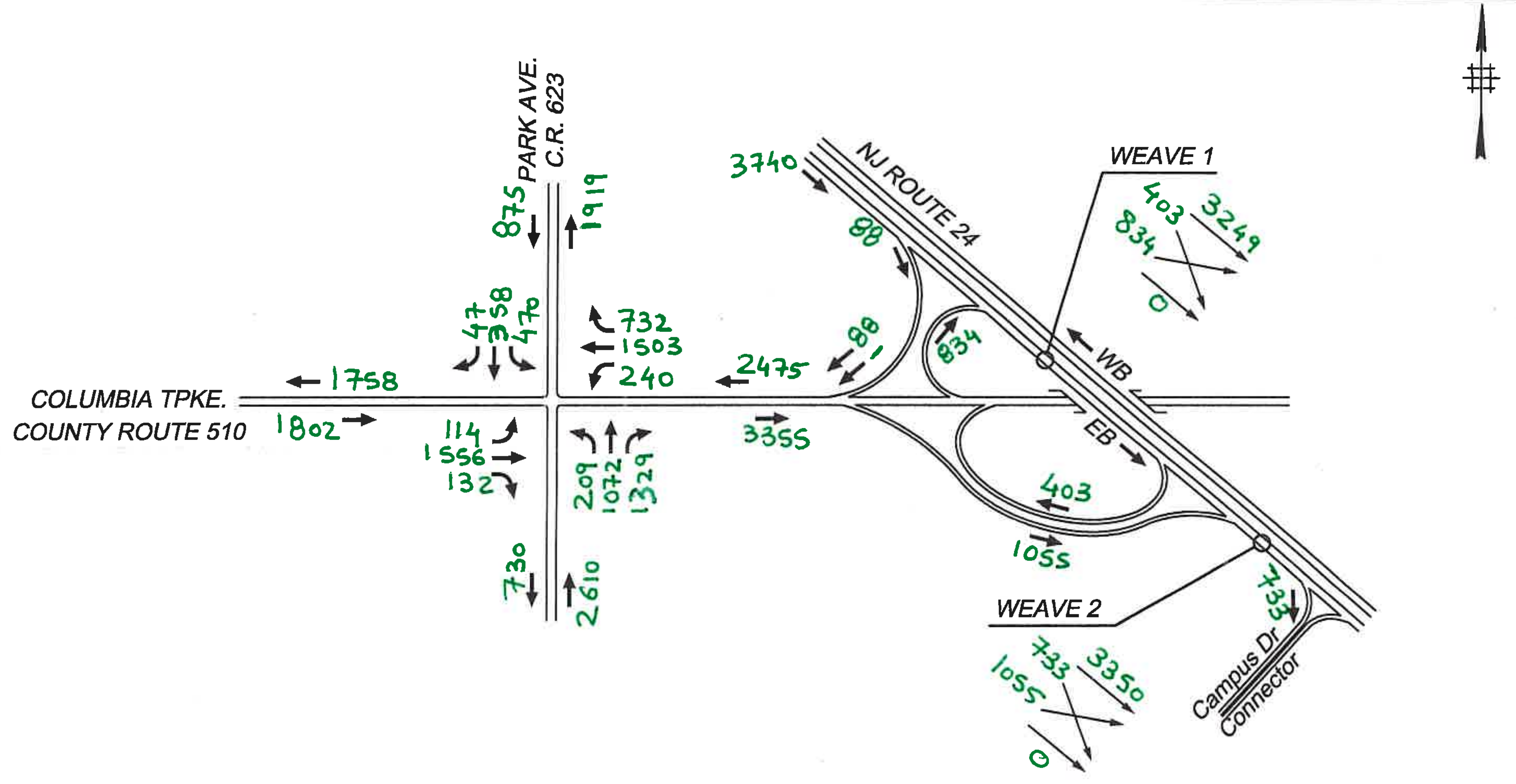
IH Engineers, P.C.

NJDOT CONCEPT DEVELOPMENT - COLUMBIA TURNPIKE (C.R. 510) AND NJ ROUTE 24
MORRIS COUNTY, NEW JERSEY



SCENARIO: Alt-4
YEAR: 2040
PEAK HOUR: PM

N.T.S.

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰↰	↑↑	↱	↰	↑↑	↱↱	↰↰	↑↱	
Traffic Volume (veh/h)	114	1556	132	240	1503	732	209	1072	1329	470	358	47
Future Volume (veh/h)	114	1556	132	240	1503	732	209	1072	1329	470	358	47
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1885	1870	1885	1885	1900	1900	1885	1885	1885
Adj Flow Rate, veh/h	148	1655	153	270	1748	915	246	1307	1510	534	411	81
Peak Hour Factor	0.77	0.94	0.86	0.89	0.86	0.80	0.85	0.82	0.88	0.88	0.87	0.58
Percent Heavy Veh, %	2	2	2	1	2	1	1	0	0	1	1	1
Cap, veh/h	170	1540	877	163	1367	796	215	890	831	395	717	140
Arrive On Green	0.10	0.43	0.43	0.05	0.38	0.38	0.12	0.25	0.25	0.11	0.24	0.24
Sat Flow, veh/h	1781	3554	1585	3483	3554	1598	1795	3610	2834	3483	2987	584
Grp Volume(v), veh/h	148	1655	153	270	1748	915	246	1307	1510	534	245	247
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1742	1777	1598	1795	1805	1417	1742	1791	1780
Q Serve(g_s), s	12.3	65.0	7.2	7.0	57.7	57.7	18.0	37.0	37.0	17.0	18.1	18.4
Cycle Q Clear(g_c), s	12.3	65.0	7.2	7.0	57.7	57.7	18.0	37.0	37.0	17.0	18.1	18.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.33
Lane Grp Cap(c), veh/h	170	1540	877	163	1367	796	215	890	831	395	430	427
V/C Ratio(X)	0.87	1.07	0.17	1.66	1.28	1.15	1.14	1.47	1.82	1.35	0.57	0.58
Avail Cap(c_a), veh/h	178	1540	877	163	1367	796	215	890	831	395	430	427
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	67.0	42.5	16.6	71.5	46.1	37.6	66.0	56.5	53.0	66.5	50.2	50.3
Incr Delay (d2), s/veh	33.6	45.9	0.1	323.1	131.1	81.8	104.8	216.7	372.2	174.6	1.8	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.1	37.3	2.5	10.4	49.2	45.2	14.5	43.5	58.1	17.1	8.3	8.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	100.5	88.4	16.7	394.6	177.3	119.4	170.8	273.2	425.2	241.1	52.0	52.2
LnGrp LOS	F	F	B	F	F	F	F	F	F	F	D	D
Approach Vol, veh/h		1956			2933			3063			1026	
Approach Delay, s/veh		83.7			179.2			339.9			150.5	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.0	44.0	12.0	72.0	23.0	43.0	19.3	64.7
Change Period (Y+Rc), s	5.0	7.0	5.0	7.0	5.0	7.0	5.0	7.0
Max Green Setting (Gmax), s	17.0	37.0	7.0	65.0	18.0	36.0	15.0	57.0
Max Q Clear Time (g_c+I1), s	19.0	39.0	9.0	67.0	20.0	20.4	14.3	59.7
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	2.5	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	209.9
HCM 6th LOS	F

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                        HCS 2010: Freeway Weaving Release 6.65
Phone:                                      Fax:
E-mail:

______________________________Operational Analysis_____________________________

Analyst:                      VJS
Agency/Co.:                   IH
Date Performed:               Feb 2020
Analysis Time Period:         PM Peak
Freeway/Dir of Travel:        NJ 24 EB at CR 510
Weaving Location:             EB
Analysis Year:                2040
Description:                  NJ 24/CR 510 CD - Alt 4

___________________________________Inputs______________________________________

Segment Type                                Freeway
Weaving configuration                       One-Sided
Number of lanes, N                          3           ln
Weaving segment length, LS                  600         ft
Freeway free-flow speed, FFS                65          mi/h
Minimum segment speed, SMIN                 15          mi/h
Freeway maximum capacity, cIFL              2350        pc/h/ln

Terrain type                                Level
    Grade                                   0.00        %
    Length                                  0.00        mi

___________________Conversion to pc/h Under Base Conditions____________________
                                       Volume Components
                                      VFF     VRF     VFR     VRR
Volume, V                              3249    834     403     0    veh/h
Peak hour factor, PHF                  0.90    0.90    0.90    0.90
Peak 15-min volume, v15                903     232     112     0
Trucks and buses                       5       5       5       0         %
Recreational vehicles                  0       0       0       0         %
Trucks and buses PCE, ET               1.5     1.5     1.5     1.5
Recreational vehicle PCE, ER           1.2     1.2     1.2     1.2
Heavy vehicle adjustment, fHV          0.976   0.976   0.976   1.000
Driver population adjustment, fP       1.00    1.00    1.00    1.00
Flow rate, v                           3700    950     459     0     pc/h

Volume ratio, VR                               0.276

_________________________Configuration Characteristics_________________________
Number of maneuver lanes, NWL              2           ln
Interchange density, ID                    1.0         int/mi
Minimum RF lane changes, LCRF              1           lc/pc
Minimum FR lane changes, LCFR              1           lc/pc
Minimum RR lane changes, LCRR                          lc/pc

Minimum weaving lane changes, LCMIN        1409        lc/h
Weaving lane changes, LCW                  1515        lc/h
Non-weaving vehicle index, INW             222
Non-weaving lane change, LCNW              510         lc/h
Total lane changes, LCALL                  2025        lc/h

_______________________Weaving and Non-Weaving Speeds__________________________
Weaving intensity factor, W                0.590
```

```
Average weaving speed, SW                  46.4        mi/h
Average non-weaving speed, SNW             46.7        mi/h

_________Weaving Segment Speed, Density, Level of Service and Capacity_________
Weaving segment speed, S                   46.6        mi/h
Weaving segment density, D                 36.5        pc/mi/ln
Level of service, LOS                      E
Weaving segment v/c ratio                  0.857
Weaving segment flow rate, v               4985        veh/h
Weaving segment capacity, cW               5819        veh/h

_______________________Limitations on Weaving Segments_________________________
If limit reached, see note.

                          Minimum       Maximum       Actual       Note
Weaving length (ft)          300            5326        600         a,b
                                        Maximum       Analyzed
Density-based capacty,                      2350        1988         c
cIWL (pc/h/ln)
                                        Maximum       Analyzed
v/c ratio                                   1.00        0.857        d

Notes:
a.  In weaving segments shorter than 300 ft, weaving vehicles are assumed to
    make only necessary lane changes.
b.  Weaving segments longer than the calculated maximum length should be
    treated as isolated merge and diverge areas using the procedures of
    Chapter 13, "Freeway Merge and Diverge Segments."
c.  The density-based capacity exceeds the capacity of a basic freeway segment,
    under equivalent ideal conditions.
d.  Volumes exceed the weaving segment capacity. The level of service is F.

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                        HCS 2010: Freeway Weaving Release 6.65
Phone:                                      Fax:
E-mail:

______________________________Operational Analysis_____________________________

Analyst:                      VJS
Agency/Co.:                   IH
Date Performed:               Feb 2020
Analysis Time Period:         PM Peak
Freeway/Dir of Travel:        NJ 24 EB at CR 510
Weaving Location:             EB
Analysis Year:                2040
Description:                  NJ 24/CR 510 CD - Alt 4, Weave 2

___________________________________Inputs______________________________________

Segment Type                                Freeway
Weaving configuration                       One-Sided
Number of lanes, N                          3           ln
Weaving segment length, LS                  900         ft
Freeway free-flow speed, FFS                65          mi/h
Minimum segment speed, SMIN                 15          mi/h
Freeway maximum capacity, cIFL              2350        pc/h/ln

Terrain type                                Level
    Grade                                   0.00        %
    Length                                  0.00        mi

___________________Conversion to pc/h Under Base Conditions____________________
                                       Volume Components
                                      VFF     VRF     VFR     VRR
Volume, V                              3350    1055    733     0    veh/h
Peak hour factor, PHF                  0.90    0.90    0.90    0.90
Peak 15-min volume, v15                931     293     204     0
Trucks and buses                       5       5       5       0          %
Recreational vehicles                  0       0       0       0          %
Trucks and buses PCE, ET               1.5     1.5     1.5     1.5
Recreational vehicle PCE, ER           1.2     1.2     1.2     1.2
Heavy vehicle adjustment, fHV          0.976   0.976   0.976   1.000
Driver population adjustment, fP       1.00    1.00    1.00    1.00
Flow rate, v                           3815    1202    835     0     pc/h

Volume ratio, VR                               0.348

_________________________Configuration Characteristics_________________________
Number of maneuver lanes, NWL                 2           ln
Interchange density, ID                       1.0         int/mi
Minimum RF lane changes, LCRF                 1           lc/pc
Minimum FR lane changes, LCFR                 1           lc/pc
Minimum RR lane changes, LCRR                             lc/pc

Minimum weaving lane changes, LCMIN                       lc/h
Weaving lane changes, LCW                     2187        lc/h
Non-weaving vehicle index, INW                343
Non-weaving lane change, LCNW                 696         lc/h
Total lane changes, LCALL                     2883        lc/h

_______________________Weaving and Non-Weaving Speeds__________________________
Weaving intensity factor, W                   0.566
```

```
Average weaving speed, SW                  46.9        mi/h
Average non-weaving speed, SNW             41.0        mi/h

_________Weaving Segment Speed, Density, Level of Service and Capacity_________
Weaving segment speed, S                   42.9        mi/h
Weaving segment density, D                 45.5        pc/mi/ln
Level of service, LOS                      F
Weaving segment v/c ratio                  0.999
Weaving segment flow rate, v               5709        veh/h
Weaving segment capacity, cW               5713        veh/h

_______________________Limitations on Weaving Segments_________________________
If limit reached, see note.

                          Minimum       Maximum       Actual       Note
Weaving length (ft)          300            6105        900         a,b
                                        Maximum       Analyzed
Density-based capacty,                      2350        1952         c
cIWL (pc/h/ln)
                                        Maximum       Analyzed
v/c ratio                                   1.00        0.999        d

Notes:
a.  In weaving segments shorter than 300 ft, weaving vehicles are assumed to
    make only necessary lane changes.
b.  Weaving segments longer than the calculated maximum length should be
    treated as isolated merge and diverge areas using the procedures of
    Chapter 13, "Freeway Merge and Diverge Segments."
c.  The density-based capacity exceeds the capacity of a basic freeway segment,
    under equivalent ideal conditions.
d.  Volumes exceed the weaving segment capacity. The level of service is F.

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Appendix “K”

Collision Diagrams

TOWNSHIP OF HANOVER and FLORHAM PARK **COUNTY OF MORRIS**

NEW JERSEY DEPARTMENT OF TRANSPORTATION

ROUTE 24 INTERCHANGE &
COLUMBIA TURNPIKE
COLLISION DIAGRAM 2016-2018

IH Engineers, P.C.

Y:\NJDOT\GEC 2013 Term Agreement\TO 30 Rte 24 and Columbia Turnpike Interchange\10 CAD\HWY\Crash Diagram_from 2016 to 2018.dgn
Y:\CADD_Standards\Iplot\pentables\IH_Engineers_NJ.tbl
USER: mmarue
12/13/2019

TOWNSHIP OF HANOVER and FLORHAM PARK *COUNTY OF MORRIS*

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CRASH DIAGRAM

ROUTE 24 INTERCHANGE &
COLUMBIA TURNPIKE

COLLISION DIAGRAM 2011-2013

IH Engineers, P.C.

Y:\NJDOT\GEC 2013 Term Agreement\TO 30 Rte 24 and Columbia Turnpike Interchange\10 CAD\HWY\Crash Diagram_01.dgn 19-JAN-2017 09:33 mmarue NJDOT_full.tbl

Appendix “L”

Environmental Screening and Constraint Map

NEW JERSEY DEPARTMENT OF TRANSPORTATION
Bureau of Landscape Architecture and Environmental Solutions
ENVIRONMENTAL AND LANDSCAPE SCREENING

Revised September 22, 2011

Request Date:	5/6/2016
Request made by:	Ed D'Arcy
Project Name:	Rt. 24, EB Ramp to CR 510 (Columbia Turnpike)
Project Description:	Concept Development Study to alleviate congestion at the intersection of Columbia Turnpike and Park Avenue, an intersection near the ramps from Rt. 24. The study may recommend modifications to the Rt. 24 ramps.
County and Municipality:	Florham Park Borough, Hanover, and Morris Townships, Morris County – UPC No. 154330 M.P. 2.09

Project Purpose	
☒Reduce Congestion	☐Improve Vehicular/Driver Safety
☐System Linkage	☐Economic Development
☐Improve Bike/Ped. Capacity or Safety	☐Change to Current Design Standards
☐Other (Describe)	

ENVIRONMENTAL CONSTRAINTS/OPPORTUNITIES:

Cultural Resources	**Yes / No**
Are there any 50+ year old structures in the project study area?	Y
Are there known buildings or structures on or eligible for the State and /or National Register of Historic Places in the project study area?	N
Is there involvement with a historic bridge or culvert?	N
Is the project located in a known or potential Historic District?	N
Are there any undisturbed areas, old foundations or building rubble in the project study area?	Y
Are there any known archaeological sites or potential underground cultural resources within the project study area?	N
Enhancement Opportunities:	
Comments: The Normandy Park Historic District Boundary Increase is located just outside of the project area to the west. SHPO consultation will likely be needed due to scope of work and potential archeological impacts.	

Section 4(f) Properties	**Yes / No**
Are there any recreational facilities within the project study area?	Y
Is there publicly owned open space in the project study area?	Y
Is there a Wildlife Refuge or Wildlife Management Area in the project study area?	Y
Is there a school or school athletic fields in the project study area?	Y
Is there a community park or parkland within the project study area?	N
Is there a historic bridge or historic site in the project area?	N
Enhancement Opportunities:	
Comments: Black Meadows is a wildlife preserve located on the eastern side Route 24. Farleigh Dickinson University is located just south of the project.	

Air/Noise	**Yes / No**
Are there any sensitive receptors (i.e. residences, schools, hospitals, and churches) within 300 feet of the project?	Y
Will the project change the vertical or horizontal alignment of the roadway?	Y
Does the project provide for a significant increase in vehicle operating speeds of roadway capacity?	Y
Is the project in a non-attainment area for Carbon Monoxide?	N
Is an intersection Carbon monoxide analysis required?	N
Is the project in a non-attainment area for PM2.5?	N
Is a PM2.5 hot-spot analysis required?	Possibly
Is the project in a non-attainment area for PM10?	N
Is a PM10 hot-spot analysis required?	N
Mitigation Opportunities:	
Comments: • The project is in a PM 2.5 maintenance area. Traffic data detailing the Level-of-Service will be needed to determine if a hot-spot analysis is needed. • Due to the potential change in alteration of the highway alignment and the relocation and addition of interchange lanes, and the addition of through traffic lanes, a noise study may be required. • Air/Noise impacts will have to be reevaluated once a more detailed scope of work is available.	

Ecology	**Yes / No**
Are there any wetlands, floodplains, sole source aquifer, stream crossings, riparian zones, or wildlife habitat in the project study area?	Wetlands, SSA, Wildlife Habitat
Is there any potential for rare, threatened or endangered species or their habitats within the project study area *or* within a mile downstream of the project study area (where streams are present)?	Y
Is there any potential or known vernal pool habitat within the project study area?	N
Is there a potential need for wildlife crossings in the project area (e.g., pipes, small tunnels, fencing)?	Y
Are there any trout maintenance or trout production streams within the project study area?	N
Are there any Category 1 waters in the project area?	N
Is the project located in a geologic formation(s) associated with acid producing soils?	N
Are there any potential stormwater management mitigation areas in project area or upstream of the project area?	Y
Do Stormwater Management facilities need to be created? If so, are there potential locations within the project limits?	Unknown
Are there any Wild and Scenic Rivers in the project study area?	N
Does Essential Fish Habitat exist in the project study area?	N
Are there any other environmentally-sensitive areas that are possible project design constraints?	N

Describe ecology in the project study area (e.g., heavily forested, urban, residential, etc.): The project area is mostly forested with wetlands, with urban areas along the roadways.

Comments:

- The Black Meadows Preserve is located within the project area on the southeastern side.
- There are wetlands scattered throughout the project area.
- The project is within the Buried Valley SSA.
- According to the Fish & Wildlife IPaC tool, Indiana Bat, Northern Long-Eared Bat, and Bog Turtles have the potential to be found within the project area.
- Florham Park, Hanover Twp, and Morris Twp have maternity populations of both the Northern Long-Eared Bat and the Indiana Bat. Hanover Twp and Morris Twp have hibernation populations of the Indiana Bat. If tree clearing is proposed, it cannot occur from April 1 – November 15 due to bat populations.
- Black Brook, a Freshwater Category 2 non-trout waterway, crosses Route 24, but does not reach the Park Ave, Columbia Turnpike intersection. If work near Black Brook is needed, a riparian zone of 150’ may apply.
- According to NJDEP’s Species Based Habitat GIS layer, Bald Eagle (State Endangered) may be present in the project area.
- Due to all of the causeways, there may be a need for wildlife crossing amenities.

Potential environmental permits/approvals and interagency coordination		**Comments:**
☐	US Coast Guard	
☐	USACOE Section 10	
☐	USACOE Section 404	
☒	NJDEP Freshwater Wetlands	
☐	NJDEP Water Quality Certification	
☐	NJDEP Flood Hazard Area	
☐	NJDEP CAFRA	
☐	NJDEP Coastal Wetlands	
☐	NJDEP Waterfront Development	
☐	NJDEP Tidelands Conveyance	
☐	NJPDES Construction Activity Stormwater GP	
☒	NJDEP Stormwater Management	Will likely be needed, due to disturbance.
☐	PL 2001 Chapter 10 Reforestation	
☐	Pinelands Commission	
☐	D&R Canal Commission	
☐	Meadowlands Commission	
☐	Essential Fish Habitat	
☐	Category One waters	
☐	USEPA Sole Source Aquifer	
☒	Highland Rules/Preservation Area	
☐	Delaware River Port Authority	
Comments: • The majority of the project is within the Highlands Planning Area, Highlands Rules will have to be followed. • If ¼ or more of impervious surface is added or if 1 acre or more of land is disturbed then stormwater management will be needed. • Impacts to wetlands may trigger an individual permit where mitigation might be required.		

Landscape Architecture	**Yes / No**
Is there deforestation taking place in accordance with the No Net Loss Reforestation Act (NNL P.L. 2001 Chapter 10 Reforestation)?	Y
Does existing vegetation need management (e.g., tree trimming, hazardous tree removal, clearing, thinning)?	Y
Will planting need to be included (e.g., commitments, street trees, reforestation)?	Y
Are there Context Sensitive Solutions opportunities (e.g., streetscapes, screenings)?	N
Will vegetative Soil Erosion and Sediment Control Measures need to be included?	Y
Are there Aesthetic Enhancements that need to be addressed?	N
Are any structures proposed (e.g., bridge, retaining walls)?	Y
Do Stormwater Management facilities need to be created?	Possibly
Mitigation Opportunities:	
Comments:	

Socioeconomics	**Yes / No**
Will the project affect farmland or community facilities?	Unknown
Based on the proposed improvements for this project, will there be possible displacement of businesses or residences?	Y
Will the project affect access to community facilities, bus stop shelters, playgrounds or parks or gardens?	Unknown
Can the project improve bike/ped facilities?	Y
Are there any observable safety (e.g. ADA compliant) issues or concerns in the project study area?	Unknown
Does project have potential for socioeconomic impacts? If **YES** provide US Census data in comments.	Unknown
Does project have potential for Environmental Justice involvement? If **YES** provide US Census data in comments.	N
Comments: There are 55 people within the project area. 14% of that population is considered to be a minority with 7% being Asian, 4% Hispanic, and 2% Black. 83% of the population has a household income of $75,000 or higher. This does not appear to be an Environmental Justice community.	

Hazardous Waste	**Yes / No**
Are there any known or suspected hazardous waste sites (UST, landfills, known NJDEP Case, ECRA Case), within the project study area?	Y
Are there active or abandoned industries, service stations or repair shops within the project study area?	N
Is there evidence of potential contamination (monitoring wells, stained soils, etc.)?	Y
Are railroads or railyards located in the project study area?	N
Enhancement Opportunities:	
Comments: Since there are active NJDEP enforcement cases and historic fill within the project area, there is a potential for involvement with regulated material or contaminated sites. Once more specific project plans are available, then a reevaluation will be made to determine whether environmental investigation will be required.	

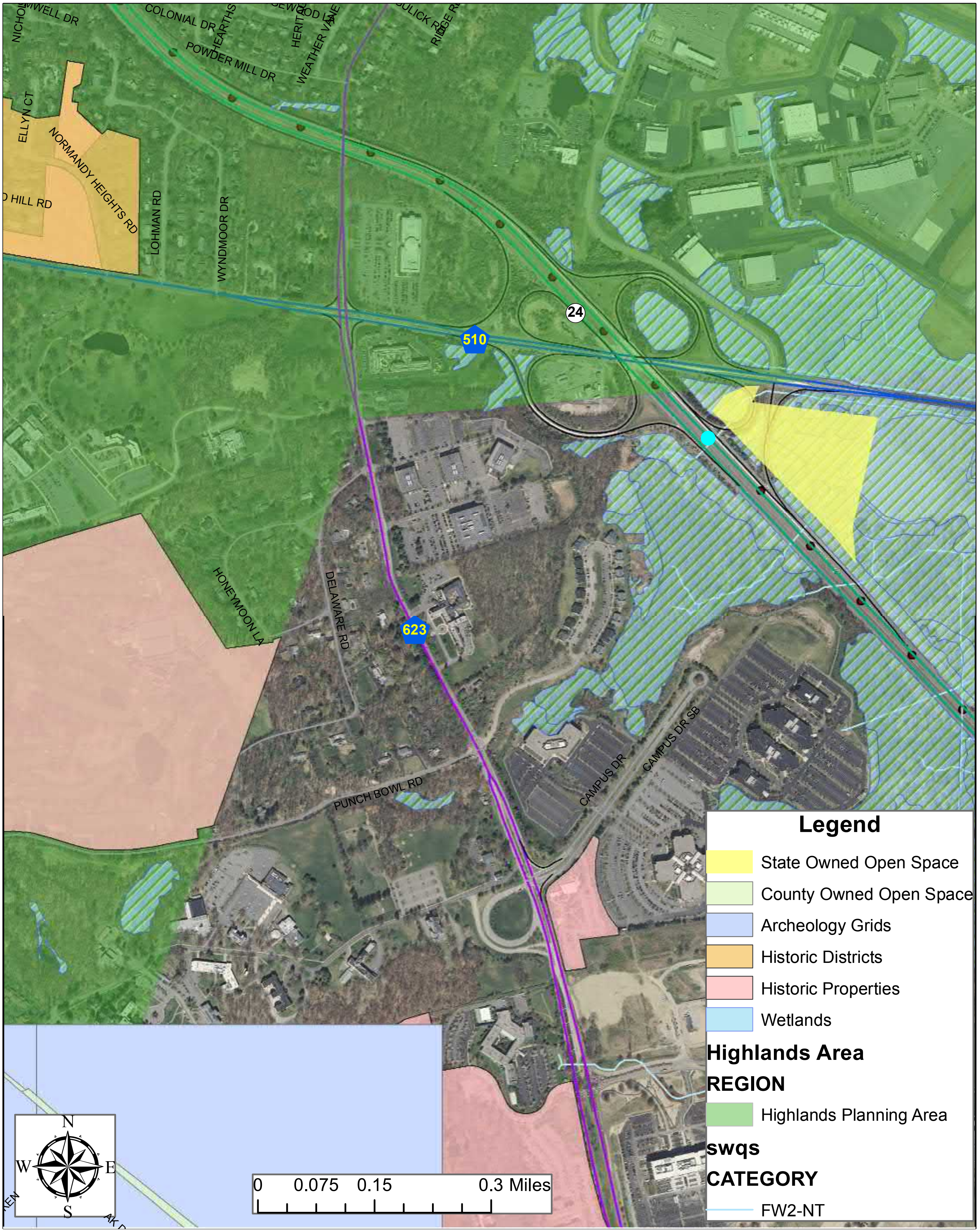
Environmental Screening Summary:

- The Normandy Park Historic District Boundary Increase is located just outside of the project area to the west. SHPO consultation will likely be needed due to scope of work and potential archeological impacts.
- The project is in a PM 2.5 maintenance area. Traffic data detailing the Level-of-Service will be needed to determine if a hot-spot analysis is needed.
- Due to the potential change in alteration of the highway alignment and the relocation and addition of interchange lanes, and the addition of through traffic lanes, a noise study may be required. Air/Noise impacts will have to be reevaluated once a more detailed scope of work is available.
- The Black Meadows Preserve is located within the project area on the southeastern side.
- There are wetlands scattered throughout the project area.
- According to the Fish & Wildlife IPaC tool, Indiana Bat, Northern Long-Eared Bat, and Bog Turtles have the potential to be found within the project area.
- Due to bat presence, if tree clearing is proposed, it cannot occur from April 1 – November 15 due to bat populations.
- Black Brook, a Freshwater Category 2 non-trout waterway, crosses Route 24, but does not reach the Park Ave, Columbia Turnpike intersection. If work near Black Brook is needed, a riparian zone of 150' may apply.
- According to NJDEP's Species Based Habitat GIS layer, Bald Eagle (State Endangered) may be present in the project area.
- Due to all of the causeways, there may be a need for wildlife crossing amenities. The majority of the project is within the Highlands Planning Area, Highlands Rules will have to be followed.
- If ¼ or more of impervious surface is added or if 1 acre or more of land is disturbed then stormwater management will be needed.
- Impacts to wetlands may trigger an individual permit where mitigation might be required.
- Due to the presence of active NJDEP enforcement cases and historic fill, there is a potential for involvement with regulated material or contaminated sites. Once more specific project plans are available, then a reevaluation will be made to determine whether environmental investigation will be required.

Prepared & Recommended By:

Rachel DeKovitch	5-16-16	609-530-2312
E-Team Screening Coordinator	Date	Phone
	5.13.16	609.530.5266
Environmental Team Leader	Date	Phone
Niri Shepperd	5/16/2016	5-3802
Landscape Screening Coordinator	Date	Phone
Brenda Hammer	5/16/16	5-5672
Landscape Team Leader	Date	Phone

Route 24, EB Ramp to CR 510 (Columbia Turnpike)
Hanover and Morris Townships, Morris County
Environmental Constraints Map



EJSCREEN Census 2010 Summary Report

Location: User-specified polygonal location
Ring (buffer): 0-mile radius
Description: Route 24

Summary	Census 2010
Population	55
Population Density (per sq. mile)	250
Minority Population	8
% Minority	14%
Households	17
Housing Units	18
Land Area (sq. miles)	0.22
% Land Area	99%
Water Area (sq. miles)	0.00
% Water Area	1%

Population by Race	Number	Percent
Total	55	-------
Population Reporting One Race	54	99%
White	49	89%
Black	1	2%
American Indian	0	0%
Asian	4	7%
Pacific Islander	0	0%
Some Other Race	0	0%
Population Reporting Two or More Races	1	1%
Total Hispanic Population	2	4%
Total Non-Hispanic Population	53	96%
White Alone	47	86%
Black Alone	1	2%
American Indian Alone	0	0%
Non-Hispanic Asian Alone	4	7%
Pacific Islander Alone	0	0%
Other Race Alone	0	0%
Two or More Races Alone	1	1%

Population by Sex	Number	Percent
Male	26	47%
Female	29	53%

Population by Age	Number	Percent
Age 0-4	3	6%
Age 0-17	13	23%
Age 18+	42	77%
Age 65+	12	23%

Households by Tenure	Number	Percent
Total	17	
Owner Occupied	16	92%
Renter Occupied	1	8%

Data Note: Detail may not sum to totals due to rounding. Hispanic population can be of any race.
Source: U.S. Census Bureau, Census 2010 Summary File 1.

EJSCREEN Census 2000 Summary Report

Location: User-specified polygonal location
Ring (buffer): 0-mile radius
Description: Route 24

Summary	**Census 2000**
Population	355
Population Density (per sq. mile)	2,727
Minority Population	36
% Minority	10%
Households	133
Housing Units	139
Housing Units Built Before 1950	18
Land Area (sq. miles)	0.13
% Land Area	100%
Water Area (sq. miles)	0.00
% Water Area	0%

Population by Race	**Number**	**Percent**
Total	355	-------
Population Reporting One Race	352	99%
White	325	92%
Black	3	1%
American Indian	0	0%
Asian	21	6%
Pacific Islander	0	0%
Some Other Race	2	0%
Population Reporting Two or More Races	3	1%
Total Hispanic Population	8	2%

Population by Sex	**Number**	**Percent**
Male	160	45%
Female	195	55%

Population by Age	**Number**	**Percent**
Age 0-4	25	7%
Age 0-17	70	20%
Age 18+	285	80%
Age 65+	75	21%

Population 25+ by Educational Attainment	**Number**	**Percent**
Total	264	-------
Less than 9th Grade	8	3%
9th - 12th Grade, No Diploma	13	5%
High School Graduate	42	16%
Some College, No Degree	33	12%
Associate Degree	9	3%
Bachelor's Degree or more	160	60%

Data Note: Detail may not sum to totals due to rounding. Hispanic population can be of any race. **Source:** U.S. Census Bureau, Census 2000 Summary File 3.

May 09, 2016

EJSCREEN Census 2000 Summary Report

Location: User-specified polygonal location
Ring (buffer): 0-mile radius
Description: Route 24

Population Age 5+ Years by Ability to Speak English	Number	Percent
Total	334	-------
Speak only English	270	81%
Non-English at Home	64	19%
Speak English "very well"	44	13%
Speak English "well"	15	4%
Speak English "not well"	5	1%
Speak English "not at all"	0	0%
Speak English "less than well"	5	2%

Households by Household Income in 1999	Number	Percent
Household Income Base	133	-------
< $15,000	6	5%
$15,000 - $25,000	8	6%
$25,000 - $50,000	23	17%
$50,000 - $75,000	17	13%
$75,000 +	79	60%

Households by Tenure	Number	Percent
Total	133	-------
Owner Occupied	110	83%
Renter Occupied	23	17%

Data Note: Detail may not sum to totals due to rounding. Hispanic population can be of any race. **Source:** U.S. Census Bureau, Census 2000 Summary File 3.

EJSCREEN ACS Summary Report

Location: User-specified polygonal location
Ring (buffer): 0-mile radius
Description: Route 24

Summary of ACS Estimates	2008 - 2012
Population	59
Population Density (per sq. mile)	268
Minority Population	6
% Minority	10%
Households	19
Housing Units	20
Housing Units Built Before 1950	3
Per Capita Income	55,575
Land Area (sq. miles) (Source: SF1)	0.22
% Land Area	99%
Water Area (sq. miles) (Source: SF1)	0.00
% Water Area	1%

	2008 - 2012 ACS Estimates	Percent	MOE (±)
Population by Race			
Total	59	100%	414
Population Reporting One Race	59	100%	782
White	54	92%	455
Black	1	1%	202
American Indian	0	0%	15
Asian	4	7%	85
Pacific Islander	0	0%	12
Some Other Race	0	0%	13
Population Reporting Two or More Races	0	0%	39
Total Hispanic Population	1	2%	167
Total Non-Hispanic Population	58		
White Alone	53	90%	447
Black Alone	1	1%	202
American Indian Alone	0	0%	12
Non-Hispanic Asian Alone	4	7%	85
Pacific Islander Alone	0	0%	12
Other Race Alone	0	0%	12
Two or More Races Alone	0	0%	38
Population by Sex			
Male	29	49%	310
Female	30	51%	253
Population by Age			
Age 0-4	4	6%	94
Age 0-17	14	23%	224
Age 18+	45	77%	409
Age 65+	15	25%	148

Data Note: Detail may not sum to totals due to rounding. Hispanic population can be of any race. N/A means not available.
Source: U.S. Census Bureau, American Community Survey (ACS) 2008 - 2012.

EJSCREEN ACS Summary Report

Location: User-specified polygonal location
Ring (buffer): 0-mile radius
Description: Route 24

	2008 - 2012 ACS Estimates	Percent	MOE (±)
Population 25+ by Educational Attainment			
Total	43	100%	251
Less than 9th Grade	0	1%	24
9th - 12th Grade, No Diploma	0	1%	27
High School Graduate	6	14%	116
Some College, No Degree	6	13%	138
Associate Degree	2	4%	109
Bachelor's Degree or more	30	71%	229
Population Age 5+ Years by Ability to Speak English			
Total	55	100%	413
Speak only English	50	91%	398
Non-English at Home[1+2+3+4]	5	9%	170
[1]Speak English "very well"	3	5%	117
[2]Speak English "well"	2	3%	71
[3]Speak English "not well"	0	0%	27
[4]Speak English "not at all"	0	0%	37
[3+4]Speak English "less than well"	0	0%	44
[2+3+4]Speak English "less than very well"	2	4%	83
Linguistically Isolated Households*			
Total	0	100%	29
Speak Spanish	0	0%	20
Speak Other Indo-European Languages	0	73%	22
Speak Asian-Pacific Island Languages	0	27%	12
Speak Other Languages	0	0%	12
Households by Household Income			
Household Income Base	19	100%	171
< $15,000	1	4%	29
$15,000 - $25,000	1	3%	89
$25,000 - $50,000	1	5%	92
$50,000 - $75,000	1	5%	103
$75,000 +	16	83%	175
Occupied Housing Units by Tenure			
Total	19	100%	171
Owner Occupied	18	95%	104
Renter Occupied	1	5%	156

Data Note: Detail may not sum to totals due to rounding. Hispanic population can be of any race. N/A means not available.
Source: U.S. Census Bureau, American Community Survey (ACS) 2008 - 2012.
*Linguistically Isolated Households is available at the census tract summary level and up.

EJSCREEN ACS Summary Report

Location: User-specified polygonal location
Ring (buffer): 0-mile radius
Description: Route 24

	2008 - 2012 ACS Estimates	Percent	MOE (±)
Population by Language Spoken at Home[**]			
Total (persons age 5 and above)	55	100%	413
English	N/A	N/A	N/A
Spanish	N/A	N/A	N/A
French	N/A	N/A	N/A
French Creole	N/A	N/A	N/A
Italian	N/A	N/A	N/A
Portuguese	N/A	N/A	N/A
German	N/A	N/A	N/A
Yiddish	N/A	N/A	N/A
Other West Germanic	N/A	N/A	N/A
Scandinavian	N/A	N/A	N/A
Greek	N/A	N/A	N/A
Russian	N/A	N/A	N/A
Polish	N/A	N/A	N/A
Serbo-Croatian	N/A	N/A	N/A
Other Slavic	N/A	N/A	N/A
Armenian	N/A	N/A	N/A
Persian	N/A	N/A	N/A
Gujarathi	N/A	N/A	N/A
Hindi	N/A	N/A	N/A
Urdu	N/A	N/A	N/A
Other Indic	N/A	N/A	N/A
Other Indo-European	N/A	N/A	N/A
Chinese	N/A	N/A	N/A
Japanese	N/A	N/A	N/A
Korean	N/A	N/A	N/A
Mon-Khmer, Cambodian	N/A	N/A	N/A
Hmong	N/A	N/A	N/A
Thai	N/A	N/A	N/A
Laotian	N/A	N/A	N/A
Vietnamese	N/A	N/A	N/A
Other Asian	N/A	N/A	N/A
Tagalog	N/A	N/A	N/A
Other Pacific Island	N/A	N/A	N/A
Navajo	N/A	N/A	N/A
Other Native American	N/A	N/A	N/A
Hungarian	N/A	N/A	N/A
Arabic	N/A	N/A	N/A
Hebrew	N/A	N/A	N/A
African	N/A	N/A	N/A
Other and non-specified	N/A	N/A	N/A
Total Non-English	N/A	N/A	N/A

Data Note: Detail may not sum to totals due to rounding. Hispanic population can be of any race. N/A means not available.
Source: U.S. Census Bureau, American Community Survey (ACS) 2008 - 2012.
**Population by Language Spoken at Home is available at the census tract summary level and up.

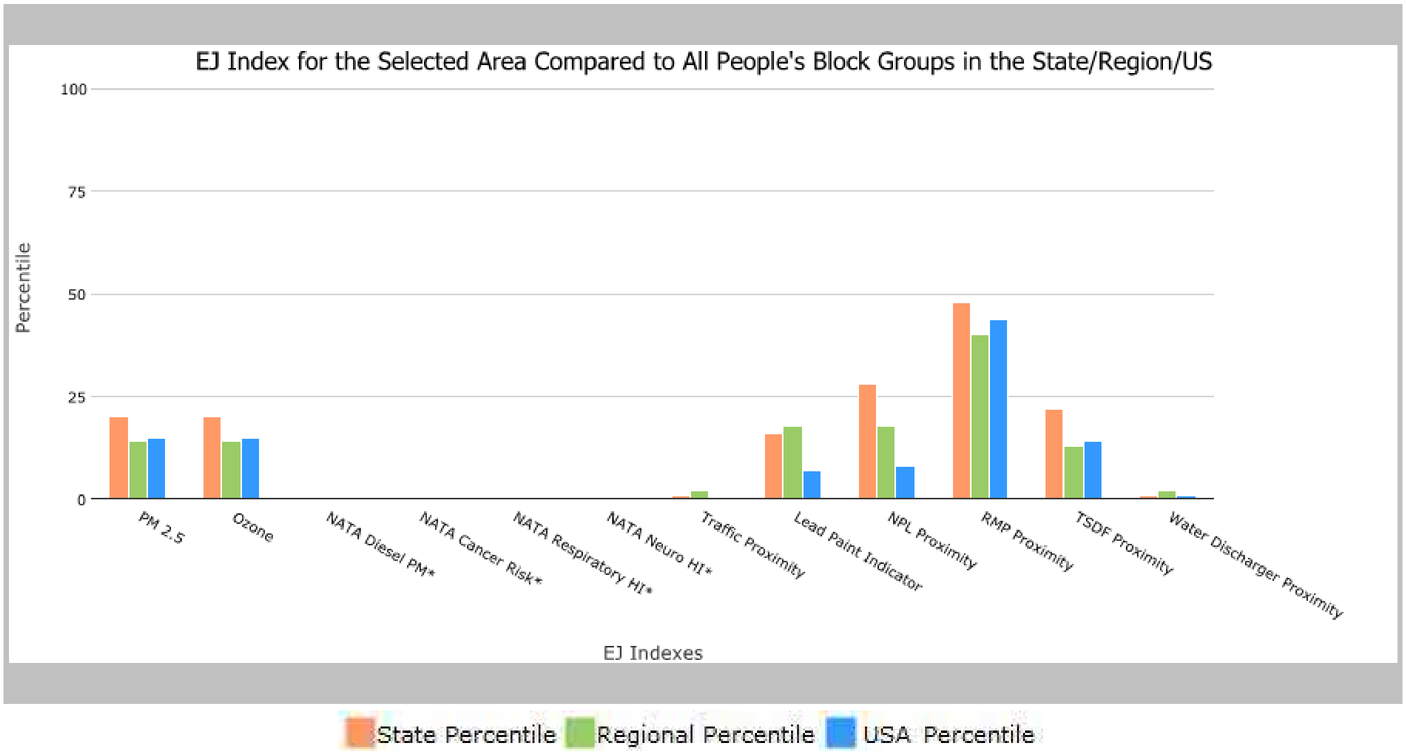
EJSCREEN Report

for the User Specified Area, NEW JERSEY, EPA Region 2

Approximate Population: 59

Route 24

Selected Variables	State Percentile	EPA Region Percentile	USA Percentile
EJ Indexes			
EJ Index for PM2.5	20	14	15
EJ Index for Ozone	20	14	15
EJ Index for NATA Diesel PM*	N/A	N/A	N/A
EJ Index for NATA Air Toxics Cancer Risk*	N/A	N/A	N/A
EJ Index for NATA Respiratory Hazard Index*	N/A	N/A	N/A
EJ Index for NATA Neurological Hazard Index*	N/A	N/A	N/A
EJ Index for Traffic Proximity and Volume	1	2	0
EJ Index for Lead Paint Indicator	16	18	7
EJ Index for Proximity to NPL sites	28	18	8
EJ Index for Proximity to RMP sites	48	40	44
EJ Index for Proximity to TSDFs	22	13	14
EJ Index for Proximity to Major Direct Dischargers	1	2	1



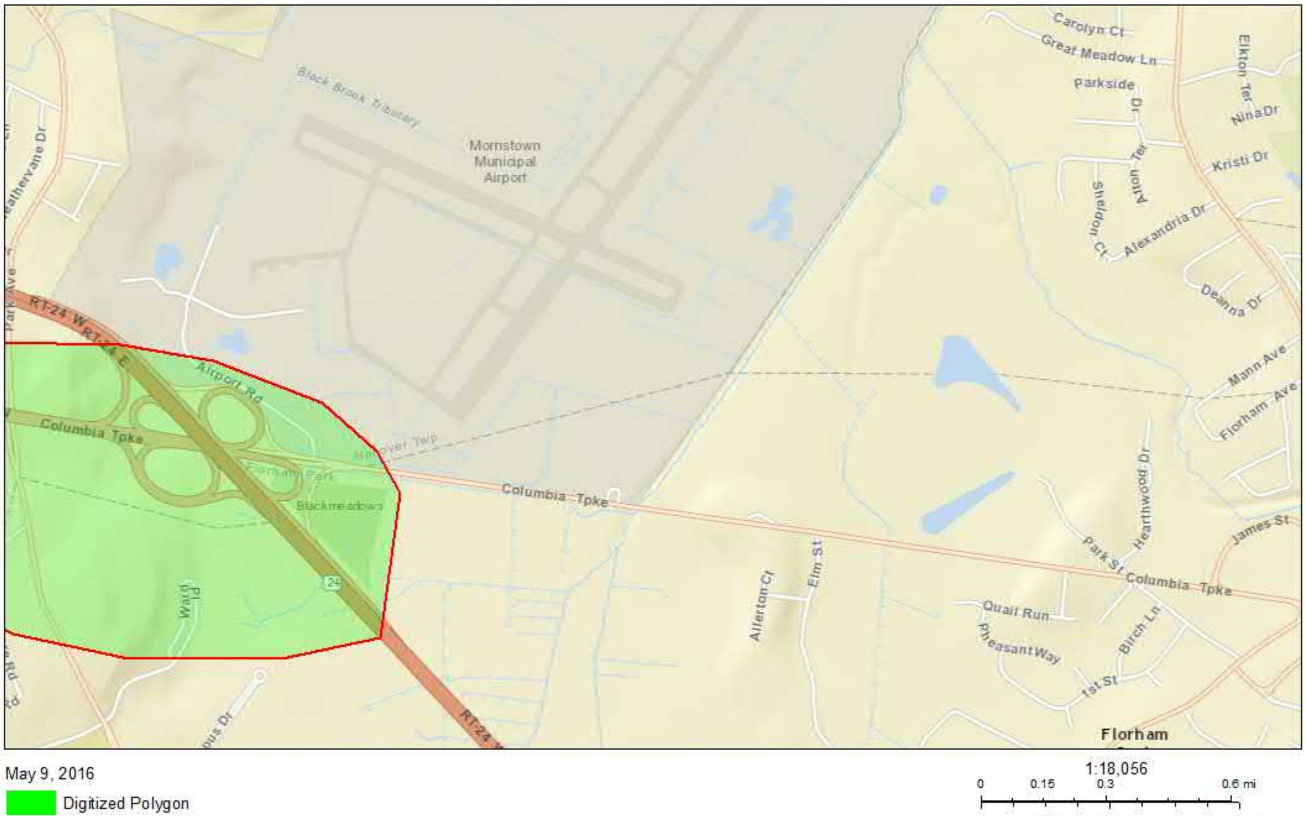
This report shows environmental, demographic, and EJ indicator values. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports.

EJSCREEN Report

for the User Specified Area, NEW JERSEY, EPA Region 2

Approximate Population: 59

Route 24



May 9, 2016

🟩 Digitized Polygon

Sources: Esri, HERE, DeLorme, USGS, Intermap, Increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

EJSCREEN Report

for the User Specified Area, NEW JERSEY, EPA Region 2

Approximate Population: 59

Route 24

Selected Variables	Raw Data	State Avg.	%ile in State	EPA Region Avg.	%ile in EPA Region	USA Avg.	%ile in USA
Environmental Indicators							
Particulate Matter (PM 2.5 in µg/m^3)	9.4	10	27	9.94	38	9.78	36
Ozone (ppb)	45.9	46.9	41	44.7	66	46.1	46
NATA Diesel PM (µg/m^3)*	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NATA Cancer Risk (lifetime risk per million)*	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NATA Respiratory Hazard Index*	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NATA Neurological Hazard Index*	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Traffic Proximity and Volume (daily traffic count/distance to road)	290	130	88	160	86	110	91
Lead Paint Indicator (% Pre-1960 Housing)	0.39	0.43	45	0.53	33	0.3	66
NPL Proximity (site count/km distance)	0.1	0.28	28	0.19	47	0.096	76
RMP Proximity (facility count/km distance)	0.03	0.21	4	0.18	6	0.31	5
TSDF Proximity (facility count/km distance)	0.029	0.11	38	0.058	50	0.054	58
Water Discharger Proximity (facility count/km distance)	0.91	0.29	93	0.36	89	0.25	95
Demographic Indicators							
Demographic Index	9%	32%	11	35%	9	35%	6
Minority Population	10%	41%	17	41%	24	36%	26
Low Income Population	7%	23%	20	29%	13	34%	8
Linguistically Isolated Population	1%	7%	32	8%	35	5%	49
Population With Less Than High School Education	2%	12%	10	14%	9	14%	9
Population Under 5 years of age	6%	6%	59	6%	60	7%	54
Population over 64 years of age	25%	14%	92	14%	92	13%	92

* The National-scale Air Toxics Assessment (NATA) environmental indicators and EJ indexes, which include cancer risk, respiratory hazard, neurodevelopment hazard, and diesel particulate matter will be added into EJSCREEN during the first full public update after the soon-to-be-released 2011 dataset is made available. The National-Scale Air Toxics Assessment (NATA) is EPA's ongoing, comprehensive evaluation of air toxics in the United States. EPA developed the NATA to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that NATA provides broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. More information on the NATA analysis can be found at: http://www.epa.gov/ttn/atw/natamain/index.html.

For additional information, see: www.epa.gov/environmentaljustice

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Appendix “M”

Alternatives, Right of Way Impacts, Environmental Constraints

TOWNSHIP OF HANOVER and FLORHAM PARK

COUNTY OF MORRIS

ALTERNATE 1					
PARCEL NUMBER	BLOCK	LOT	OWNER	PARCEL TYPE	AREA (acres)
1	9101	6	HONEYWELL (KHOV)	Partial	0.321
2	9201	12	MILLMORE, ANNE O TRUSTEE	Partial	0.012
3	1201	1	ADVANCE AT PARK NORMANDY REAL EST	Access Revocation	
4	1201	1	ADVANCE AT PARK NORMANDY REAL EST	Partial	0.093
5	1201	1	ADVANCE AT PARK NORMANDY REAL EST	Partial	0.522
6	4802	1	LSREF THREE/AH CHICAGO LLC YES ABH	Partial	2.275
7	4802	2	PARKANNIE PROPERTIES INC	Entire	3.302
8	4902	1	RAVINE DEVELOPMENT CO LLC	Partial	1.311
9	4902	2	COLUMBIA EXECUTIVE PLAZA ASSOC.	Entire	1.080
10	4903	1	SOUTH MORRIS CTY MUN UTIL AUTH	Entire	0.389
				TOTAL AREA	**9.304**

LEGEND:

🟨	PROPOSED ROADWAY
🟧	PROPOSED SHOULDER
🟥	PROPOSED STRUCTURE
🟩	REMOVAL OF RAMP
⬛	ISLAND
🟦	BASIN LOCATION
▭	PROPOSED ROW
▨	WETLAND MITAGATION
✳	WETLAND AREA

NEW JERSEY DEPARTMENT OF TRANSPORTATION

ALTERNATIVE 1

ROUTE 24 INTERCHANGE &
COLUMBIA TURNPIKE

IH Engineers, P.C.

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TOWNSHIP OF HANOVER and FLORHAM PARK **COUNTY OF MORRIS**

ALTERNATE 2					
PARCEL NUMBER	BLOCK	LOT	OWNER	PARCEL TYPE	AREA (acres)
1	9101	6	HONEYWELL (KHOV)	Partial	0.316
2	9201	12	MILLMORE, ANNE O TRUSTEE	Partial	0.012
3	1201	1	ADVANCE AT PARK NORMANDY REAL EST	Access Revocation	
4	1201	1	ADVANCE AT PARK NORMANDY REAL EST	Partial	0.094
5	1201	1	ADVANCE AT PARK NORMANDY REAL EST	Partial	0.295
7	4802	1	LSREF THREE/AH CHICAGO LLC YES ABH	Partial	2.126
6	4802	2	PARKANNIE PROPERTIES INC	Entire	3.299
9	4902	1	RAVINE DEVELOPMENT CO LLC	Partial	1.272
10	4902	2	COLUMBIA EXECUTIVE PLAZA ASSOC.	Entire	1.080
11	4903	1	SOUTH MORRIS CTY MUN UTIL AUTH	Entire	0.047
				TOTAL AREA	8.540

LEGEND:

🟨	PROPOSED ROADWAY
🟧	PROPOSED SHOULDER
🟥	PROPOSED STRUCTURE
🟩	REMOVAL OF RAMP
⬛	ISLAND
🟦	BASIN LOCATION
▭	PROPOSED ROW
▨	WETLAND MITAGATION
* *	WETLAND AREA

NEW JERSEY DEPARTMENT OF TRANSPORTATION

ALTERNATIVE 2

ROUTE 24 INTERCHANGE &
COLUMBIA TURNPIKE

IH Engineers, P.C.

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TOWNSHIP OF HANOVER and FLORHAM PARK

COUNTY OF MORRIS

ALTERNATE 3					
PARCEL NUMBER	BLOCK	LOT	OWNER	PARCEL TYPE	AREA (acres)
1	9101	6	HONEYWELL (KHOV)	Partial	0.321
2	9201	12	MILLMORE, ANNE O TRUSTEE	Partial	0.010
3	9502	1	BELL ATLANTIC DUFF & PHELPS	Partial	0.100
4	9502	2	BROCKWELL SHANE & DEGREZIA, DALENA	Partial	0.038
5	9502	3	JOSEPH, HAROLD N & SYLITA	Partial	0.036
6	1201	1	ADVANCE AT PARK NORMANDY REAL EST	Access Revocation	
7	1201	1	ADVANCE AT PARK NORMANDY REAL EST	Partial	0.093
8	1201	1	ADVANCE AT PARK NORMANDY REAL EST	Partial	0.456
9	4802	1	LSREF THREE/AH CHICAGO LLC YES ABH	Partial	0.269
10	4802	1	LSREF THREE/AH CHICAGO LLC YES ABH	Partial	1.882
11	4802	2	PARKANNIE PROPERTIES INC	Entire	3.300
12	4902	1	REVINE DEVELOPMENT CO LLC	Partial	0.391
				TOTAL AREA	**6.897**

LEGEND:

🟨	PROPOSED ROADWAY
🟧	PROPOSED SHOULDER
🟥	PROPOSED STRUCTURE
🟩	REMOVAL OF RAMP
⬛	ISLAND
🟦	BASIN LOCATION
▭	PROPOSED ROW
▨	WETLAND MITIGATION
⁂	WETLAND AREA

NEW JERSEY DEPARTMENT OF TRANSPORTATION

ALTERNATIVE 3

ROUTE 24 INTERCHANGE &
COLUMBIA TURNPIKE

IH Engineers, P.C.

8/18/2017

USER: mmarue

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TOWNSHIP OF HANOVER and FLORHAM PARK

COUNTY OF MORRIS

ALTERNATE 3 rev

PARCEL NUMBER	BLOCK	LOT	OWNER	PARCEL TYPE	AREA (acres)
1	9101	4	HONEYWELL (KHOV)	PARTIAL	0.1998
2	9201	12	MILLMORE, ANNE O TRUSTEE	PARTIAL	0.0276
3	9502	1	BELL ATLANTIC DUFF & PHELPS	PARTIAL	0.0542
4	9502	2	BROCKWELL, SHANE & DEGREZIA, DALENA	PARTIAL	0.0465
5	9502	3	JOSEPH, HAROLD N & SYLITA	PARTIAL	0.0318
6	1201	1	ADVANCE AT PARK NORMANDY REAL EST	PARTIAL	3.8696
7	4802	1	LSREF THREE/AH CHICAGO LLC YES ABH	PARTIAL	0.2592
8	4802	1	LSREF THREE/AH CHICAGO LLC YES ABH	PARTIAL	1.8982
9	4802	2	PARKANNIE PROPERTIES INC	PARTIAL	0.0560
10	4902	1	RAVINE DEVELOPMENT CO LLC	PARTIAL	0.4350
				TOTAL	6.8779

LEGEND:

🟨	PROPOSED ROADWAY
🟧	PROPOSED SHOULDER
🟥	PROPOSED STRUCTURE
🟩	REMOVAL OF RAMP
⬛	ISLAND
🟦	BASIN LOCATION
▭	PROPOSED ROW
▨	WETLAND MITAGATION
⁂	WETLAND AREA

NEW JERSEY DEPARTMENT OF TRANSPORTATION

ALTERNATIVE 3 rev

ROUTE 24 INTERCHANGE &
COLUMBIA TURNPIKE

IH Engineers, P.C.

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4/29/2020

TOWNSHIP OF HANOVER and FLORHAM PARK

COUNTY OF MORRIS

ALTERNATE 4					
PARCEL NUMBER	BLOCK	LOT	OWNER	PARCEL TYPE	AREA (acres)
1	1201	6	KBSII 300-600 CAMPUS DRIVE. LLC	Partial	5.630
				TOTAL AREA	**5.630**

LEGEND:

🟨	PROPOSED ROADWAY
🟧	PROPOSED SHOULDER
🟩	GRASS MEDIAN
⬛	ISLAND
🟥	PROPOSED ROW
* *	WETLAND AREA

NEW JERSEY DEPARTMENT OF TRANSPORTATION

ALTERNATIVE NO. 4
(CAMPUS DRIVE)

ROUTE 24 INTERCHANGE &
COLUMBIA TURNPIKE

IH Engineers, P.C.

11/6/2017

USER: mmarue

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Appendix “N”

Public Communications / Utility Communications

Memorandum

Route 24, Columbia Turnpike and Park Avenue Interchange Improvements

Morris Township, Borough of Florham Park and Hanover Township, Morris County

Public Information Center (PIC)

Introduction

A virtual Public Information Center (PIC) was held for the Route 24, Columbia Turnpike and Park Avenue Interchange Improvements project from November 30, 2020 to December 14, 2020 to allow the public to view the Preliminary Preferred Alternative (PPA) and if desired, to provide comments. Due to the declared COVID-19 Public Health Emergency and State of Emergency, and in order to maintain recommended social distancing practices, it was determined that the PIC would be conducted in a virtual format.

Information was posted on the New Jersey Department of Transportation (NJDOT) website to provide notice to the public about the virtual PIC for the project.

The virtual PIC included a project handout, narrated video presentation, and feedback survey. The project handout, a copy of which is shown in Appendix A, provided a summary of the proposed improvements and anticipated design schedule. The handout also provided an individual to contact in the NJDOT's Office of Community Relations for further information or to provide comments. The narrated video presentation provided a visual and audible description of the proposed improvements. A PDF copy of the presentation is shown in Appendix B. After viewing the handout and video, visitors to the PIC were encouraged to participate in a survey, a copy of which is shown in Appendix C, to provide their comments and / or concerns.

Information regarding the virtual PIC was provided to municipal and county officials. The project handout was sent via US Mail to residences, businesses, and utility owners located within 250 feet of the project limits. The mailing list is shown in Appendix D.

The virtual PIC was advertised on the Florham Park Police Department and Office of Emergency Management Facebook page and in several news outlets. Copies of these notices and articles are shown in Appendix E. The readers were encouraged to view the virtual PIC presentation and participate in the survey after viewing the presentation.

PIC Survey Responses

During the two weeks that the virtual PIC was active on the website, there were 3,764 visitors to the website and NJDOT had received 122 survey responses. Eleven additional responses were received via e-mail. A tabulation of the responses received are shown in Appendix F. Of the 133 total responses received, 81 were in support of the project, 40 did not support the project and 12 did not indicate a preference. Resolutions of support for the project have not yet been received from the municipalities. At the conclusion of this Concept Development Phase, Morris County will manage the project and be responsible for Preliminary and Final Design.

A summary of Frequently Asked Questions and NJDOT's Responses were posted to the web page on December 18, 2020 and are as follows:

1. **Can improvements be made to the Route 24 Mainline?**
   The project Purpose and Need is to provide relief from congestion and reduce the number of vehicle crashes at the intersection of Columbia Turnpike and Park Avenue. The scope of this project does not address improvements to weaving or traffic flow on Route 24. Guide signing will be changed to reroute Route 24 motorists to the new proposed ramp. Exit numbers will not change.

2. **Why not build a ramp to the business complexes via Campus Drive, NY Jets training facility and locations further south where the cars are heading anyway?**
   Per the NJDOT Roadway Design Manual the minimum spacing for interchanges should be at least 1 mile between urban crossroads. Campus Drive is 0.3 miles and the Jets training facility is 0.8 miles from the interchange at Columbia Turnpike. If Campus Drive was converted to a ramp, vehicular access would have to be denied to the office complex from the ramp.

3. **Can the existing ramp from Columbia Turnpike Eastbound to Route 24 Eastbound remain?**
   In order to provide relief from congestion and reduce delays at the Columbia Turnpike and Park Avenue intersection, the existing ramp from Columbia Turnpike Eastbound to Route 24 Eastbound will be closed and traffic will be directed to the new proposed ramp via two yield controlled right turn lanes from Columbia Turnpike Eastbound to Park Avenue Southbound. Two left turn lanes will also be provided from Park Avenue Southbound to the new proposed ramp.

4. **The design eliminates the turn left from our neighborhood (Delaware and Prescott), onto Park Avenue. Why not build the new ramp at the existing Prescott Road intersection?**
   In the original Preliminary Preferred Alternative, the proposed ramp between Park Avenue and Route 24 Eastbound was aligned opposite Prescott Road at a new signalized intersection. Because of a local approval for the construction of the Marriot Hotel, the Preliminary Preferred Alternative was revised and the proposed ramp was relocated.

5. **How will the new curbed island on Columbia Turnpike Westbound affect traffic?**
   The curbed island will be provided on Columbia Turnpike Westbound to relieve congestion and reduce the number of vehicle crashes at the intersection with Park Avenue. Motorists on Route 24 Eastbound will be rerouted to the next exit and use the new proposed ramp to reach Park Avenue. To be clear, traffic exiting Route 24 Westbound and traffic coming from Florham Park on Columbia Turnpike Westbound will be able to use the left turn lanes, through lanes or right turn lane at Park Avenue.

6. **When were traffic counts taken? Did COVID affect traffic counts?**

   The traffic counts at the intersection of Columbia Turnpike and Park Avenue were taken in October 2019 prior to COVID. These volumes were then projected to 2020 using a growth factor for the area as a matter of standard practice.

7. **How will traffic be improved if a new signalized intersection will be added for the new ramp?**

   As indicated in the presentation, the existing traffic delays at the intersection of Columbia Turnpike and Park Avenue can be as high as 8 minutes. The traffic analysis performed for this study show that rerouting the Route 24 Eastbound traffic to the new proposed ramp along with the additional intersection upgrades and timing modifications will reduce these delays by 3 to 6 minutes.

Appendix A

Governor Phil Murphy
Lt. Governor Sheila Oliver

New Jersey Department of Transportation
Commissioner Diane Gutierrez-Scaccetti
www.njdot.nj.gov

Virtual Public Information Center

November 30, 2020 through December 14, 2020
Route 24, Columbia Turnpike and Park Avenue Interchange Improvements
Morris Township, Borough of Florham Park and Hanover Township
Morris County, New Jersey

The New Jersey Department of Transportation (NJDOT), committed to developing transportation improvements that best balance transportation needs, the environment, community concerns and costs, will hold a Virtual Public Information Center (PIC) to provide local residents and businesses with information on the **Route 24, Columbia Turnpike and Park Avenue Interchange Improvements.** You are encouraged to actively participate by providing comments at the end of the presentation by mail or e-mail.

The Presentation

Due to the COVID-19 Public Health Emergency, the Public Information Center will be conducted virtually at the following website:

https://www.dewberry.com/njdot-rt24-columbiatpk-parkave-interchange

Please view the presentation at a time that is convenient for you between November 30, 2020 and December 14, 2020. The purpose of the presentation is to provide information about the proposed improvements at the Route 24, Columbia Turnpike and Park Avenue Interchange. After the presentation, you will have an opportunity to submit comments to the NJDOT. Property owners with rental units are advised that tenants are also invited and encouraged to participate.

Background

Traffic exiting Route 24 Eastbound for Columbia Turnpike Westbound is forced to weave across heavy traffic on Columbia Turnpike Westbound to make a left turn onto Park Avenue Southbound. Weaving is causing accidents, delays at the Columbia Turnpike/Park Avenue signalized intersection and back-ups onto Route 24 during the morning peak hours.

The Proposed Project

NJDOT determined that a new ramp will be constructed to connect Route 24 Eastbound to and from Park Avenue at a new signalized T-intersection located south of the Columbia Turnpike/Park Avenue intersection. This new two-way ramp will connect to the existing ramps to and from Route 24 Eastbound and Columbia Turnpike Eastbound. The existing ramps will be modified.

New signing will direct Route 24 Eastbound drivers bound for Park Avenue Southbound to stay on the highway and take the next exit (Columbia Turnpike Eastbound) to access the new ramp to Park Avenue. This will eliminate weaving on Columbia Turnpike Westbound and reduce accidents and delays at the Columbia Turnpike/Park Avenue intersection.

A physical separator such as a curbed island will be constructed on Columbia Turnpike Westbound to prevent exiting traffic from Route 24 Eastbound from weaving across traffic to the left. Drivers will have the option of staying on Columbia Turnpike or turning right onto Park Avenue Northbound.

The existing ramp from Columbia Turnpike Eastbound to Route 24 Eastbound will be closed and signing will direct drivers to use the new ramp connection on Park Avenue. To accommodate the increase in traffic from Columbia Turnpike Eastbound to Park Avenue Southbound, two right turn lanes will be provided at the Columbia Turnpike/Park Avenue intersection.

Anticipated Schedule

- Concept Development Phase complete: Winter 2021
- Preliminary Engineering Phase begins: Fall 2021

For further information, please contact:

Anthony Sytko, Regional Coordinator
New Jersey Department of Transportation
Office of Community Relations
PO Box 600, Trenton, NJ 08625-0600
Phone: 609-963-1992
E-mail: Anthony.Sytko@dot.nj.gov

Appendix B

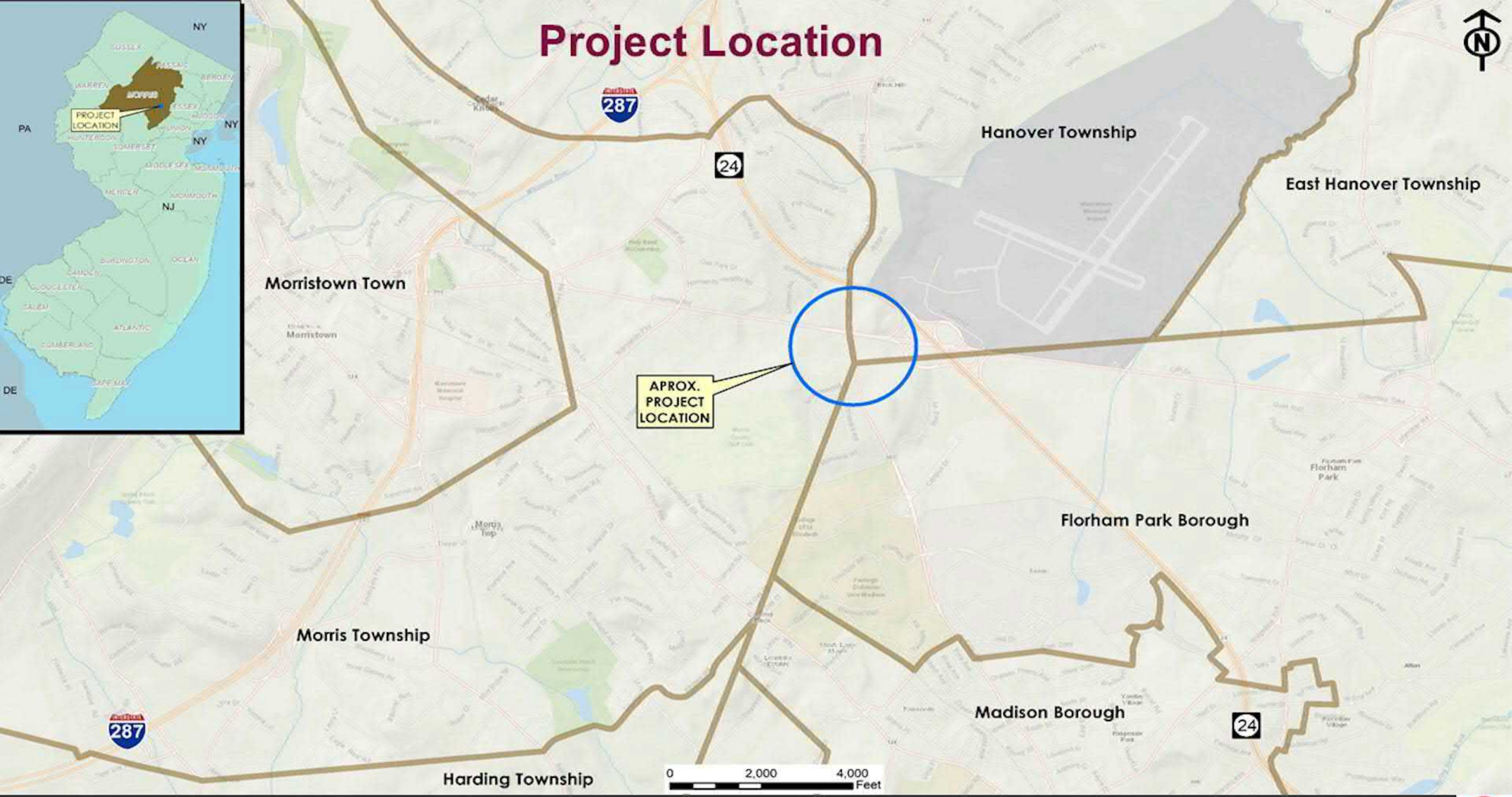
New Jersey Department of Transportation

Route 24, Columbia Turnpike and Park Avenue Interchange Improvements

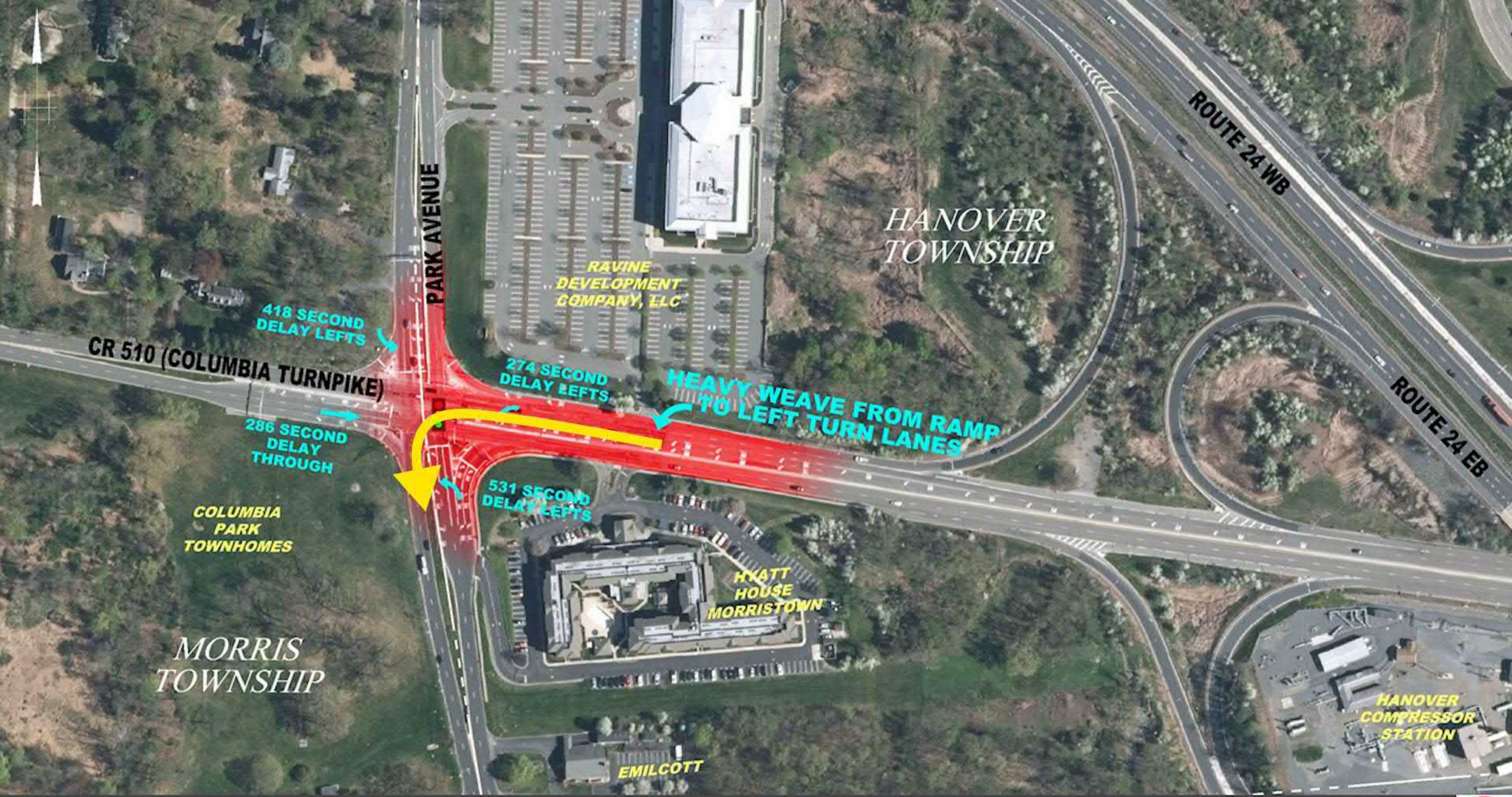
Virtual Public Information Center

November 30, 2020

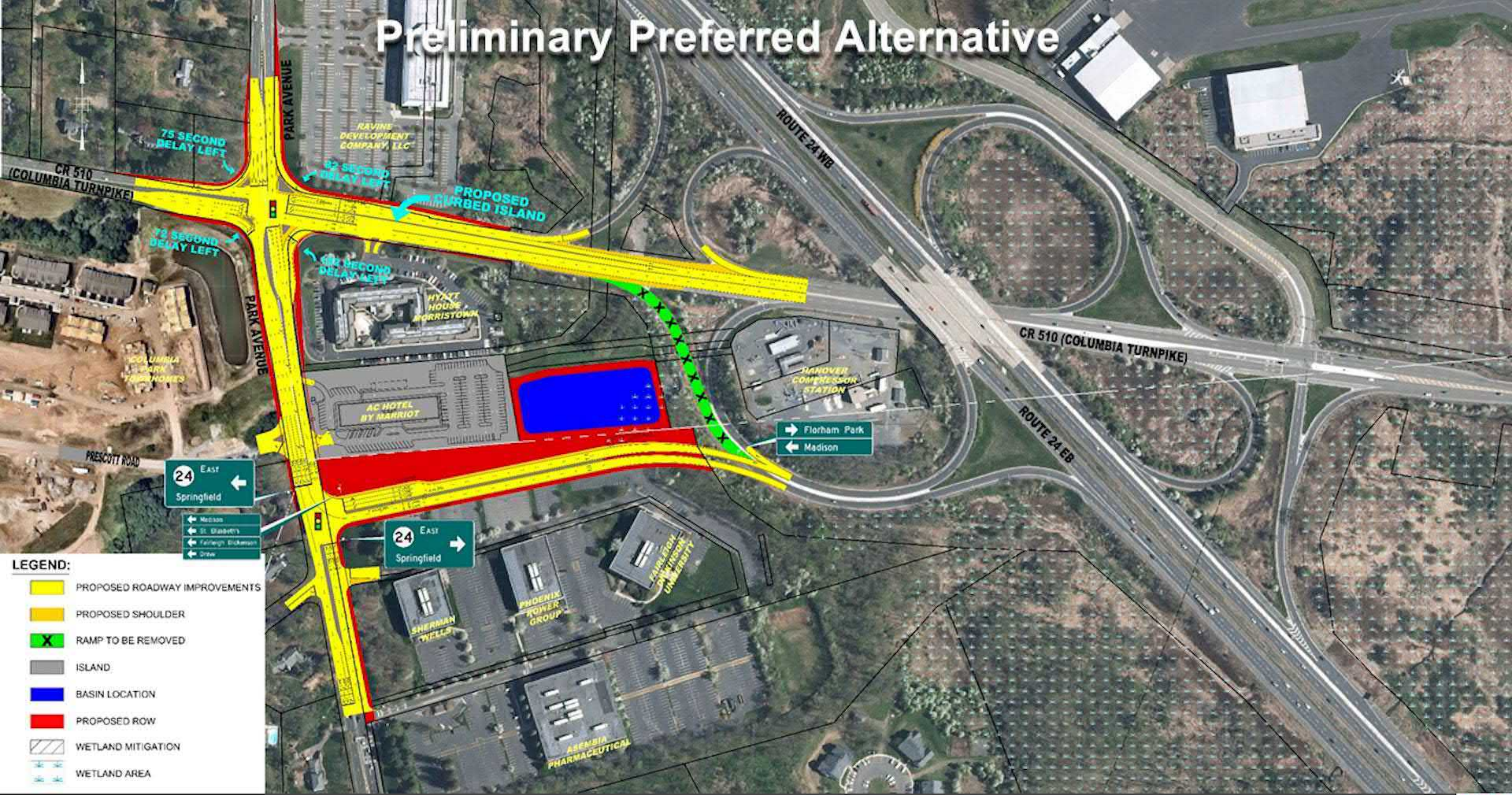
Project Location

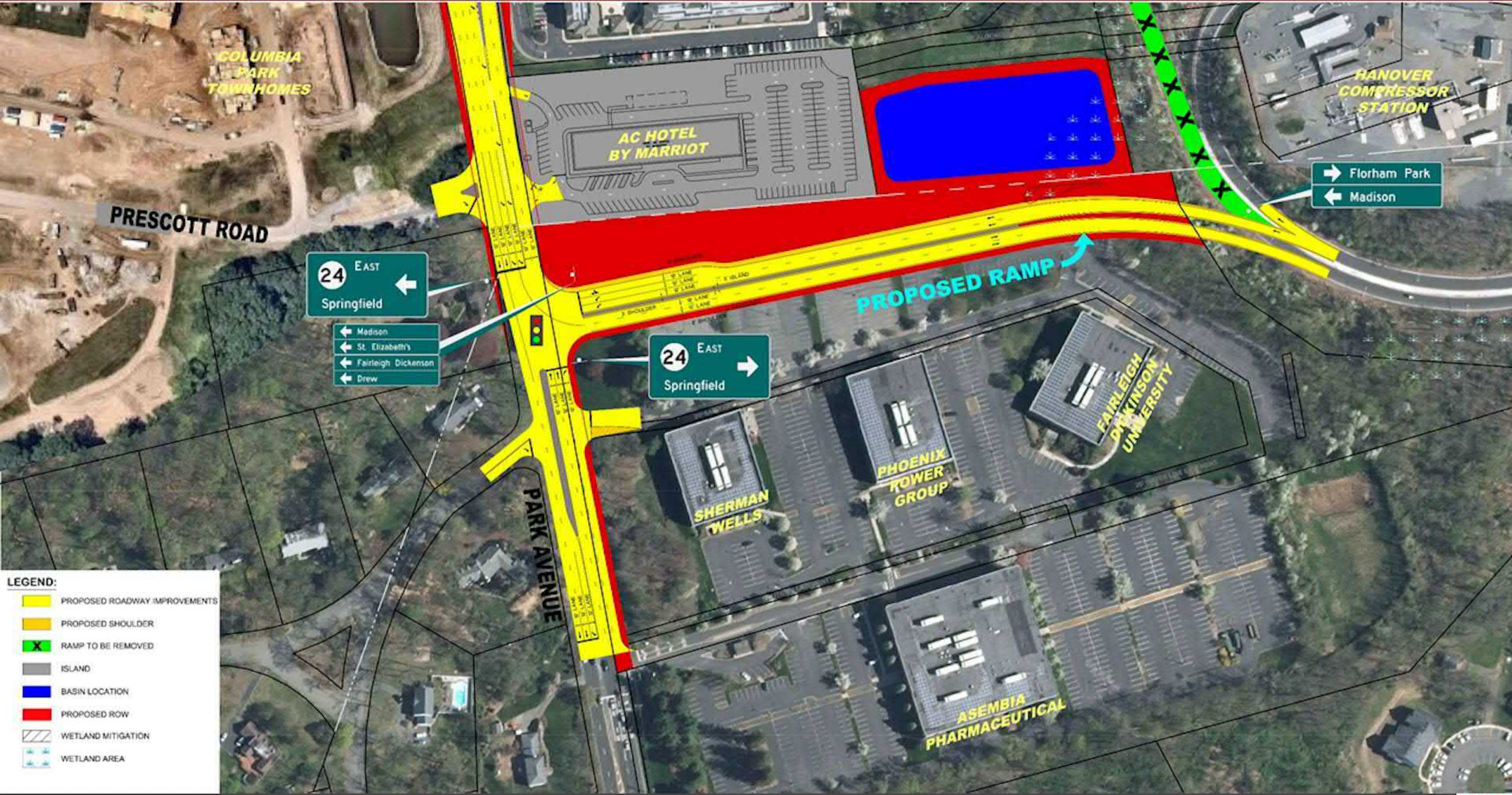


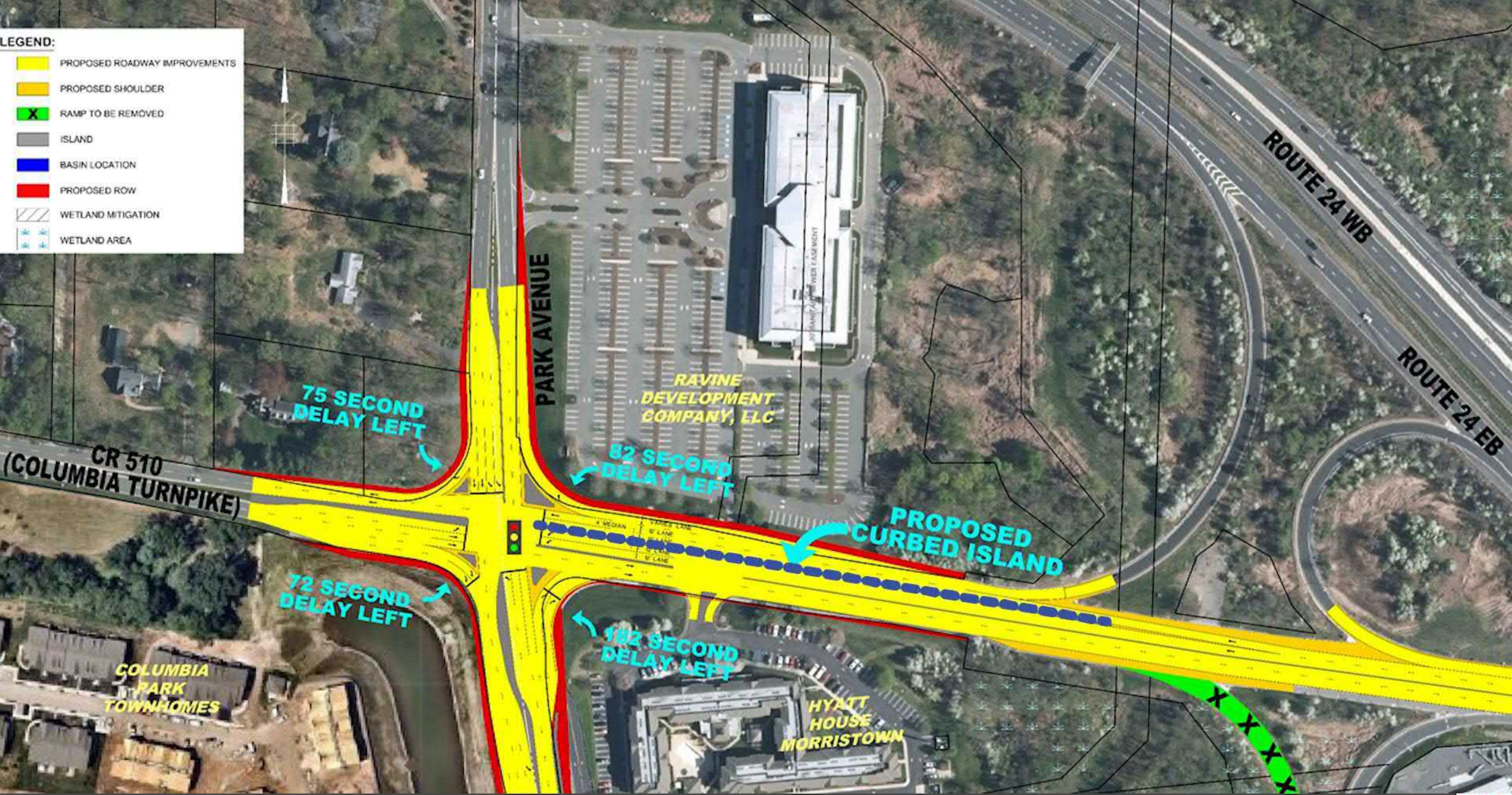
Existing Conditions


ROUTE 24 WB
PARK AVENUE
HANOVER TOWNSHIP
RAVINE DEVELOPMENT COMPANY, LLC
418 SECOND DELAY LEFTS
CR 510 (COLUMBIA TURNPIKE)
274 SECOND DELAY LEFTS
HEAVY WEAVE FROM RAMP TO LEFT TURN LANES
ROUTE 24 EB
286 SECOND DELAY THROUGH
531 SECOND DELAY LEFTS
COLUMBIA PARK TOWNHOMES
HYATT HOUSE MORRISTOWN
MORRIS TOWNSHIP
HANOVER COMPRESSOR STATION
EMILCOTT

Preliminary Preferred Alternative




COLUMBIA PARK TOWNHOMES
AC HOTEL BY MARRIOT
HANOVER COMPRESSOR STATION
Florham Park
Madison
PRESCOTT ROAD
24 EAST Springfield
Madison
St. Elizabeth's
Fairleigh Dickenson
Drew
PROPOSED RAMP
24 EAST Springfield
FAIRLEIGH DICKINSON UNIVERSITY
PHOENIX POWER GROUP
SHERMAN WELLS
PARK AVENUE
ASEMBIA PHARMACEUTICAL
LEGEND:
PROPOSED ROADWAY IMPROVEMENTS
PROPOSED SHOULDER
RAMP TO BE REMOVED
ISLAND
BASIN LOCATION
PROPOSED ROW
WETLAND MITIGATION
WETLAND AREA


LEGEND:
🟨 PROPOSED ROADWAY IMPROVEMENTS
🟧 PROPOSED SHOULDER
🟩 RAMP TO BE REMOVED
▨ ISLAND
🟦 BASIN LOCATION
🟥 PROPOSED ROW
▨ WETLAND MITIGATION
WETLAND AREA
ROUTE 24 WB
ROUTE 24 EB
PARK AVENUE
CR 510 (COLUMBIA TURNPIKE)
RAVINE DEVELOPMENT COMPANY, LLC
75 SECOND DELAY LEFT
82 SECOND DELAY LEFT
72 SECOND DELAY LEFT
182 SECOND DELAY LEFT
PROPOSED CURBED ISLAND
COLUMBIA PARK TOWNHOMES
HYATT HOUSE MORRISTOWN

Project Schedule

Concept Development

Preliminary/ Final Design

Construction

Current Phase
By NJDOT

Phase
By County

Phase
By County

Feedback

Take the survey and submit comments at the following website:

https://www.dewberry.com/njdot-rt24-columbiatpk-parkave-interchange

Questions can be submitted via email to NJDOT at:

Anthony.Sytko@dot.nj.gov

Appendix C

NJDOT Route 24, Columbia Turnpike and Park Avenue Interchange

Public Information Center Survey

1. Contact Information (Optional)

By providing contact information, you will be added to the mailing list for Route 24, Columbia Turnpike and Park Avenue Interchange

Name

Address

Email Address

Phone Number

2. To help us better understand your interest in the project, please indicate your affiliation:

○ Resident

○ Business

○ Municipal/Government

○ Utility

○ Other:

3. Do you live or work in the project area?

○ Yes - please indicate where in the comment field below.

○ No

Comments:

4. Are you supportive of the project as it is shown in the presentation?

○ Yes

○ No

Comments:

5. If you have any questions regarding the project, please provide them below.

Q1:

Q2:

Q3:

Q4:

Q5:

6. Please provide any other comments below.

NJDOT Route 24, Columbia Turnpike and Park Avenue Interchange

THANK YOU FOR YOUR PARTICIPATION!

If you have any remaining questions or comments regarding this project, please submit them by email to Anthony.Sytko@dot.nj.gov

Appendix D

Sr.No	Owner Name	Mailing Address	Street Address	Block	Lot
1	FORTE, JOHN J. JR & MARY BETH	7 ACADEMY RD, MADISON, NJ 07940	35 PARK AVE, MADISON, NJ 07940	1101	2
2	CHIAROLANZIO, DAVID & DANIELLE	37 PARK AVE, MADISON, NJ 07940	37 PARK AVE, MADISON, NJ 07940	1101	3
3	DE CARO, CARMINE J	41 PARK AVE, MADISON, NJ 07940	41 PARK AVE, MADISON, NJ 07940	1101	4
4	AMBROSIANO, THEODORE	45 PARK AVE, MADISON, NJ 07940	45 PARK AVE, MADISON, NJ 07940	1101	5
5	SANGILLO, STEVEN	195 PARK AVE, MADISON, NJ 07940	47 PARK AVE, MADISON, NJ 07940	1101	6
6	AMALGAMATED & CONSOLIDATED LLC	25-27 DICKERSON ST, DOVER, NJ 07801	49 PARK AVE, MADISON, NJ 07940	1101	7
7	ALVEY, DAVID	17 LAKE TRAIL WEST, HARDING, NJ 07960	57 PARK AVE, MADISON, NJ 07940	1101	8
8	PISCIOTTO, JAMES & JACQUELINE S	14 CORN HILL DR, MORRISTOWN, NJ 07960	61 PARK AVE, MADISON, NJ 07940	1101	9
9	ALVEY, DAVID	17 LAKE TRAIL WEST, HARDING, NJ 07960	65 PARK AVE, MADISON, NJ 07940	1101	10
10	DECARO, UMBERTO	69 PARK AVE, MADISON, NJ 07940	69 PARK AVE, MADISON, NJ 07940	1101	11
11	PICONE, PAUL C & TONI M	211 PARK AVE, MADISON, NJ 07940	211 PARK AVE, MADISON, NJ 07940	1101	12
12	GORZELNIK, LAWRENE M	14 DELAWARE RD MORRISTOWN, NJ 07960	14 DELAWARE RD MORRISTOWN, NJ 07960	1101	13
13	BUNETA, ANDRO & JENNIFER	12 DELAWARE RD MORRISTOWN, NJ 07960	12 DELAWARE RD MORRISTOWN, NJ 07960	1101	14
14	ALTMAN, SCOTT & ENRICHETTA	10 DELAWARE RD MORRISTOWN, NJ 07960	10 DELAWARE RD MORRISTOWN, NJ 07960	1101	15
15	MC HUGH, JAMES R & SUSAN B	8 DELAWARE RD MORRISTOWN, NJ 07960	8 DELAWARE RD MORRISTOWN, NJ 07960	1101	16
16	RICCIARDELLI, STEVEN & MARLO	6 DELAWARE RD MORRISTOWN, NJ 07960	6 DELAWARE RD MORRISTOWN, NJ 07960	1101	17
17	BIALOS, STEVEN/NUNEZ, SCORPIO	2 DELAWARE RD MORRISTOWN, NJ 07960	2 DELAWARE RD MORRISTOWN, NJ 07960	1101	18
18	JAMES H DOWDY III	15 DELAWARE RD MORRISTOWN, NJ 07960	PARK AVE & DELAWARE	1105	2
19	MILLMORE, ANNE O. (TRUSTEE)	215 PARK AVE MORRISTOWN, NJ 07960	PARK AVE	1105	3
20	ADVANCE AT PARK%SLK GLOBAL SOLUTION	2727 LBJ FREEWAY STE 806, DALLAS, TX 75234	220 PARK AVE FLORHAM PARK, NJ 07932	1201	1
21	ADVANCE AT PARK%SLK GLOBAL SOLUTION	2727 LBJ FREEWAY STE 806, DALLAS, TX 75234	200 PARK AVE FLORHAM PARK, NJ 07932	1201	2
22	VILLA AT FLORHAM PARK INC	3 MANHATTAN DR BURLINGTON, NJ 08016	190 PARK AVE FLORHAM PARK, NJ 07932	1201	3
23	WOODFIELD ESTATES @ FLORHAM PARK	39 MAIN ST CHATHAM, NJ 07932	188 PARK AVE FLORHAM PARK, NJ 07932	1201	4
24	KBSII 100-200 CAMPUS DRIVE LLC	100 CAMPUS DR,1F-%T LYNCH FLORHAM PARK, NJ 07932	200 CAMPUS DR FLORHAM PARK, NJ 07932	1201	5
25	KBSII 300-600 CAMPUS DRIVE LLC	100 CAMPUS DR,1F-%T LYNCH FLORHAM PARK, NJ 07932	300 CAMPUS DR FLORHAM PARK, NJ 07932	1201	6
26	KBSII 100-200 CAMPUS DRIVE LLC	100 CAMPUS DR,1F-%T LYNCH FLORHAM PARK, NJ 07932	100 CAMPUS DR FLORHAM PARK, NJ 07932	1201	7
27	PARK AVENUE FOUNDATION INC	184 PARK AVE FLORHAM PARK, NJ 07932	184 PARK AVE FLORHAM PARK, NJ 07932	1201	8
28	TEXAS EASTERN TRANSMISSION CORP	P.O.BOX 2629, ADDISON, TEXAS 75001	34 COLUMBIA RD	4801	6, 7. 8
29	LSREF3 AH CHICAGO LLC% RYAN, LLC	600 FIFTH AVE, 9TH FLOOR, NEW YORK, NY 10020	194 PARK AVE FLORHAM PARK, NJ 07932	4802	1
30	CEDAR KNOLLS ONE LLC	80 S JEFFERSON RD, #202, WHIPPANY, NJ 07981	190 PARK AVE FLORHAM PARK, NJ 07932	4802	2
31	RAVINE DEVELOPMENT CO LLC	P.O. BOX 298, SPRINGFIELD, NJ 07081	10 PARK AVE	4902	1
32	COLUMBIA EXECUTIVE PLAZA ASSOC.	820 MORRIS TPK.SUITE 301, HORT HILLS, N.J. 07078	COLUMBIA ROAD, OFF	4902	2
33	SOUTHEAST MORRIS CTY MUN UTIL AUTH	19 SADDLE RD, CEDAR KNOLLS, NJ 07927	29 COLUMBIA RD	4903	1
34	HONEYWELL,INC., ATT: RAY MERCHANT	115 TABOR RD. MORRIS PLAINS, NJ 07950	101 COLUMBIA RD	9101	4
35	BOLCAR, STEPHEN & SALLY A	88 NO JEFFERSON RD WHIPPANY, NJ 07981	88 NO JEFFERSON RD WHIPPANY, NJ 07981	9201	1
36	ANTONIELLO, JOSEPH R/CAROL	29 NYE AVE WHIPPANY, NJ 07981	29 NYE AVE WHIPPANY, NJ 07981	9201	2
37	MARINO, ANNA F	111 NO JEFFERSON RD WHIPPANY, NJ 07981	9 LILLIAN PL WHIPPANY, NJ 07981	9201	3
38	LETIZIA, RONALD JR/BETH ANN	25 NYE AVE WHIPPANY, NJ 07981	25 NYE AVE WHIPPANY, NJ 07981	9201	4
39	BAKA, JOHN A/CAROL M/ET ALS	19 NYE AVE WHIPPANY, NJ 07981	19 NYE AVE WHIPPANY, NJ 07981	9201	5
40	MORETTI,FRANK R. JR. & PATRICIA	15 NYE AVE WHIPPANY, NJ 07981	15 NYE AVE WHIPPANY, NJ 07981	9201	6
41	WANG, ALICE M	11 NYE AVE WHIPPANY, NJ 07981	11 NYE AVE WHIPPANY, NJ 07981	9201	7
42	MIHALKO, MICHAEL & ANDREA	7 NYE AVE WHIPPANY, NJ 07981	7 NYE AVE WHIPPANY, NJ 07981	9201	8
43	BARCELLONA, GAETANO	1101 APPLETON WAY WHIPPANY, NJ 07981	78 NO JEFFERSON RD	9201	9
44	DOYLE, DAVID & DANIELLE	72 NO JEFFERSON RD, WHIPPANY, NJ 07981	72 NO JEFFERSON RD, WHIPPANY, NJ 07981	9201	10
45	PURDUE, MICHAEL/DENISE/ASHLEY	68 NO JEFFERSON RD, WHIPPANY, NJ 07981	68 NO JEFFERSON RD, WHIPPANY, NJ 07981	9201	11
46	MILLMORE, ANNE O TRUSTEE	215 PARK AVE, MORRISTOWN, NJ 07960	215 PARK AVE, MORRISTOWN, NJ 07960	9201	12
47	LAKE, ROLAND & ELEANOR	3 NYE AVE WHIPPANY, NJ 07981	3 NYE AVE WHIPPANY, NJ 07981	9201	15
48	GANCARZ, ADAM/ELIZBIETA	183 PARSIPPANY RD WHIPPANY, NJ 07981	183 PARSIPPANY RD WHIPPANY, NJ 07981	9202	1
49	HEUVERKAMP, DIRK & MAFALDA	179 PARSIPPANY RD WHIPPANY, NJ 07981	179 PARSIPPANY RD WHIPPANY, NJ 07981	9202	2
50	ORFANAKOS, GEORGE T & MARIA	175 PARSIPPANY RD WHIPPANY, NJ 07981	175 PARSIPPANY RD WHIPPANY, NJ 07981	9202	3
51	BRUNNER, FRED C THIRD	9 KITCHELL PL WHIPPANY, NJ 07981	163 PARSIPPANY RD WHIPPANY, NJ 07981	9202	4
52	GRAVES, WILLIAM & ALICE	5 WOODLAND AVE WHIPPANY, NJ 07981	10 WOODLAND AVE WHIPPANY, NJ 07981	9202	5
53	JCP&L ATT:FIRSTENERGY SERVICE CO	JCP&L ATT:FIRSTENERGY SERVICE CO PO BOX 4747 OAKBROOK, IL 60522	24 WOODLAND AVE WHIPPANY, NJ 07981	9202	6
54	BOURGEOIS, DONNYELL	34 WOODLAND AVE WHIPPANY, NJ 07981	34 WOODLAND AVE WHIPPANY, NJ 07981	9202	7
55	GRAVEMAN, RICHARD FRED & SUSAN H	15 PARK AVE, CONVENT, NJ 07960	15 PARK AVE, CONVENT, NJ 07960	9502	6
56	JP PICONE III TRUST & JP PICONE III	11 PARK AVE, MORRISTOWN, NJ 07960	11 PARK AVE, MORRISTOWN, NJ 07960	9502	5
57	MERCER, PAUL A & JOY M	5010 THOMAS BERRY WAY, CHAPEL HILL, NC 27516	9 PARK AVE, MORRISTOWN, NJ 07960	9502	4
58	JOSEPH, HAROLD N & SYLITA	592 NW 135 TER, PLANTATION, FL 33325	5 PARK AVE, MORRISTOWN, NJ 07960	9502	3
59	BROCKWELL, SHANE & DEGREZIA, DALENA	118 COLUMBIA RD, MORRISTOWN, NJ 07960	118 COLUMBIA RD, MORRISTOWN, NJ 07960	9502	2
60	BELL ATLANTIC %DUFF & PHELPS	PO BOX 2749, ADDISON,TX 75001	3 PARK AVE/COLUMBIA RD	9502	1
61	OPPENHEIMER, JOHN & NALLET, CORINNE	112 COLUMBIA RD, MORRISTOWN, NJ 07960	112 COLUMBIA RD, MORRISTOWN, NJ 07960	9502	7
62	PEREZ, PACIFICO B & EVELYN C	114 COLUMBIA RD, CONVENT, NJ 07960	114 COLUMBIA RD, CONVENT, NJ 07960	9502	8
63	DEEPU, ARIFUR & RAHMAN, ZAKIA	2 WYNDMOOR DR CONVENT, NJ 07960	2 WYNDMOOR DR CONVENT, NJ 07960	9502	9
64	KELLY, JENNIFER WIGFIELD	4 WYNDMOOR DR, CONVENT, NJ 07960	4 WYNDMOOR DR, CONVENT, NJ 07960	9502	10
65	Steve W. Williams, Administrator	Borough of Chatham 54 Fairmount Avenue Chatham, NJ 07928		NP	
66	Brian K. Gibbons, Chief of Police	Borough of Chatham 54 Fairmount Avenue Chatham, NJ 07928		NP	
67	Raymond M. Codey, Adminstrator	Borough of Madison Hartley Dodge Memorial Building 50 Kings Road, Madison, NJ 07940		NP	
68	Darren P. Dachisen Sr. Chief of Police	Borough of Madison Hartley Dodge Memorial Building 50 Kings Road, Madison, NJ 07940		NP	
69	Timothy Quinn Administrator	Morris Township 50 Woodland Avenue, P.O. Box 7603 Convent Station, NJ 07961		NP	

70	Mark DiCarlo Chief of Police	Morris Township 50 Woodland Avenue, P.O. Box 7603 Convent Station, NJ 07961		NP
71	Jesse Kaar Fire Chief	Morris Township 50 Woodland Avenue, P.O. Box 7603 Convent Station, NJ 07961		NP
72	Larry Gross EMS Captain	Morris Township 50 Woodland Avenue, P.O. Box 7603 Convent Station, NJ 07961		NP
73	Joseph A. Giorgio Adminstrator	Hanover Township PO Box 250 1000 Route 10, Whippany, NJ 07981		NP
74	Gerry Maceira Township Engineer	Hanover Township PO Box 250 1000 Route 10, Whippany, NJ 07981		NP
75	Mark D. Roddy Chief of Police	Hanover Township PO Box 250 1000 Route 10, Whippany, NJ 07981		NP
76	William F. Huyler Administrator	Borough of Florham Park 111 Ridgedale Avenue Florham Park, NJ 07932		NP
77	Michael Sgaramella Borough Engineer	Borough of Florham Park 111 Ridgedale Avenue Florham Park, NJ 07932		NP
78	Joseph Orlando Chief of Police	Borough of Florham Park 111 Ridgedale Avenue Florham Park, NJ 07932		NP
79	Florham Park Memorial First Aid Squad	60 Felch Road Florham Park, 07932		NP
80	Florham Park Volunteer Fire Department	Company #01 – Headquarters 315 Brooklake Road Florham Park, NJ 07932		NP
81	Company #02 – Annex	49 Broadway Florham Park, NJ 07932		NP
82	Christopher J. Vitz, P.E. Director of Public Works and County Engineer	County of Morris Department of Public Works PO Box 900 Morristown, NJ 07963-0900		NP

Appendix E

Route 24, Columbia Turnpike and Park Avenue Interchange Improvements
Virtual PIC Online Advertisements

Morristown

https://morristowngreen.com/2020/12/03/dot-proposing-changes-to-columbia-turnpike-park-avenue-interchange-public-comments-through-dec-14/

DOT proposing changes to Columbia Turnpike/Park Avenue interchange; public comments through Dec. 14

Two cars were involved in an accident in Morris Township at the intersection of Columbia and Normandy parkways, around noon on Aug. 3, 2020. The state DOT proposes major safety improvements nearby at Columbia/Park Avenue. Photo by Lee Goldberg.

By Kevin Coughlin - December 3, 2020 1

Tapinto

https://www.tapinto.net/articles/proposed-improvements-to-rt-24-on-and-off-access-in-florham-park

GOVERNMENT

Proposed Improvements to Rt. 24 on and off Access in Florham Park

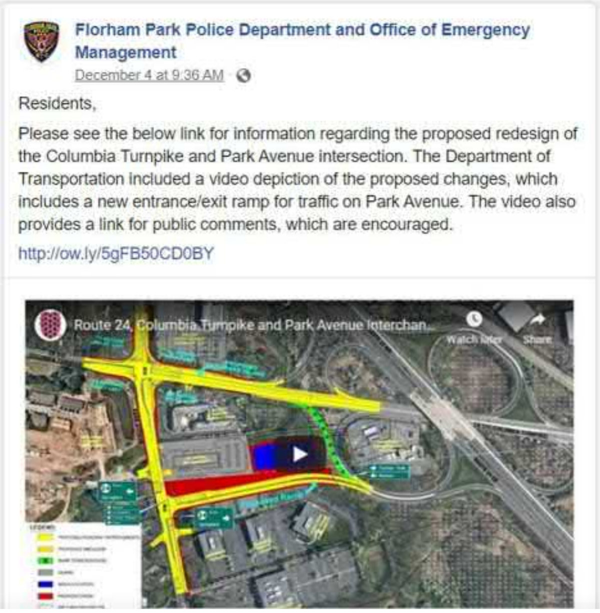
By TAPINTO STAFF
December 4, 2020 at 11:49 PM

Credits: Dewberry

FLORHAM PARK, NJ - There are proposed changes to the on and off access of Rt. 24 at Columbia Turnpike and Park Avenue. These changes are at the study of the NJ Department of Transportation.

Florham Park PD Facebook Page

https://www.facebook.com/pg/FlorhamparkPD/posts/



Florham Park Police Department and Office of Emergency Management
December 4 at 9:36 AM

Residents,

Please see the below link for information regarding the proposed redesign of the Columbia Turnpike and Park Avenue intersection. The Department of Transportation included a video depiction of the proposed changes, which includes a new entrance/exit ramp for traffic on Park Avenue. The video also provides a link for public comments, which are encouraged.

http://ow.ly/5gFB50CD0BY

NJDOT

https://www.state.nj.us/transportation/community/meetings/

Active/Upcoming Public Meetings

'NA'NA'

Date:	From: Tuesday, November 24, 2020 at 02:26:00 PM To: Friday, December 11, 2020 at 02:26:00 PM
Topic:	Rt 36 Thompson Ave
Meeting Type:	Public Information Center - Information (pdf) Click for PIC Web Site - Web Site
Location:	
Topic:	
Date:	From: Monday, November 30, 2020 at 03:21:00 PM To: Monday, December 14, 2020 at 03:21:00 PM
Topic:	Rt. 24/Columbia Turnpike Interchange
Meeting Type:	Public Information Center - Information (pdf) Click for PIC Web Site - Web Site
Location:	Morris Twp, Florham Park, Hanover Township, Morris County
Topic:	25th Legislative District: Sen. Anthony Bucco, Asm. Brian Bergen, Asw. Aura Dunn26th Legislative District: Sen. Joseph Pennacchio, Asm. Jay Webber, Asw. BettyLou DeCroce27th Legislative District: Sen. Richard Codey, Asm. John McKeon, Asw. Mila Jasey

Florham Park Eagle

https://www.newjerseyhills.com/florham_park_eagle/news/video-ramp-being-considered-to-ease-congestion-at-columbia-turnpike-intersection/article_4a61fbc6-6aa2-5250-bf7b-7d8b062642ec.html

(need a login to view the entire article but it appears that this leads to the virtual PIC)

VIDEO: Ramp being considered to ease congestion a
Turnpike intersection

Dec 5, 2020 0

The state Department of Transportation (DOT) is considering a new ramp off Route 24 that would connect with Park Avenue further south of the Park Avenue-Columbia Turnpike intersection to ease traffic congestion in Morris Township.

Appendix F

IH Engineers, P.C.
an equal opportunity employer
103 College Road East, 1st Floor, Princeton, NJ 08540
T: 609-734-8400 F: 609-734-8405 www.ihengineers.com
Also in: Hackensack, NJ, and New York, NY

MINUTES OF MEETING

To: **All Attendees**

Scribe: **Anthony Sytko/ John Coffey**

Cc:

Date: **9/25/2020**

Subj: **Route 24/Columbia Turnpike Interchange Local Officials Meeting**

Attendees	Organization	Email
Christopher Vitz	Morris County	CVitz@co.morris.nj.us
Debra Dellagiacoma	Morris County	ddellagiacoma@co.morris.nj.us
Jim Slate	Morris Township	jslate@morristwp.com
Timothy Quinn	Morris Township	tquinn@morristwp.com
Michael Sgaramella	Florham Park	msgaramella@fpboro.net
Gerry Maceira	Hanover Township	gmaceira@hanovertownship.com
Stephen Williams	Chatham Township	swilliams@chathamborough.org
Jim Burnet	Madison Township	
Ed D’Arcy	NJDOT	edward.darcy@dot.nj.gov
Alexander Maevsky	NJDOT	Alexander.Maevsky@dot.nj.gov
Anthony Sytko	NJDOT	Anthony.Sytko@dot.nj.gov
John Coffey	Dewberry	jjcoffey@dewberry.com
John Korunow	IH Engineers	jkorunow@ihengineers.com

The following was discussed at the above referenced meeting:

Following brief introductions by Anthony Sytko and a description of the meetings purpose by Ed D’Arcy, John Korunow proceeded to describe the changes that have occurred since the previous Local Officials Meeting in May of 2017. John explained that the Preliminary Preferred Alternative is essentially the same with the exception of a shift to the south on Park Avenue by 350’. The Parcel originally set for the ramp has been sold to a developer to build a hotel. The new location has two added benefits over the original location. First the new signal will now be a greater distance from the signal at Columbia and Park and the ramp will be constructed over a parking lot which reduces the environmental impact by reducing the impervious area required for the project.

John also stated that due to the time that has passed, new crash data and traffic counts where obtained to confirm that the Preliminary Preferred Alternative is still valid.

The meeting was then opened up for questions:

Jim Slate (Morris Twp.) asked what impact the revised Alternative 3 had on the level of service at the intersections. John Korunow (IH Engineering) said the level of service stayed the same and the only real change is the ramp shifting over 350'. There are still 900 vehicles being taken out of the intersection, which will reduce crashes and congestion. Jim asked what the cost change is with this alternative. John said the construction cost is about the same, but there are fewer right-of-way acquisitions and a reduction in impervious surface could reduce the size of the retention basin. Jim asked how the lost parking spots will be made up. John said that will have to be evaluated and discussed with the businesses in Preliminary Engineering.

Mike Sgaramella (Florham Park) asked if the land in the complex would be condemned. Chris Vitz (Morris County) said that it would go through the standard right-of-way process. Ed D'Arcy (NJDOT) explained NJDOT is only handling this Concept Development Phase, and that Morris County will take over for design and construction, and it would only be condemned if an agreement cannot be negotiated. Chris added that the County works with property owners, and condemnation is a last resort.

Mike then asked if this is a surface ramp or an elevated ramp. John said there is a wall along the side, but it is a surface ramp.

Chris asked what the next steps are. Anthony Sytko (NJDOT) said there will be a Public Information Center (PIC) soon, and it will be virtual. Ed added after the PIC is done, the Draft Concept Development Report will be revised, and then the project will be turned over to the County in early 2021.

Jim Slate mentioned he liked portions of the old plan, and preferred that the ramp line up with Prescott Road. He asked if there was any chance things could change. Jim Burnet added that the County could take ownership of Campus Drive and use that to create an interchange that will work for eastbound and westbound. Chris said the County will not take over Campus Drive, as there are impacts to wetlands and the detention basin. In addition, it is too close to the Columbia Turnpike EB ramp to Route 24 EB creating a weave conflict. Jim Slate said he'd like to see the hotel taken into consideration as well. Chris said once it becomes a County project, they can discuss funding and then determinations will be made. John Korunow added that using Campus Drive increases the cost of the project and Ed added that NJDOT prohibits access off a ramp.

Jim Slate then suggested the Triboro Road ramp, and asked if that was a possible option. Chris said that is a separate project, and it will never be built.

Steve Williams (Chatham) asked if the info center will be this year. Anthony said it will be in October or November. Steve then asked what the next steps are, and the timeline. Chris said assuming the Draft CD Report is sent to the County in early 2021, Preliminary Engineering could then begin late 2021 or early 2022 if funding for the project is provided by NJTPA. He said construction is still 7 years away.

The meeting adjourned at 10:45 AM.

If the writer does not receive any comments on the minutes by (October 16, 2020), it will be understood that the content of this memo is acceptable to all attendees.

Wednesday, August 23, 2017 – Rt. 24 EB ramp to CR 510 (Columbia Turnpike) meeting, Municipal Building, Florham Park

Name	Organization	Phone #	Email address
Anthony Sytko	NJDOT – Gov't & Comm. Relations	609-530-2110	Anthony.sytko@dot.nj.gov
Steve Williams	Chatham – Administrator	973-701-6807	swilliams@chathamborough.org
Michael Sgaramella	Florham Park – Engineer	973-410-5473	msgaramella@fpboro.net
Dave Leo	Hanover – Engineering	973-428-2489	dleo@hanovertownship.com
Joseph Orlando	Florham Park PD	973-410-5440	545@fppd.net
Mark Taylor	Florham Park – Mayor	973-410-5302	mtaylor@fpboro.net
Aliaa Majeed	NJDOT – Project Mgt.		Aliaa.majeed@dot.nj.gov
Ed D'Arcy	NJDOT – Project Mgt.	609-530-3631	Edward.darcy@dot.nj.gov
Jesse Kaar	Morris Twp. FD	973-326-7462	jkaar@morristwp.com
Joe Cortright	Whippany FD	973-703-0285	jcortright@whippanyfire.com
Christopher Vitz	Morris Co. – Engineer	973-285-6758	cvitz@co.morris.nj.us
Danielle Ferland	Morris Co. – Asst. Bridge Engineer	973-829-8622	dferland@co.morris.nj.us
Robert Vogel	Madison – Engineer	973-593-3060	vogelr@rosenet.org
Chief Robert Treiber	Florham Park PD	973-377-2200	532@fppd.net
Bryan Pilipie	Hanover PD	973-428-2512	bpilipie@hanoverpolice.com
Lt. Ed Conrads	Morris Twp. PD	973-326-7454	econrads@mtpd1422.com
Mark Osterhoudt	Morris Twp. PD	973-326-7436	mosterhoudt@mtpd1422.com
John Korunow	IH Engineers	609-734-8400	jkorunow@ihengineers.com
Brian Stankus	IH Engineers	609-734-8400	bstankus@ihengineers.com
Peter Mancuso	Morris Twp. Committee	973-704-1937	mancuso@att.net
Jim Slate	Morris Twp.	973-326-7443	jslate@morristwp.com

After introductions, Ed D'Arcy (NJDOT) explained that although this is a county project, NJDOT has agreed to do the concept development phase, at the county's request, due to the proximity to a state ramp. The project will be turned over to the county once we finish the CD phase.

John Korunow (IH Engineers) then presented the first alternative. He said that initially they considered ramps off Park Ave. but that didn't work because if there was a backup, it would bring cars onto the interchange. Instead, vehicles will come off Rt. 24 to a new intersection, and that will take the volume off Columbia & Park. Part of this will remove the ramp from Rt. 24 SB to Columbia. This alternative requires a lot of ROW acquisition, and will cost approximately $21 million in total.

Brian Stankus (IH Engineers) provided the traffic engineering breakdown. He said that approximately 90% of the traffic during the AM rush hour is making the left from Columbia onto Park – roughly 1,600 vehicles per hour. The backup meters traffic coming off the ramp as well. All that traffic would be diverted to the new signal intersection, and would still leave approximately 600 vehicles/hr making the left. In addition, the traffic in the evening rush hour making the right from Park to Columbia is also massive, and the new signal will alleviate much of that traffic as well.

There was a discussion about the Honeywell facility, and whether that anticipated traffic was factored into the projections, which it was. John noted they also did not want to put the ramp directly over gas transmission lines. Brian concluded that this alternative was not an overall fail, but did include some F movements. Mayor Taylor (Florham Park) said that safety for drivers is the top priority.

John then presented Alternative 2, which includes roundabouts. This eliminates the 2A exit, and all traffic would come onto 2B. There are additional walls needed for the ramps, and more basins will be needed because of the increase impervious surface. This project will total approximately $15 million.

Brian explained this alternative is one of the two better ones for the Columbia/Park interchange. It still takes traffic off the intersection, but it does create a weaving section on Rt. 24 EB. He noted that most roundabouts work with low volume, but this is higher volume, and that could create an issue with traffic backing up onto the ramp during the AM peak. Representatives from the Florham Park Police Department expressed concerns about those potential backups causing accidents.

There was a discussion about accidents, and where cars would go in the event of a lane closure due to the circle. John explained that the lanes were of sufficient width that, should one lane be closed, cars would still be able to move. In addition, there would be a wide enough shoulder for most vehicles to get around.

John then presented Alternative 3. This is less expensive and requires less ROW acquisition than the first two; it would cost approximately $12.5 million total. The barrier would prevent movement from the ramp to the left turn lane, and new signage would direct drivers to Morristown. However, the ramp from Columbia onto Rt. 24 EB would be eliminated. Mayor Taylor asked if this would help the projected 2020 traffic numbers; Brian said this creates similar numbers to Alternative 2. Brian also noted this causes a 600 foot weaving section on Rt. 24 EB, which would be an issue. Lt. Ed Conrads (Morris Twp. Police Department) said this would force more drivers further down to take Exit 1A at Whippany Rd.

Joe Cortright (Whippany Fire Department) asked if the exit by the hotel would be acquired, because he was concerned about safety access to the Honeywell property. He suggested creating a fire hydrant on the Florham Park side (northeast corner) of the new intersection, because the only hydrant currently there is across the road, and in the event of a fire there, the department would have to close down all of Park Ave. to bring the hose across the road. John said that would be factored in once Concept Development was finished and they moved into Final Design.

Finally, Alternative 4 was presented. This proposes to move the traffic down to Campus Drive. It addresses the safety issues, but does not eliminate traffic out of the Columbia/Park intersection, and does nothing to remove traffic during the evening peak. In addition, this proposal creates multiple driveways on the ramp, which is not allowed under the guidelines. This would require eliminating the trailways that were just put in. Lastly, it creates an F weaving pattern as well.

There was a discussion about the jurisdictional issues. Representatives from Morris County inquired why county funds were being used to pay for a project that would benefit the state ramps. Ed explained that although there is a political aspect to it, it’s a county intersection that happens to be near a state ramp, and thus it’s ultimately a county project.

There was a discussion about expanding the scope to look at regional issues on Rt. 24, but Ed said this project was limited in scope – this was just about the Columbia/Park intersection and not all of Rt. 24. Robert Vogel (Madison) said a list of pros and cons was needed, and in his opinion the best recommendation is Alternative 1. John said that project costs the most and doesn’t create much improvement. Ed recommends Alternative 3, since it improves the safety and is the cheapest, which makes it the most efficient.

Bryan Pilipie (Hanover Police Department) inquired about traffic coming from Morristown that wants to go onto Rt. 24 EB with Alternative 3. Brian answered that they would move through the Columbia/Park intersection and make the left at the new signal. Jesse Kaar (Morris Township Fire Department) responded that would move backups to the new intersection instead. John said it would alleviate most of the issues – there would still be F movements, but there would be fewer of them.

Ed said that he hoped to advance and finalize concept development by the end of the year and present to Morris County in early 2018 to choose the PPA.

Bryan asked if the new signal would impact the timing of signals further down Park Ave. Ed said they would have to coordinate the timing, since ordinarily signals are not placed that closely together. Brian added that there would not be a lot of movement eastbound at the new signal, but it would be sufficient to warrant its own phase.

Steve Williams (Chatham) asked if there was a discussion or examination of looking at Rt. 24 near Rt. 287. Drivers get off early and create problems in that area. Ed mentioned there could be a problem statement submitted about that area. Steve then asked about other issues on Rt. 24 in Chatham. Ed responded that ITS was looking to optimize the signals and signage on Rt. 124, including at its intersection with Rt. 24, but that the purpose of this meeting was to discuss Columbia/Park.

Ed Conrads inquired if there could be a generator switch installed at Columbia/Park to allow the police department to hook up a generator in the event of a power outage, which would save time and money in police manpower at the intersection. Ed D'Arcy responded that it would be passed along to Traffic Engineering, since it's a NJDOT light. Anthony Sytko (NJDOT) added that he would get Lt. Conrads a contact person to investigate that.

MEETING ADJOURNED

John Korunow

To: John Korunow
Subject: FW: Route 24 and Columbia Turnpike Interchange and Intersection Alternatives.
Attachments: 510-623 count summary.xls

From: Brian M. Stankus [mailto:bstankus@ihengineers.com]
Sent: Tuesday, September 12, 2017 6:05 PM
To: 'Vitz, Chris'; 'John Korunow'; 'Edward D'Arcy'
Cc: 'Dellagiacoma, Debra'; 'Majeed, Aliaa'
Subject: RE: Route 24 and Columbia Turnpike Interchange and Intersection Alternatives.

Chris –

Attached is a copy of the peak hour intersection counts IH conducted in April 2016 at Columbia Turnpike and Park Avenue.

You noted: *"Under the "Advantages" paragraph bullet "3." Notes a third receiving lane would be constructed south of Columbia Turnpike on Park Avenue. That is not reflected on the graphic."* We propose to revise the text to eliminate the reference to the third southbound lane (so it matches the graphic). Since no more than two lanes at a time enter southbound Park Avenue at the signal there is not really a need for a third southbound lane here – the third lane could potentially increase the available storage between the two signals, but the lane drop beyond the proposed new signal could add to delays especially during the weekday morning peak hour.

I will send the sketches showing the redistributed Year 2022 peak hour volumes for Alternatives 1 and 3 in a separate email. At this point these diagrams are the rough working pencil sketches but they will show you what we analyzed.

Thanks and please contact me with any further questions.

Brian M. Stankus, P.E., PTOE
Project Manager
IH Engineers, P.C.
103 College Road East, First Floor
Princeton, NJ 08540
phone (609) 734-8400
direct (609) 524-6407
fax (609) 734-8405
bstankus@ihengineers.com
www.ihengineers.com

"First choice of our clients for over 15 years."

From: Vitz, Chris
Sent: Tuesday, September 05, 2017 3:27 PM
To: 'John Korunow' <jkorunow@ihengineers.com>; 'Brian M. Stankus' <bstankus@ihengineers.com>; 'Edward D'Arcy' <edward.darcy@dot.state.nj.us>

Cc: Dellagiacoma, Debra <ddellagiacoma@co.morris.nj.us>; 'Majeed, Aliaa' <Aliaa.Majeed@dot.nj.gov>
Subject: RE: Route 24 and Columbia Turnpike Interchange and Intersection Alternatives.

John,

Thank you. I have to present the alternatives at the Freeholder work session on Sept 13th. So if the additional answers from Brian are sent before Friday, that would be great.

Christopher J. Vitz, P.E.
Director of Public Works & County Engineer
County of Morris Department of Public Works
PO Box 900
Morristown, NJ 07963-0900
973-285-6758

From: John Korunow [mailto:jkorunow@ihengineers.com]
Sent: Tuesday, September 05, 2017 11:08 AM
To: Vitz, Chris <CVitz@co.morris.nj.us>; 'Brian M. Stankus' <bstankus@ihengineers.com>; 'Edward D'Arcy' <edward.darcy@dot.state.nj.us>
Cc: Dellagiacoma, Debra <ddellagiacoma@co.morris.nj.us>; 'Majeed, Aliaa' <Aliaa.Majeed@dot.nj.gov>
Subject: RE: Route 24 and Columbia Turnpike Interchange and Intersection Alternatives.

See Below

From: Vitz, Chris [mailto:CVitz@co.morris.nj.us]
Sent: Friday, September 01, 2017 4:12 PM
To: 'jkorunow@ihengineers.com'; 'Brian M. Stankus'; Edward D'Arcy
Cc: Dellagiacoma, Debra
Subject: Route 24 and Columbia Turnpike Interchange and Intersection Alternatives.

John, Brian, Ed,

I want to thank you again for the presentation and work performed on the Route 24 / Columbia Turnpike / Park Avenue interchange and intersection.

I have had some time to digest the materials provided and have a few questions;

1) Was any research done on a direct connection from Route 24 EB to Park Avenue Southbound? I know this has been suggested before at the county level, but I am not sure if your group, or NJDOT Value Engineering looked into that alternative. Some type of answer on that would allow me to address that specific issue with the Freeholder Board. Thank you. – NJDOT Value Solutions looked at this alternative (see attached). This alternative dumps the relocated traffic right back into the intersection at Columbia Turnpike. This will require changing the signal timing to give more to Park Avenue. This alternative may help with the weave on Columbia Turnpike but it does nothing for the delays at the intersection. They are still a very bad "F".

2) Alternative 1

    a. There is no justification given as to why the WB Columbia Turnpike to EB Route 24 Ramp is being realigned and reconstructed. We are not touching this particular ramp. It is remaining as is. However the first paragraph suggests that half the remaining Columbia WB left turns would use this alternative to get to the flyover ramp. Why not just allow those WB vehicles to continue to make the left at Park Avenue? The WB vehicles are allowed to go either way. We are suggesting that when they discover that there is another way that reduces their delay that they may take the flyover ramp as an alternate.

How was the percentage of vehicles proposed to use that approach determined? There was no formula for the 50%. It is an assumption based on engineering judgement. It could be more or it could be less. There is no way to know until the construction is complete and the realignment is in use.

I need to defer to Brian Stankus on the rest of these questions. He is out of the office today, back tomorrow. I will also discuss the "bullet 3" issue with him.

b. Under the "Advantages" paragraph bullet "3." Notes a third receiving lane would be constructed south of Columbia Turnpike on Park Avenue. That is not reflected on the graphic.

3) Alternative 3

a. Under the "Advantages" paragraph bullet "3." Notes a third receiving lane would be constructed south of Columbia Turnpike on Park Avenue. That is not reflected on the graphic.

4) If possible, can the traffic counts be provided for the intersection of Columbia Turnpike and Park Avenue? As well as any other traffic counts taken in the area? It would be helpful for us to have those for any future development applications.

5) If possible, could you provide the proposed traffic volumes on simplified versions of the maps for Alternatives 1 and 3?

I would like to have these answers and documents to better inform the County Freeholder Board. I have been asked to present your findings at an upcoming Freeholder Board Work Session. I have copied in Debra Dellagiacoma, our Morris County Traffic Engineer on this message.

Thank you.

Sincerely,

Christopher J. Vitz, P.E.
Director of Public Works & County Engineer
County of Morris Department of Public Works
PO Box 900
Morristown, NJ 07963-0900
973-285-6758

IH ENGINEERS, P.C.
www.ihengineers.com

CONCEPT DEVELOPMENT/INTERCHANGE IMPROVEMENTS
NJ Route 24 and Columbia Turnpike Interchange
Borough of Florham Park, Townships of Morris and Hanover
Morris County

№	UTILITY TYPE	COMPANY NAME	COMPANY CONTACT	CONTACT TITLE/DEPARTMENT	CONTACT ADDRESS	CONTACT TELEPHONE	EMAIL	LETTER SUBMISSION DATE	RESPONSE DATE	WITHIN PROJECT LIMIT		REMARKS
										YES	NO	
1	**Gas**	**PSE&G**	Mr. Len Pannucci, PMP	Program Manager/ Delivery Projects & Constructions	4000 Hadley Road, MC 446 South Plainfield, NJ 07080	Office: 908-412-2228	len.pannucci@pseg.com	27-Oct-16	01-Nov-16	YES		**Company Engineer to be Contacted & Utility Agreement:** Len Pannucci, PMP - Program Manager/Delivery Projects & Constructions, 4000 Hadley Road, MC 446 South Plainfield, NJ 07080, 908-412-2228, len.pannucci@pseg.com. **Preliminary Engineering funding** $25,000.00 - Note: For Actual location and/or depth of any facilities depicted on this drawing must be verified in the field by excavating test holes where applicable.
2	**Gas**	**NJ Natural Gas**	Mr. John Wyckoff	Director - Engineering	1415 Wyckoff Road PO Box 1464 Wall, NJ 07719	Office: 732-938-7864	jbwyckoff@njng.com	27-Oct-16	31-Oct-16	YES		**Company Engineer to be Contacted:** Kyle Rauth - Project Engineer, 1415 Wyckoff Rd, POBox 1464, Wall, NJ 07719, 732-919-8016, Krauth@njng.com. **UTILITY Agreement**: John B. Wychoff, P.E.; Director-Engineering, 1415 Wyckoff Rd, POBox 1464, Wall, NJ 07719, 732-938-7864, JBWyckoff@NJNG.com **Preliminary Engineering funding** $10,000.00
3	**Electric**	**Jersey Central Power & Light of New Jersey (NORTH)**	Mr. Baxter Turley Mr. Harvey Lockley	Advanced Engineer	300 Madison Avenue Morristown NJ 07962	Office: 732-212-4262	bturley@firstenergycorp.com hlockley@firstenergycorp.com	27-Oct-16	12-Jul-17	YES		1.Mr. Turley is no longer with company, found the new person assigned for the area of the project. Called on 01/23/2017, left voice message. Sent e-mail on 01/23/2017. 2. 07/12/2017 got email from Mr. Lockley with attachment. JCP&L of NJ have a utilities within the limits. Also, Verizon and Cablevision are tenants on their facility. **Preliminary Engineering funding** $20,000.00
4	**Cable**	**Cablevision**	Mr. Glenn Cisek	Director, Contracts Manager	1111 Stewart Avenue Bethpage, NY 11714	Office: 516-803-2785	gcisek@cablevision.com	27-Oct-16	11-Nov-16	YES		**Company Engineer to be Contacted:** John Bartels Manager - HFC-Construction, 275 Centennial Avenue, Piscataway, NJ 08854, 973-659-2470, jbartel@cablevision.com. **UTILITY Agreement**: Glenn F. Cisek, Director - Contracts Management, 1111 Stewart Avenue, Bethpage, NY 11714, 516-803-2785, gcisek@cablevision.com. **Preliminary Engineering funding** $5,000.00
6	**Telephone**	**Verizon**	Mr. Frank Antisell	Manager	6000 Hadley Road South Plainfield, NJ 07080	Office: 908-412-6160	frank.t.antisell@verizon.com	27-Oct-16	31-Oct-16	YES		**Company Engineer to be Contacted:** Krzysztof Ogrodnik - Engineer, 6000 Hadley Road, South Plainfield, NJ 07080, 908-412-6161, Krzysztof.Ogrodnik@verizon.com. **UTILITY Agreement**: Frank Antisell; Manager - Network Engineering, 6000 Hadley Road, South Plainfield, NJ 07080, 908-412-6160,Frank.Antisell@verizon.com **Preliminary Engineering funding** $20,000.00

7	**Sewer (Florham Park Borough)**	**Florham Park Borough Sewer Utility**	Mr. Ted Lee	Plant Manager	111 Ridgedale Avenue, Florham Park, NJ 07932	Office: 973-377-1330		27-Oct-16	16-Nov-16		NO	**Company Engineer to be Contacted:** Howard Matteson -CDM Smith- Senior PE, 110 Fieldcrest Avenue, #8, 6th Floor, Edison, NJ 08837, 732-225-7000, mattesonHS@cdmsmith.com. **UTILITY Agreement**: Carl Ganger; Borough of Florham Park, Director-DCS, 111 Ridgedale Avenue, Florham Park, NJ, 973-410-5330, cganger@fpboro.net. **Preliminary Engineering funding** - not specified
8	**Water (Florham Park Borough)**	**Florham Park Borough Water Utility**	Mr. Alex Zipeto	Water Superintendent	111 Ridgedale Avenue, Florham Park, NJ 07932	Office: 973-410-5316	azipeto@fpboro.net	27-Oct-16				1. Called on 01/23/2017, left voice message. Mr. Zipeto returned phone call and requested Letter #1 to be re-send by email. E-mail sent on 01/23/2017.
9	**Sewer (Hanover Township)**	**Hanover Sewerage Authority**	Michael C. Wynne, P.E.	Executive Director	PO Box 320 1000 Route 10 Whippany NJ 07981	Office: 973-428-2477 Fax: 973-515-3774	mwynne@hanovertownship.com	27-Oct-16				1. Called on 01/23/2017, left voice message.
10	**Water (Hanover Township)**	**The Southeast Morris County Municipal Utility Authority (SMCMUA)**	Paul Kozakiewicz	Superintendent	19 Saddle Road Cedar Knolls, NJ 07927	Office: 973-326-6865	pkozakiewicz@smcmua.org	27-Oct-16	02-Dec-16	YES		1. We got questionnaire from Paul, indicating that SMCMUA has a utility within the limits of the project, but we didn't get the map indicating the exact location. In Paul's email says that there is new person (Mr. Manley) will be assigned for this work. Called on 01/23/2017, but he had a day off, I will call on 01/24/2017.
11	**Sewer (Morris Township)**	**Morris Township Sewer**	Mr. James Slate	Township Engineer	50 Woodland Ave PO Box 7603 Convent Station, NJ 07961-7603	Office: 973-326-7440	Jslate@morristwp.com	27-Oct-16	23-Jun-17	YES		1. Called on 01/23/2017, left voice message. 2. We got questionnaire on June 23, 2017. **Preliminary Engineering funding** $00.00
12	**Water (Morris Township)**	**The Southeast Morris County Municipal Utility Authority (SMCMUA)**	Paul Kozakiewicz	Superintendent	19 Saddle Road Cedar Knolls, NJ 07927	Office: 973-326-6865	pkozakiewicz@smcmua.org	27-Oct-16				1. We got questionnaire from Paul, indicating that SMCMUA has a utility within the limits of the project, but we didn't get the map indicating the exact location. In Paul's email says that there is new person (Mr. Manley) will be assigned for this work. Called on 01/23/2017, but he had a day off, I will call on 01/24/2017.
13	**Gas**	**Algonquin Gas Transmission Co**	Mr. Andy Meyer	Superintendent	Morristown Airport (MMU) 45 Airport Rd, Morristown, NJ 07960	Office: 973-644-2640	armeyer@spectraenergy.com	23-Jan-17				1.Sent e-mail with Letter #1 on 01/23/2017
14	**Gas**	**Texas Eastern Gas**				Office: 713-627-5400		23-Jan-17				1. Called on 01/23/2017, left voice message to engineering department of central office in Texas. Also found the local Morristown office 1 Columbia Rd., Morristown, NJ 07960 (973)539-1933, nobody picks the phone answer machine.

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103 College Road East, 1st Floor
Princeton, NJ 08540
T: 609-734-8400 F: 609-734-8405
www.ihengineers.com
Also in: Hackensack and Staten Island

Re: NJDOT Utility Letter #1
NJ Route 24 and Columbia Turnpike Interchange
(Interchange Improvements)
UPC # **154330**

October 28, 2016

Mr. Baxter Turley
Advanced Engineer
Jersey Central Power & Light of New Jersey (NORTH)
300 Madison Avenue
Morristown NJ 07962
Phone: 732-212-4262

Re:
NJ Route 24 and Columbia Turnpike Interchange

Concept Development
Interchange Improvements
Borough of Florham Park, Townships of Morris and Hanover
Morris County
UPC Code: **154330**
ELECTRIC UTILITY

Project Designer:
IH Engineers, P.C.
103 College Road East, 1st Fl.
Princeton, NJ 08540
ATTN: John Korunow, P.E.
Phone: (609) 734-8400
Fax: (609) 734-8405
Email: jkorunow@ihengineers.com

Dear Mr. **Turley:**

The New Jersey Department of Transportation (NJDOT) has contracted IH Engineers, P.C. (IH) for Concept Development (CD) for Interchange Improvements of NJ Route 24, Park Avenue and Columbia Turnpike Interchange. The project involves alternative analysis for the relocation of interchange ramps. This will involve relocating traffic from the intersection of Columbia Turnpike and Park Avenue to Park Avenue approximately 1000 feet east of the intersection.

This letter will serve to established an official contact with Jersey Central Power & Light of New Jersey (NORTH) - Electric and verify if you do have any facility in the project affected area. Please find enclosed project Location Map and Photos of existing condition of the project area, to give you a better understanding of proposed project. If your facility exists within the project area, please estimate and provide the **additional** amount of Preliminary Engineering (PE) expenses you may request to pay for your effort in assisting NJDOT to investigate and verify the actual information and to develop accommodation schemes of all your facilities affected by the project.

Please complete the following questionnaire and return it to the Designer's Engineer by **November 25th, 2016.** If you prefer to respond by FAX or E-mail the numbers are in the caption above.

(X) We DO HAVE existing facilities within the project limits.

(____) We DO NOT HAVE existing facilities within the project limits.

(____) We HAVE PROPOSED facilities planned within the project limits.

(X) **The following companies are tenants on/in our facilities within the project limits:**

Verizon
Cablevision

(X) The Company Engineer to be contacted is:

Name Harvey M. Lockley
Company Jersey Central Power & Light
Title Engineering Services Supervisor.
Address 101 Crawford's Corner Road
Bld.#1, 5th. Fl. Suite 1-511
Holmdel, NJ. 07733
Tel: (732) 212-4262
Fax: (330) 245-5635
Email: Hlockley@firstenergycorp.com

(X) The UTILITY AGREEMENT shall be sent to the following person:

(X) Same as above or fill in below:

Name ____________________
Company ____________________
Title ____________________
Address ____________________
____
____
Tel: ____________________
Fax: ____________________
Email: ____________________

(X) **The amount of Preliminary Engineering funding needed will be $** 20,000.00
(This amount is only an estimate)

(X) We would like the NJDOT to arrange for the following work to be done for our facilities should it be necessary for them to be relocated or modified.
(____) Design/Engineering
(____) Construction – Some or All? ____________
(____) Neither – the Company will perform (or arrange to have performed) all needed work.
(X) Not certain at this time.

End of questionnaire.

If you have any further questions, please feel free to contact me.

Sincerely,
IH Engineers, P.C.

John Korunow, P.E.

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103 College Road East, 1st Floor
Princeton, NJ 08540
T: 609-734-8400 F: 609-734-8405
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Re: NJDOT Utility Letter #1
NJ Route 24 and Columbia Turnpike Interchange
(Interchange Improvements)
UPC # **154330**

January 23, 2017

Mr. Andy Meyer
Algonquin Gas Transmission Co
Morristown Airport (MMU)
45 Airport Rd,
Morristown, NJ 07960
Phone: 973 -664-2640

Re:
NJ Route 24 and Columbia Turnpike Interchange

Concept Development
Interchange Improvements
Borough of Florham Park, Townships of Morris and Hanover
Morris County
UPC Code: **154330**
GAS UTILITY

Project Designer:
IH Engineers, P.C.
103 College Road East, 1st Fl.
Princeton, NJ 08540
ATTN: John Korunow, P.E.
Phone: (609) 734-8400
Fax: (609) 734-8405
Email: jkorunow@ihengineers.com

Dear Mr. **Meyer**:

The New Jersey Department of Transportation (NJDOT) has contracted IH Engineers, P.C. (IH) for Concept Development (CD) for Interchange Improvements of NJ Route 24, Park Avenue and Columbia Turnpike Interchange. The project involves alternative analysis for the relocation of interchange ramps. This will involve relocating traffic from the intersection of Columbia Turnpike and Park Avenue to Park Avenue approximately 1000 feet east of the intersection.

This letter will serve to established an official contact with Algonquin Gas Transmission Co - Gas and verify if you do have any facility in the project affected area. Please find enclosed project Location Map and Photos of existing condition of the project area, to give you a better understanding of proposed project. If your facility exists within the project area, please estimate and provide the **additional** amount of Preliminary Engineering (PE) expenses you may request to pay for your effort in assisting NJDOT to investigate and verify the actual information and to develop accommodation schemes of all your facilities affected by the project.

Please complete the following questionnaire and return it to the Designer's Engineer by **February 23rd, 2017.** If you prefer to respond by FAX or E-mail the numbers are in the caption above.

(____) We DO HAVE existing facilities within the project limits.

(____) We DO NOT HAVE existing facilities within the project limits.

(____) We HAVE PROPOSED facilities planned within the project limits.

(____) **The following companies are tenants on/in our facilities within the project limits:**

____

____

(____) The Company Engineer to be contacted is:

Name ______________________________
Company ______________________________
Title ______________________________
Address ______________________________
____
____
Tel: ______________________________
Fax: ______________________________
Email: ______________________________

(____) The UTILITY AGREEMENT shall be sent to the following person:

(____) Same as above or fill in below:

Name ______________________________
Company ______________________________
Title ______________________________
Address ______________________________
____
____
Tel: ______________________________
Fax: ______________________________
Email: ______________________________

(____) **The amount of Preliminary Engineering funding needed will be $____________**
(This amount is only an estimate)

(____) We would like the NJDOT to arrange for the following work to be done for our facilities should it be necessary for them to be relocated or modified.
(_____) Design/Engineering
(_____) Construction – Some or All? ______________
(_____) Neither – the Company will perform (or arrange to have performed) all needed work.
(_____) Not certain at this time.

End of questionnaire.

If you have any further questions, please feel free to contact me.

Sincerely,
IH Engineers, P.C.

John Korunow, P.E.

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an equal opportunity employer

103 College Road East, 1st Floor
Princeton, NJ 08540
T: 609-734-8400 F: 609-734-8405
www.ihengineers.com
Also in: Hackensack and Staten Island

Re: NJDOT Utility Letter #1
NJ Route 24 and Columbia Turnpike Interchange
(Interchange Improvements)
UPC # **154330**

October 28, 2016

RECEIVED
OCT 31 2016
MAK - ENGINEERING

Mr. John Wyckoff
Director – Engineering
NJ Natural Gas
1415 Wyckoff Road
PO Box 1464
Wall, NJ 07719
Phone: 732-938-7864

Re:
NJ Route 24 and Columbia Turnpike Interchange

Concept Development
Interchange Improvements
Borough of Florham Park, Townships of Morris and Hanover
Morris County
UPC Code: **154330**
GAS UTILITY

Project Designer:
IH Engineers, P.C.
103 College Road East, 1st Fl.
Princeton, NJ 08540
ATTN: John Korunow, P.E.
Phone: (609) 734-8400
Fax: (609) 734-8405
Email: jkorunow@ihengineers.com

Dear Mr. **Wyckoff:**

The New Jersey Department of Transportation (NJDOT) has contracted IH Engineers, P.C. (IH) for Concept Development (CD) for Interchange Improvements of NJ Route 24, Park Avenue and Columbia Turnpike Interchange. The project involves alternative analysis for the relocation of interchange ramps. This will involve relocating traffic from the intersection of Columbia Turnpike and Park Avenue to Park Avenue approximately 1000 feet east of the intersection.

This letter will serve to established an official contact with NJ Natural Gas - Gas and verify if you do have any facility in the project affected area. Please find enclosed project Location Map and Photos of existing condition of the project area, to give you a better understanding of proposed project. If your facility exists within the project area, please estimate and provide the **additional** amount of Preliminary Engineering (PE) expenses you may request to pay for your effort in assisting NJDOT to investigate and verify the actual information and to develop accommodation schemes of all your facilities affected by the project.

Please complete the following questionnaire and return it to the Designer's Engineer by **November 25th, 2016.** If you prefer to respond by FAX or E-mail the numbers are in the caption above.

(X) We DO HAVE existing facilities within the project limits.

(____) We DO NOT HAVE existing facilities within the project limits.

(____) We HAVE PROPOSED facilities planned within the project limits.

(____) **The following companies are tenants on/in our facilities within the project limits:**

____

____

(X) The Company Engineer to be contacted is:

Name	Kyle Rauth
Company	NEW JERSEY NATURAL GAS
Title	Project Engineer
Address	1415 Wyckoff Rd PO Box 1464 Wall, NJ 07719
Tel:	T: 732-919-8016
Fax:	F: 732-919-7854
Email:	Krauth@njng.com

(X) The UTILITY AGREEMENT shall be sent to the following person:

(____) Same as above or fill in below:

Name	John B. Wyckoff, P.E.
Company	NEW JERSEY NATURAL GAS
Title	Director - Engineering
Address	1415 Wyckoff Rd PO Box 1464 Wall, NJ 07719
Tel:	T: 732-938-7864
Fax:	F: 732-919-7854
Email:	JBWyckoff@NJNG.com

(____) **The amount of Preliminary Engineering funding needed will be $ 10,000.00**
(This amount is only an estimate)

(____) We would like the NJDOT to arrange for the following work to be done for our facilities should it be necessary for them to be relocated or modified.

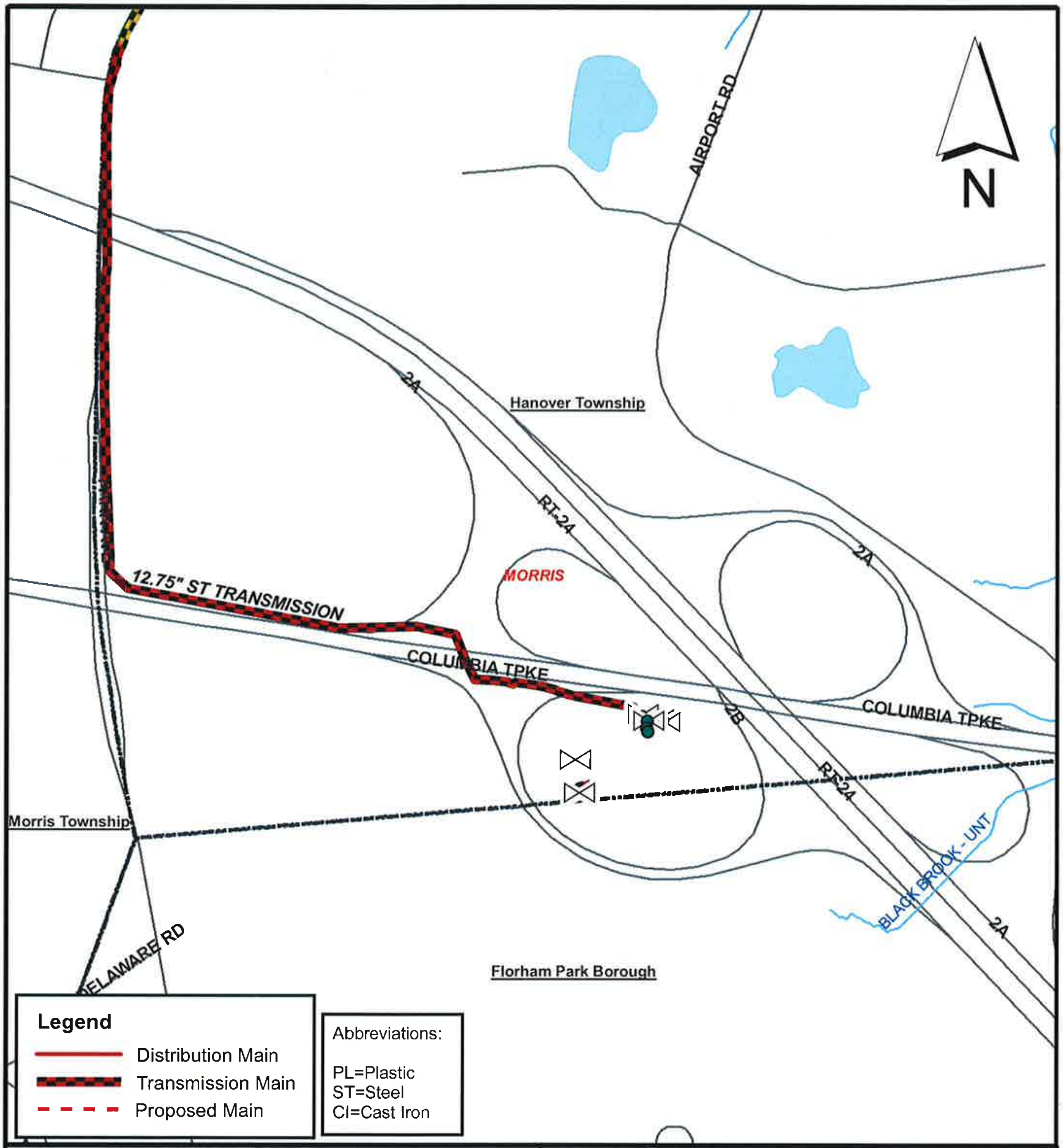
(_____) Design/Engineering
(_____) Construction – Some or All? ________________
(X) Neither – the Company will perform (or arrange to have performed) all needed work.
(_____) Not certain at this time.

End of questionnaire.

If you have any further questions, please feel free to contact me.

Sincerely,
IH Engineers, P.C.

John Korunow, P.E.



DESIGN PURPOSE ONLY
FOR EXACT LOCATION
DIAL 811 FOR MARKOUT

If required, relocations on transmission mains are subject to seasonal constraints.
Contact NJNG Engineer to discuss requirements.

NJ Route 24 & Columbia Turnpike
Interchange
Hanover Twp., Morris County

CREATED BY: kurillam	**DATE:** 11/7/2016
SCALE: NONE	New Jersey Natural Gas
SHEET 1 OF 1	

M:\Users\All GIS Users\Mark Ups\Foldername\Filename.mxd

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Princeton, NJ 08540
T: 609-734-8400 F: 609-734-8405
www.ihengineers.com
Also in: Hackensack and Staten Island

Re: NJDOT Utility Letter #1
NJ Route 24 and Columbia Turnpike Interchange
(Interchange Improvements)
UPC # 154330

October 28, 2016

Mr. Ted Lee
Plant Manager
Florham Park Borough Sewer Utility
111 Ridgedale Avenue,
Florham Park, NJ 07932
Phone: 973-377-1330

Re:
NJ Route 24 and Columbia Turnpike Interchange

Concept Development
Interchange Improvements
Borough of Florham Park, Townships of Morris and Hanover
Morris County
UPC Code: 154330
SEWER UTILITY

Project Designer:
IH Engineers, P.C.
103 College Road East, 1st Fl.
Princeton, NJ 08540
ATTN: John Korunow, P.E.
Phone: (609) 734-8400
Fax: (609) 734-8405
Email: jkorunow@ihengineers.com

Dear Mr. Lee:

The New Jersey Department of Transportation (NJDOT) has contracted IH Engineers, P.C. (IH) for Concept Development (CD) for Interchange Improvements of NJ Route 24, Park Avenue and Columbia Turnpike Interchange. The project involves alternative analysis for the relocation of interchange ramps. This will involve relocating traffic from the intersection of Columbia Turnpike and Park Avenue to Park Avenue approximately 1000 feet east of the intersection.

This letter will serve to established an official contact with Florham Park Borough Sewer Utility - Sewer and verify if you do have any facility in the project affected area. Please find enclosed project Location Map and Photos of existing condition of the project area, to give you a better understanding of proposed project. If your facility exists within the project area, please estimate and provide the **additional** amount of Preliminary Engineering (PE) expenses you may request to pay for your effort in assisting NJDOT to investigate and verify the actual information and to develop accommodation schemes of all your facilities affected by the project.

Please complete the following questionnaire and return it to the Designer's Engineer by November 25th, 2016. If you prefer to respond by FAX or E-mail the numbers are in the caption above.

☐ We DO HAVE existing facilities within the project limits.

☑ We DO NOT HAVE existing facilities within the project limits.

☐ We HAVE PROPOSED facilities planned within the project limits.

☐ **The following companies are tenants on/in our facilities within the project limits:**

____

____

(✓) The Company Engineer to be contacted is:

Name Howard Matteson
Company CDM Smith
Title Senior PE
Address 110 Fieldcrest Ave. #8
6th Floor
Edison, NJ 08837
Tel: (732) 225-7000
Fax:
Email: MattesonHS@cdmsmith.com

(✓) The UTILITY AGREEMENT shall be sent to the following person:

(✓) Same as above or fill in below:

Name Carl Ganger
Company Borough of Florham Park
Title Director DCS
Address 111 Ridgedale Ave.
Florham Park, NJ

Tel: (973) 410-5330
Fax: (973) 410-5490
Email: cganger@fpboro.net

(____) **The amount of Preliminary Engineering funding needed will be $____________**
(This amount is only an estimate)

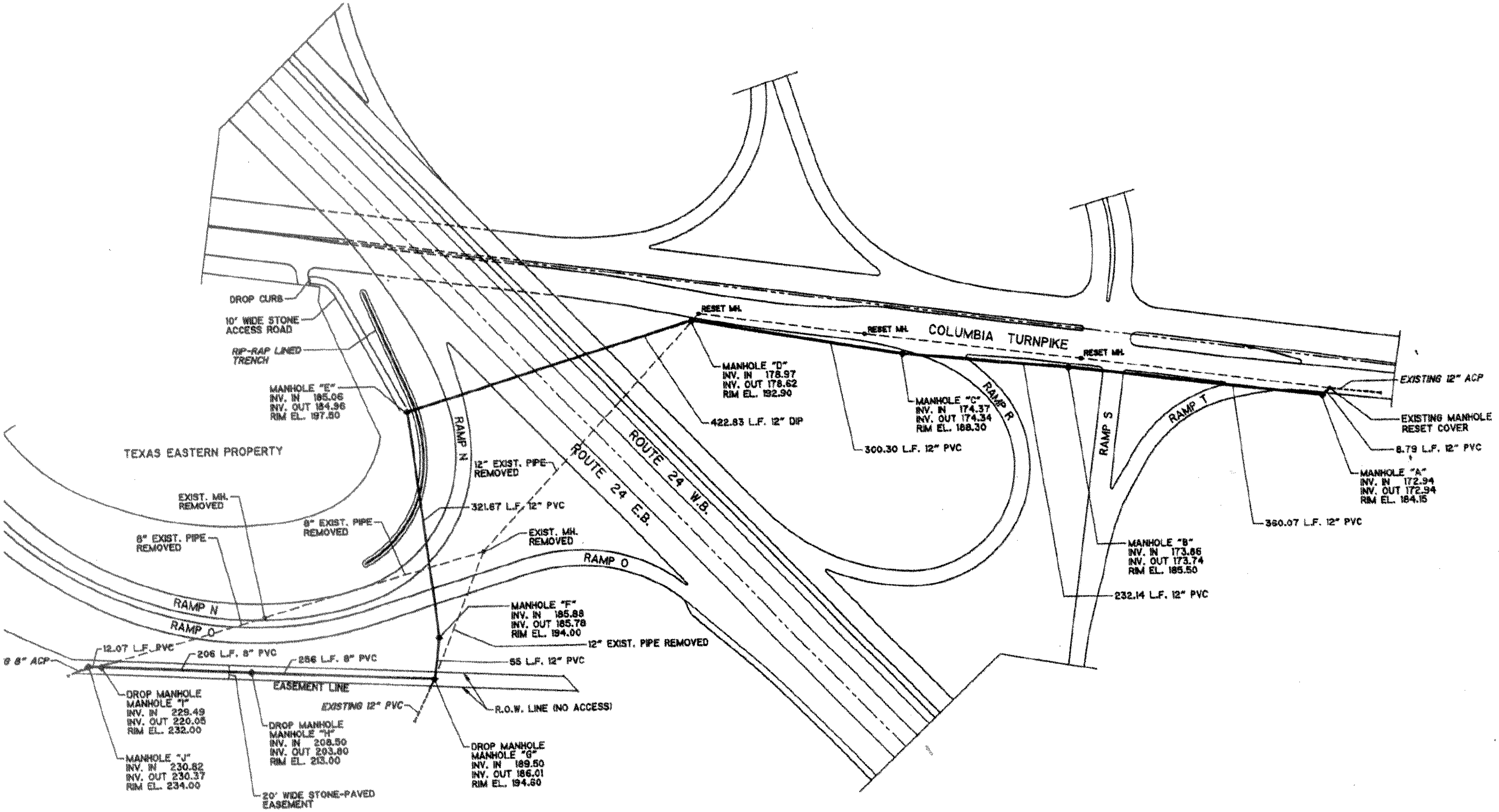
(____) We would like the NJDOT to arrange for the following work to be done for our facilities should it be necessary for them to be relocated or modified.
(____) Design/Engineering
(____) Construction – Some or All? ________________
(____) Neither – the Company will perform (or arrange to have performed) all needed work.
(✓) Not certain at this time.

End of questionnaire.

If you have any further questions, please feel free to contact me.

Sincerely,
IH Engineers, P.C.

John Korunow, P.E.


COLUMBIA TURNPIKE
RESET MH.
RESET MH.
RESET MH.
EXISTING 12" ACP
EXISTING MANHOLE
RESET COVER
8.79 L.F. 12" PVC
MANHOLE "A"
INV. IN 172.94
INV. OUT 172.94
RIM EL. 184.15
360.07 L.F. 12" PVC
RAMP T
RAMP S
MANHOLE "B"
INV. IN 173.86
INV. OUT 173.74
RIM EL. 185.50
232.14 L.F. 12" PVC
RAMP R
MANHOLE "C"
INV. IN 174.37
INV. OUT 174.34
RIM EL. 188.30
300.30 L.F. 12" PVC
MANHOLE "D"
INV. IN 178.97
INV. OUT 178.62
RIM EL. 192.90
422.83 L.F. 12" DIP
ROUTE 24 W.B.
ROUTE 24 E.B.
DROP CURB
10' WIDE STONE
ACCESS ROAD
RIP-RAP LINED
TRENCH
MANHOLE "E"
INV. IN 185.06
INV. OUT 184.96
RIM EL. 197.80
TEXAS EASTERN PROPERTY
RAMP N
12" EXIST. PIPE
REMOVED
321.67 L.F. 12" PVC
8" EXIST. PIPE
REMOVED
EXIST. MH.
REMOVED
RAMP O
EXIST. MH.
REMOVED
8" EXIST. PIPE
REMOVED
RAMP N
RAMP O
MANHOLE "F"
INV. IN 185.88
INV. OUT 185.78
RIM EL. 194.00
12" EXIST. PIPE REMOVED
55 L.F. 12" PVC
@ 8" ACP
12.07 L.F. PVC
206 L.F. 8" PVC
256 L.F. 8" PVC
EASEMENT LINE
EXISTING 12" PVC
R.O.W. LINE (NO ACCESS)
DROP MANHOLE
MANHOLE "I"
INV. IN 229.49
INV. OUT 220.05
RIM EL. 232.00
DROP MANHOLE
MANHOLE "H"
INV. IN 208.50
INV. OUT 203.80
RIM EL. 213.00
DROP MANHOLE
MANHOLE "G"
INV. IN 189.50
INV. OUT 186.01
RIM EL. 194.60
MANHOLE "J"
INV. IN 230.82
INV. OUT 230.37
RIM EL. 234.00
20' WIDE STONE-PAVED
EASEMENT

PLAN
1" = 100'

TOWNSHIP OF MORRIS

50 WOODLAND AVENUE
P.O. BOX 7603
CONVENT STATION, NEW JERSEY 07961-7603
FAX NO. (973) 605-8363
WWW.MORRISTWP.COM

JAMES R. SLATE, P.E.
TOWNSHIP ENGINEER

(973) 326-7440

ENG-099-17
June 21, 2017

John Korunow, PE
IH Engineers, PC
103 College Road East, 1st Floor
Princeton, NJ 08540

Re: Concept Development- Interchange Improvements
Park Avenue, Florham Park
Township of Morris Sanitary Sewer System

Dear Mr. Korunow:

Pursuant to your recent request for information concerning our sanitary sewer system in your project limits,
Enclosed please find the completed questionnaire you have submitted to our office. Unfortunately, we do not have any plans, either design or as-builts of this sanitary sewer system in our archive files. Since you are preparing concept plans for the revised interchange ramp for Route 24, we do not, at this time, know whether any modifications will be required of this system in your project limits.

While we understand the scope of this project is to reduce the impacts of Route 24 traffic exiting onto Columbia Road and impacting the Park Avenue/ Columbia Road intersection, the concept to move the impact to the Park Avenue intersection with the old Honeywell intersection may not address the traffic impacts unless additional ramps/exits are placed along the Route 24 corridor to address the new development along the corridor. During the various meetings held by the State, County of Morris and stakeholders along the Park Avenue corridor, it was requested that the State DOT look into installing ramps/ exits at the rear of various office complexes in the Rockerfeller Development tract and tying the ramps/ exits into the boulevard roadways and commons access roads between the various office buildings. By installing exits into the points of destination for these cars, the Park Avenue/ Columbia Road intersection would handle the other traffic coming west along Columbia Road and east along Park Avenue.

Our office would be interested in meeting with your group to discuss our concerns, even before a concept is designed for this new ramp. If you have any questions or require any additional information please give our office a call or email my office at JSlate@morristwp.com.

Yours truly,

James Slate

James R. Slate, PE
Township Engineer

cc: *Tim Quinn, Township Administrator*
Mayor Bruce Sisler and Township Committee

IH Engineers, P.C.
an equal opportunity employer

103 College Road East, 1st Floor
Princeton, NJ 08540
T: 609-734-8400 F: 609-734-8405
www.ihengineers.com
Also in: Hackensack and Staten Island

Re: NJDOT Utility Letter #1
NJ Route 24 and Columbia Turnpike Interchange
(Interchange Improvements)
UPC # **154330**

RECEIVED
NOV - 1 2016
MORRIS TOWNSHIP
ENGINEERING DEPARTMENT

October 28, 2016

Mr. James Slate
Township Engineer
Morris Township Sewer
50 Woodland Ave
PO Box 7603
Convent Station, NJ 07961-7603
Phone: 973-326-7440

Re:
NJ Route 24 and Columbia Turnpike Interchange

Concept Development
Interchange Improvements
Borough of Florham Park, Townships of Morris and Hanover
Morris County
UPC Code: **154330**
SEWER UTILITY

Project Designer:
IH Engineers, P.C.
103 College Road East, 1st Fl.
Princeton, NJ 08540
ATTN: John Korunow, P.E.
Phone: (609) 734-8400
Fax: (609) 734-8405
Email: jkorunow@ihengineers.com

Dear Mr. **Slate:**

The New Jersey Department of Transportation (NJDOT) has contracted IH Engineers, P.C. (IH) for Concept Development (CD) for Interchange Improvements of NJ Route 24, Park Avenue and Columbia Turnpike Interchange. The project involves alternative analysis for the relocation of interchange ramps. This will involve relocating traffic from the intersection of Columbia Turnpike and Park Avenue to Park Avenue approximately 1000 feet east of the intersection.

This letter will serve to established an official contact with Morris Township Sewer Hanover - Sewer and verify if you do have any facility in the project affected area. Please find enclosed project Location Map and Photos of existing condition of the project area, to give you a better understanding of proposed project. If your facility exists within the project area, please estimate and provide the **additional** amount of Preliminary Engineering (PE) expenses you may request to pay for your effort in assisting NJDOT to investigate and verify the actual information and to develop accommodation schemes of all your facilities affected by the project.

Please complete the following questionnaire and return it to the Designer's Engineer by **November 25th, 2016.** If you prefer to respond by FAX or E-mail the numbers are in the caption above.

(_X_) We DO HAVE existing facilities within the project limits.

(____) We DO NOT HAVE existing facilities within the project limits.

(____) We HAVE PROPOSED facilities planned within the project limits.

(____) **The following companies are tenants on/in our facilities within the project limits:**

____
____

(____) The Company Engineer to be contacted is:

Name JAMES SLATE
Company TOWNSHIP OF MORRIS
Title TOWNSHIP ENGINEER
Address 50 WOODLAND AVE
MORRISTOWN, NJ 07960

Tel: 973-326-7440
Fax: 973-605-8363
Email: JSLATE@MORRISTWP.COM

(____) The UTILITY AGREEMENT shall be sent to the following person:

(_X_) Same as above or fill in below:

Name ____________________
Company ____________________
Title ____________________
Address ____________________

Tel: ____________________
Fax: ____________________
Email: ____________________

(____) **The amount of Preliminary Engineering funding needed will be $____________**
(This amount is only an estimate)

(____) We would like the NJDOT to arrange for the following work to be done for our facilities should it be necessary for them to be relocated or modified.
(_____) Design/Engineering
(_____) Construction – Some or All? ______________
(_____) Neither – the Company will perform (or arrange to have performed) all needed work.
(__X__) Not certain at this time.

End of questionnaire.

If you have any further questions, please feel free to contact me.

Sincerely,
IH Engineers, P.C.

John Korunow, P.E.

IH Engineers, P.C.
an equal opportunity employer

103 College Road East, 1st Floor
Princeton, NJ 08540
T: 609-734-8400 F: 609-734-8405
www.ihengineers.com
Also in: Hackensack and Staten Island

Re: NJDOT Utility Letter #1
NJ Route 24 and Columbia Turnpike Interchange
(Interchange Improvements)
UPC # **154330**

October 28, 2016

Mr. Frank Antisell
Manager
Verizon
6000 Hadley Road
South Plainfield, NJ 07080
Phone: 908-412-6160

Re:
NJ Route 24 and Columbia Turnpike Interchange

Concept Development
Interchange Improvements
Borough of Florham Park, Townships of Morris and Hanover
Morris County
UPC Code: **154330**
TELEPHONE UTILITY

Project Designer:
IH Engineers, P.C.
103 College Road East, 1st Fl.
Princeton, NJ 08540
ATTN: John Korunow, P.E.
Phone: (609) 734-8400
Fax: (609) 734-8405
Email: jkorunow@ihengineers.com

Dear Mr. **Antisell:**

The New Jersey Department of Transportation (NJDOT) has contracted IH Engineers, P.C. (IH) for Concept Development (CD) for Interchange Improvements of NJ Route 24, Park Avenue and Columbia Turnpike Interchange. The project involves alternative analysis for the relocation of interchange ramps. This will involve relocating traffic from the intersection of Columbia Turnpike and Park Avenue to Park Avenue approximately 1000 feet east of the intersection.

This letter will serve to established an official contact with Verizon - Telephone and verify if you do have any facility in the project affected area. Please find enclosed project Location Map and Photos of existing condition of the project area, to give you a better understanding of proposed project. If your facility exists within the project area, please estimate and provide the **additional** amount of Preliminary Engineering (PE) expenses you may request to pay for your effort in assisting NJDOT to investigate and verify the actual information and to develop accommodation schemes of all your facilities affected by the project.

Please complete the following questionnaire and return it to the Designer's Engineer by **November 25th, 2016.** If you prefer to respond by FAX or E-mail the numbers are in the caption above.

(_X_) We DO HAVE existing facilities within the project limits.

(____) We DO NOT HAVE existing facilities within the project limits.

(____) We HAVE PROPOSED facilities planned within the project limits.

(____) **The following companies are tenants on/in our facilities within the project limits:**

____
____

RECEIVED
OCT 31 2016
BY: T. Grabowski

(X) The Company Engineer to be contacted is:

Name: Krzysztof Ogrodnik
Company: Verizon
Title: Engineer
Address: 6000 Hadley Road
South Plainfield, NJ 07080
Tel: 908-412-6161
Fax:
Email: Krzysztof.Ogrodnik@Verizon.com

(X) The UTILITY AGREEMENT shall be sent to the following person:

(____) Same as above or fill in below:

Name: Frank Antisell
Company: Verizon
Title: Manager – Network Engineering
Address: 6000 Hadley Road
South Plainfield, NJ 07080
Tel: 908-412-6160
Fax:
Email:

(X) **The amount of Preliminary Engineering funding needed will be $ $ 20,000**
(This amount is only an estimate)

(____) We would like the NJDOT to arrange for the following work to be done for our facilities should it be necessary for them to be relocated or modified.
(_____) Design/Engineering
(_____) Construction – Some or All? ________________
(X) Neither – the Company will perform (or arrange to have performed) all needed work.
(_____) Not certain at this time.

End of questionnaire.

If you have any further questions, please feel free to contact me.

Sincerely,
IH Engineers, P.C.

John Korunow, P.E.

IH Engineers, P.C.
an equal opportunity employer

103 College Road East, 1st Floor
Princeton, NJ 08540
T: 609-734-8400 F: 609-734-8405
www.ihengineers.com
Also in: Hackensack and Staten Island

Re: NJDOT Utility Letter #1
NJ Route 24 and Columbia Turnpike Interchange
(Interchange Improvements)
UPC # **154330**

October 28, 2016

Mr. Paul Kozakiewicz
Superintendent
The Southeast Morris County Municipal Utility Authority
(SMCMUA)
19 Saddle Road
Cedar Knolls, NJ 07927
Phone: 973-326-6865

Re:
NJ Route 24 and Columbia Turnpike Interchange

Concept Development
Interchange Improvements
Borough of Florham Park, Townships of Morris and Hanover
Morris County
UPC Code: **154330**
WATER UTILITY

Project Designer:
IH Engineers, P.C.
103 College Road East, 1st Fl.
Princeton, NJ 08540
ATTN: John Korunow, P.E.
Phone: (609) 734-8400
Fax: (609) 734-8405
Email: jkorunow@ihengineers.com

Dear Mr. **Kozakiewicz:**

The New Jersey Department of Transportation (NJDOT) has contracted IH Engineers, P.C. (IH) for Concept Development (CD) for Interchange Improvements of NJ Route 24, Park Avenue and Columbia Turnpike Interchange. The project involves alternative analysis for the relocation of interchange ramps. This will involve relocating traffic from the intersection of Columbia Turnpike and Park Avenue to Park Avenue approximately 1000 feet east of the intersection.

This letter will serve to established an official contact with The Southeast Morris County Municipal Utility Authority (SMCMUA) - Water and verify if you do have any facility in the project affected area. Please find enclosed project Location Map and Photos of existing condition of the project area, to give you a better understanding of proposed project. If your facility exists within the project area, please estimate and provide the **additional** amount of Preliminary Engineering (PE) expenses you may request to pay for your effort in assisting NJDOT to investigate and verify the actual information and to develop accommodation schemes of all your facilities affected by the project.

Please complete the following questionnaire and return it to the Designer's Engineer by **November 25th, 2016.** If you prefer to respond by FAX or E-mail the numbers are in the caption above.

(X) We DO HAVE existing facilities within the project limits.

(____) We DO NOT HAVE existing facilities within the project limits.

(____) We HAVE PROPOSED facilities planned within the project limits.

(____) **The following companies are tenants on/in our facilities within the project limits:**

(X) The Company Engineer to be contacted is:

Name Razzaq Manley, PE
Company Southeast Morris County MUA
Title Senior Engineer
Address 19 Saddle Rd
Ceder Knolls, NJ 07927

Tel: (973) 326-6860
Fax: (973) 326-9521
Email: rmanley@smcmua.org

(X) The UTILITY AGREEMENT shall be sent to the following person:

(___) Same as above or fill in below:

Name Laura Cummings, PE
Company Southeast Morris County MUA
Title Executive Director / Chief Engineer
Address 19 Saddle Rd.
Cedar Knolls NJ 07927

Tel: (973) 326-6866
Fax: (973) 326-7233
Email: lcummings@smcmua.org

(___) **The amount of Preliminary Engineering funding needed will be $____________**
(This amount is only an estimate)

(X) We would like the NJDOT to arrange for the following work to be done for our facilities should it be necessary for them to be relocated or modified.
(X) Design/Engineering
(X) Construction – Some or All? ________________
(____) Neither – the Company will perform (or arrange to have performed) all needed work.
(____) Not certain at this time.

End of questionnaire.

If you have any further questions, please feel free to contact me.

Sincerely,
IH Engineers, P.C.

John Korunow, P.E.

Appendix “O”

Design Communications Report (DCR) & STIP

STATE OF NEW JERSEY
DEPARTMENT OF TRANSPORTATION
Quality Management

Design Communications Report

PROJECT NAME: Route 24 EB Ramp to CR 510 (Columbia Turnpike)

UPC#: 154330

DESIGNER: IH Engineers, PC

DESIGNER PROJECT MANAGER: John W. Korunow, Jr., PE

NJDOT PROJECT MANAGER: Edward D’Arcy

STATE OF NEW JERSEY
DEPARTMENT OF TRANSPORTATION
Quality Management Process

Design Communications Report Approval

Final Design and Construction Phases

PROJECT NAME: Route 24 EB Ramp to CR 510 (Columbia	UPC#: 154330
CONSULTING FIRM: IH Engineers, PC	DESIGNER PROJECT MANAGER: John W. Korunow, JR., PE
NJDOT PROJECT MANAGER: Edward D'Arcy	NJDOT EXECUTIVE REGIONAL MANAGER: Atul Shah

Design Communications Report (DCR) Entry No.(s) 1 - 4

Pursuant to the Interactive Communications Procedure and the Interactive Communications Procedure of the New Jersey Department of Transportation (the Department), the Department's Project Manager has approved the DCR identified above, (approved by Entry No.(s)) subject to the certification below of the Designer.

This approval by the Department's Project Manager is not a certification by the Department that the above project has been designed in accordance with all applicable State and Federal design standards and requirements or that comments and decisions made during Interactive Communications with the Department on design elements and features of the project to this point have been incorporated or satisfactorily resolved and the Contract Documents have been revised accordingly, and the Department is fully relying in this regard upon the certification below by the Designer.

Furthermore, the Project Manager, by signing below on behalf of the Department, has not waived the Designer's obligation to provide contract documents that are constructible and free from errors and/or omissions.

Designer's Project Manager / Date
Or
NJDOT In-House Design Team Leader

NJDOT Project Manager / Date

Design Communications Report Entry Form

Project Name: Route 24 EB Ramp to CR 510 (Columbia Turnpike)

Design Activity No. 2000	**April 27, 2016**	**DCR Entry No. 1** **Concept Development Initiated – *Kick Off Meeting***
Edward D’Arcy, Value Solutions SME, John Korunow		
A Kick Off Meeting was held with the NJDOT PM, Value Solutions and the Designer to discuss the Route 24 Interchange and Columbia Turnpike – Smart Solution Study - Smart Solutions Workshop. During the workshop, several alternatives were developed centered on improving the safety of the traffic exiting from Route 24 EB to Columbia Turnpike WB and improving the LOS at the intersection of Columbia Turnpike and Park Avenue (650’ west of Route 24 EB ramp. Currently traffic exiting Route 24 weaves across multiple through lanes to make the left at Park Avenue. This safety issue is compounded by the high volumes on Columbia Turnpike and a very poor LOS.		
Of the many Value Solutions Alternatives, two were selected to be advanced to Concept Development. These alternatives are: • Alternate 1 - Overpass from the Route 24 EB Ramp/Columbia Turnpike WB to Park Avenue and Park Avenue to Route 24 EB. • Alternate 2 - Modern Roundabout Hybrid Alternative. In addition to Alternatives 1 & 2, IH will look into developing a third alternative.		

Design Activity No. 2430	**May 18, 2017**	**DCR Entry No. 2** **Core Group Meeting**
Who (NJDOT Project Manager/ SME /Stakeholder /Designer)		
Design Element issue		
Decision and reasoning		

Design Activity No.	**(Approved date by NJDOT Project Manager)**	**DCR Entry No.** **Hydraulics & Hydrology**
Edward D’Arcy, SME’s, John Korunow		
The meeting was set to review the results of the analysis of the two Value Solution Alternatives: • Alternate 1 - Overpass from the Route 24 EB Ramp/Columbia Turnpike WB to Park Avenue and Park Avenue to Route 24 EB. • Alternate 2 - Modern Roundabout Hybrid Alternative. In addition a third alternative was developed and analyzed with the first two. Unlike Alternates 1 & 2, Alternate 3 requires widening of Columbia Turnpike to provide		

<table>
<tr><td>separation between Route 24 EB Ramp traffic and Columbia Turnpike traffic. Route 24 EB Ramp traffic will no longer be able to turn left at Park Avenue eliminating a dangerous weave. However, an alternate ramp will be provided directly to Park Avenue much like Alternative 1 without the overpass.

The analysis showed that Alternative 3, while not great, provided the best LOS for the least cost and the least impacts to ROW.

During this meeting Value Solutions offered an additional alternative. This alternative proposes to utilize Campus Drive to the east as a new half interchange with Route 24 EB. Currently Campus Drive is a cul-de-sac that provides access to six large office complexes.</td></tr>
<tr><td>IH was tasked with determining if the Campus Drive Alternative was feasible.</td></tr>
</table>

<table>
<tr><td>Design Activity No. 2440</td><td>August 23, 2017</td><td>DCR Entry No. 3
Hold Local Officials Briefing</td></tr>
<tr><td colspan="3">Edward D’Arcy & Aliaa Majeed - NJDOT Project Management, Anthony Sitko – NJDOT OCCR, John Korunow & Brian Stankus – IH Engineers, Officials and Emergency Services from Florham Park, Chatham, Morris, Madison and Whippany, and Morris County Engineering.</td></tr>
<tr><td colspan="3">The purpose of the meeting was to present all 4 alternatives to the Officials of the adjoining communities and Morris County. Alternatives 1 -3 were described in detail as they were for the Core Group Meeting and Alternate 3 was presented as the possible preferred alternative.

Alternate 4 was also presented; however, details were not developed further than an image on an aerial plan. Many of the officials seemed to like the idea of moving the traffic away from the intersection of Park and Columbia Turnpike.</td></tr>
<tr><td colspan="3">It was decided to analyze Alternate 4 to determine if it is worthwhile to pursue or not.</td></tr>
</table>

<table>
<tr><td>Design Activity No. 2440</td><td>September 25, 2020</td><td>DCR Entry No. 4
Hold Local Officials Briefing</td></tr>
<tr><td colspan="3">Edward D’Arcy & Alexander Maevsky - NJDOT Project Management, Anthony Sytko – NJDOT OCCR, John Korunow – IH Engineers, John Coffey – Dewberry, Officials and Emergency Services from Florham Park, Chatham, Morris, Madison, Hanover and Morris County Engineering.</td></tr>
<tr><td colspan="3">The purpose of the meeting was to present a new Alternative – 3 (revised). This alternative was developed as the property which was to be purchased for alternative 3 is no longer available. The property owner was granted a permit to build the new hotel The Officials of the adjoining communities and Morris County were presented an Alternative 3 (Revised) to be the possible preferred alternative.</td></tr>
<tr><td colspan="3"></td></tr>
</table>

Route 24, EB Ramp to CR 510 (Columbia Turnpike)

DB#: 15433
UPC#: 154330

Develop recommendations that would improve the traffic flow between the ramp and the intersection along with providing improvements to the operation of the intersection that could be investigated further. The Route 24 EB ramp merges with Columbia Turnpike WB approximately 650 feet east of the signalized intersection of Columbia Turnpike and Park Avenue. At this intersection there is a heavy AM left turn movement on the Columbia Turnpike WB approach that currently utilizes a double left-turn lane.

COUNTY: Morris
MUNICIPALITY: Morris Twp, Hanover Twp
MILEPOSTS: 2.09
STRUCTURE NO.: NA
LEGISLATIVE DISTRICT: 27, 25 **SPONSOR:** Morris County
ASSET MANAGEMENT CATEGORY: Congestion Relief: Highway Operational Improvements

MPO	Phase	Year
NJTPA	CD	2016

Route 26, Cox Road to Nassau Street

DB#: 15398
UPC#: 153980

Federal Resurfacing/Rehab project.

COUNTY: Middlesex
MUNICIPALITY: North Brunswick Twp
MILEPOSTS: 1.64-2.54
STRUCTURE NO.: N/A
LEGISLATIVE DISTRICT: 17 **SPONSOR:** NJDOT
ASSET MANAGEMENT CATEGORY: Road Assets: Highway Resurfacing

MPO	Phase	Year
NJTPA	CD	2016

Appendix “P”

Resolutions of Support

John Korunow

From: Vitz, Chris <CVitz@co.morris.nj.us>
Sent: Wednesday, December 13, 2017 2:31 PM
To: 'John Korunow'
Cc: Dellagiacoma, Debra; Edward D'Arcy; Majeed, Aliaa; Brian M. Stankus
Subject: RE: Route 24 and Columbia Turnpike Interchange and Intersection Alternatives.

John,

The County supports Alternative 3 as the most viable option for improvements to that area.

Do you need anything additional?

Christopher J. Vitz, P.E.
Director of Public Works & County Engineer
County of Morris Department of Public Works
PO Box 900
Morristown, NJ 07963-0900
973-285-6758

From: John Korunow [mailto:jkorunow@ihengineers.com]
Sent: Wednesday, December 13, 2017 1:04 PM
To: Vitz, Chris <CVitz@co.morris.nj.us>
Cc: Dellagiacoma, Debra <ddellagiacoma@co.morris.nj.us>; Edward D'Arcy <edward.darcy@dot.state.nj.us>; Majeed, Aliaa <Aliaa.Majeed@dot.nj.gov>; Brian M. Stankus <bstankus@ihengineers.com>
Subject: Re: Route 24 and Columbia Turnpike Interchange and Intersection Alternatives.

Chris. Do you have a final decision on the PPA? We need documentation from you to finalize the CD Report

John

Sent from my iPhone

On Nov 8, 2017, at 3:50 PM, Vitz, Chris <CVitz@co.morris.nj.us> wrote:

> John,
>
> Thank you for providing this additional information. Will this be included in the final report? Do you have a date as to when the report will be completed?
>
> As an aside we did meet with officials from Hanover, Florham Park, Morris Township, Madison and Chatham Borough and explained why Alternative 3 was the best option to progress. They all seemed to sign on to the project as we pressed to keep the focus on this intersection alone, not other requested improvements outside the borders of this project.
>
> We have also spoken with the NJTPA and are working with them to get this project into the TIP.
>
> *Christopher J. Vitz, P.E.*
> *Director of Public Works & County Engineer*
> *County of Morris Department of Public Works*

PO Box 900
Morristown, NJ 07963-0900
973-285-6758

From: John Korunow [mailto:jkorunow@ihengineers.com]
Sent: Monday, November 06, 2017 2:37 PM
To: Vitz, Chris <CVitz@co.morris.nj.us>; Dellagiacoma, Debra <ddellagiacoma@co.morris.nj.us>
Cc: 'Edward D'Arcy' <edward.darcy@dot.state.nj.us>; 'Majeed, Aliaa' <Aliaa.Majeed@dot.nj.gov>; 'Brian M. Stankus' <bstankus@ihengineers.com>
Subject: RE: Route 24 and Columbia Turnpike Interchange and Intersection Alternatives.

Hi Chris, we have completed our Evaluation of the Campus Drive Alternative. The Cost is substantially more than Alternative 3 for the following reasons.

- A good portion of the ramps to and from Route 24 will be in wetlands. This material is not suitable and will need to be excavated and hauled away. The new material will need to be porous and will therefore cost more than your typical borrow material.
- The Campus Drive roadway will need to be replaced with a more substantial pavement box since it will be handling significantly more traffic including trucks.
- The Total Cost for Design and Construction is $10.6 million
- The cost does not include ROW for the ramps and the new roundabout or for wetland mitigation and a storm water basin.

See attached

Regards

John W. Korunow Jr., PE, CME
Transportation Department Manager
and Operations Manager

<image001.jpg>
103 College Road East, First Floor
Princeton, NJ 08540
(P) 609-734-8400 Ext. 6404
(F) 609-734-8405
jkorunow@ihengineers.com
www.ihengineers.com

"First choice of our clients for over 15 years"

From: Vitz, Chris [mailto:CVitz@co.morris.nj.us]
Sent: Wednesday, September 13, 2017 2:35 PM
To: 'Edward D'Arcy'; 'Brian M. Stankus'; 'John Korunow'
Cc: Dellagiacoma, Debra; 'Majeed, Aliaa'
Subject: RE: Route 24 and Columbia Turnpike Interchange and Intersection Alternatives.

Ed,

I presented the various alternatives at the Freeholder Work Session this morning. While they agree that Alternative 3 is a viable option the overall feeling is it will take many years to implement. We have already contacted the NJTPA about funding.

However the Freeholder Board also asked for additional detail on Alternative 4, the extension of Campus Drive. I did not anticipate this response from the board. I have several questions I need to investigate. They are;

1) If Campus Drive were a County roadway and new ramps to were to be constructed to Route 24 would or could the jurisdiction change between County / State occur at the point of the cul-de-sac? Would that eliminate the State's concern of having private driveway access to a state highway ramp?

2) Did the NJDOT or your consultant investigate the size or cost of any property acquisitions with this alternative?

3) Did the NJDOT or your consultant come up with an estimated cost for this alternative?

4) If there is a specific reason(s) this Alternative cannot move forward, please let me know.

The Freeholder Board understands it may take 5-10 years to implement Alternate 3 with State or Federal funding through NJTPA at $12 million. So they are asking if both could be done. If Alternative 4 could be implemented more quickly and at a substantially lower cost it would show local businesses that we are being proactive in attempting to address traffic problems in the area, stemming the possible loss of those tenants. This Alternative could work as a stop gap until the larger project is completed and remain in place to allow an additional connection to Route 24.

Thank you for taking the time to review my questions and any responses you may provide.

Christopher J. Vitz, P.E.
Director of Public Works & County Engineer
County of Morris Department of Public Works
PO Box 900
Morristown, NJ 07963-0900
973-285-6758

Appendix “Q”

NJDOT Communications _ Value Engineering Study

John Korunow

From: D'Arcy, Edward <edward.darcy@dot.nj.gov>
Sent: Thursday, May 18, 2017 4:51 PM
To: John Korunow
Cc: Majeed, Aliaa
Subject: FW: Rt.24 EB Ramp to CR 510 (Columbia Turnpike)- Scope Team Meeting-Project Fact Sheet
Attachments: Rt 24 VE 1.pdf

John,

For your use to evaluate the suggestion from the Scope Team Meeting. Thanks.

From: Kondash, Thomas
Sent: Thursday, May 18, 2017 3:23 PM
To: Majeed, Aliaa <Aliaa.Majeed@dot.nj.gov>; D'Arcy, Edward <edward.darcy@dot.nj.gov>
Cc: Alsharaa, Manar <Manar.Alsharaa@dot.nj.gov>; Ahmadi, Hedaeatull <Hedaeatull.Ahmadi@dot.nj.gov>; Patibandha, Hetal <Hetal.Patibandha@dot.nj.gov>; Abitz, Robert <robert.abitz@dot.nj.gov>; Hauske, Mark <mark.hauske@dot.nj.gov>; Vijayakumar, Amutha <Amutha.Vijayakumar@dot.nj.gov>; Vo, Binh <binh.vo@dot.nj.gov>; Howard, Warren <Warren.Howard@dot.nj.gov>
Subject: RE: Rt.24 EB Ramp to CR 510 (Columbia Turnpike)- Scope Team Meeting-Project Fact Sheet

Ed and Aliaa,

As presented today by the VE "team" (past and present members).

Thomas J. Kondash, Jr.
Project Manager
Claims-Risk Analysis & Value Engineering
(609) 530-4947

From: Majeed, Aliaa
Sent: Tuesday, May 09, 2017 2:46 PM
To: Virgilio, Al; Abitz, Robert; Howard, Warren; Balluch, Al; Cheney, Amber; Burns, Vincent; Maniar, Nipa; Kondash, Thomas; Gresavage, Susan; Khalid Shaikh; Alsharaa, Manar; Hirt, Deborah
Cc: D'Arcy, Edward
Subject: RE: Rt.24 EB Ramp to CR 510 (Columbia Turnpike)- Scope Team Meeting-Project Fact Sheet

Good afternoon All,

Please find the attached files (Project Fact Sheet & Alternatives) for Rt.24 EB Ramp to 510 (Columbia Turnpike) – Scope Team Meeting by 5/18/2017 at 1:30 pm in conference Room 3B, 3rd Floor.

Thanks!!

Aliaa Majeed
Assistant Project Manager
Division of Project Management
Phone (609-530-3713)

From: Majeed, Aliaa
Sent: Monday, May 01, 2017 2:05 PM
To: Virgilio, Al; Abitz, Robert; Howard, Warren; Balluch, Al; Cheney, Amber; Hartle, Paul; Burns, Vincent; Maniar, Nipa; Kondash, Thomas; Gresavage, Susan; '
Cc: D'Arcy, Edward
Subject: Rt.24 EB Ramp to CR 510 (Columbia turnpike)- Scope Team Meeting

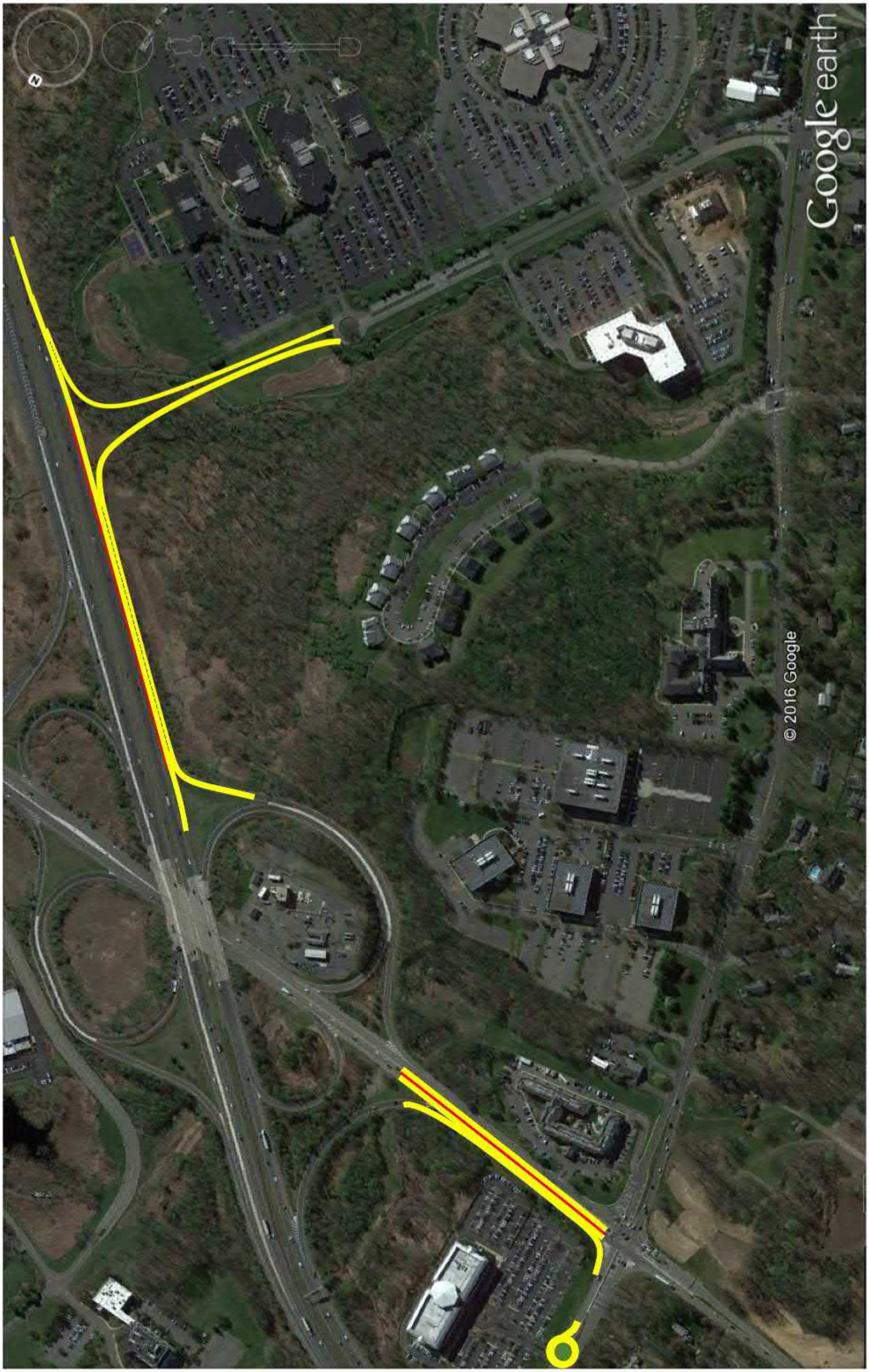
Dear All,

Good afternoon!

Scope Team Meeting is scheduled on 05-18-2017 at 1:30 PM in Conference Room 3B, E & O Building headquarter. Looking forward to your participation. Also, an agenda for project will be sent to you in near future.

Thanks,

Aliaa Majeed
Assistant Project Manager
Division of Project Management
Phone (609-530-3713)


Google earth
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Kishor Shah

From: John Korunow <jkorunow@ihengineers.com>
Sent: Wednesday, January 03, 2018 2:16 PM
To: 'Kishor Shah'
Subject: FW: Route 24 and Columbia Turnpike Interchange and Intersection Alternatives.
Attachments: Estimate_Alternative4.xls; Alternative 4.docx; campus_drive_Optimized.pdf

---

From: John Korunow [mailto:jkorunow@ihengineers.com]
Sent: Monday, November 06, 2017 2:37 PM
To: 'Vitz, Chris'; 'Dellagiacoma, Debra'
Cc: 'Edward D'Arcy'; 'Majeed, Aliaa'; 'Brian M. Stankus'
Subject: RE: Route 24 and Columbia Turnpike Interchange and Intersection Alternatives.

Hi Chris, we have completed our Evaluation of the Campus Drive Alternative. The Cost is substantially more than Alternative 3 for the following reasons.

- A good portion of the ramps to and from Route 24 will be in wetlands. This material is not suitable and will need to be excavated and hauled away. The new material will need to be porous and will therefore cost more than your typical borrow material.
- The Campus Drive roadway will need to be replaced with a more substantial pavement box since it will be handling significantly more traffic including trucks.
- The Total Cost for Design and Construction is $10.6 million
- The cost does not include ROW for the ramps and the new roundabout or for wetland mitigation and a storm water basin.

See attached

Regards

John W. Korunow Jr., PE, CME
Transportation Department Manager
and Operations Manager

IH Engineers P.C.
103 College Road East, First Floor
Princeton, NJ 08540
(P) 609-734-8400 Ext. 6404
(F) 609-734-8405
jkorunow@ihengineers.com
www.ihengineers.com

"First choice of our clients for over 15 years"

From: Vitz, Chris [mailto:CVitz@co.morris.nj.us]
Sent: Wednesday, September 13, 2017 2:35 PM
To: 'Edward D'Arcy'; 'Brian M. Stankus'; 'John Korunow'

Cc: Dellagiacoma, Debra; 'Majeed, Aliaa'
Subject: RE: Route 24 and Columbia Turnpike Interchange and Intersection Alternatives.

Ed,

I presented the various alternatives at the Freeholder Work Session this morning. While they agree that Alternative 3 is a viable option the overall feeling is it will take many years to implement. We have already contacted the NJTPA about funding.

However the Freeholder Board also asked for additional detail on Alternative 4, the extension of Campus Drive. I did not anticipate this response from the board. I have several questions I need to investigate. They are;

1) If Campus Drive were a County roadway and new ramps to were to be constructed to Route 24 would or could the jurisdiction change between County / State occur at the point of the cul-de-sac? Would that eliminate the State's concern of having private driveway access to a state highway ramp?

2) Did the NJDOT or your consultant investigate the size or cost of any property acquisitions with this alternative?

3) Did the NJDOT or your consultant come up with an estimated cost for this alternative?

4) If there is a specific reason(s) this Alternative cannot move forward, please let me know.

The Freeholder Board understands it may take 5-10 years to implement Alternate 3 with State or Federal funding through NJTPA at $12 million. So they are asking if both could be done. If Alternative 4 could be implemented more quickly and at a substantially lower cost it would show local businesses that we are being proactive in attempting to address traffic problems in the area, stemming the possible loss of those tenants. This Alternative could work as a stop gap until the larger project is completed and remain in place to allow an additional connection to Route 24.

Thank you for taking the time to review my questions and any responses you may provide.

Christopher J. Vitz, P.E.
Director of Public Works & County Engineer
County of Morris Department of Public Works
PO Box 900
Morristown, NJ 07963-0900
973-285-6758

IH ENGINEERS, P.C.
www.ihengineers.com

103 College Road East, 1st Floor, Princeton, NJ 08540
(609) 734-8400, (609) 734-8405 (fax)

Project No.: Route 24 & Columbia Turnpike
Project Desc.:
Page No. of
Calculated By: NSL Date 11/2/2017
Checked By: Date

ALTERNATIVE 4

ITEM DESCRIPTION	Unit	Quantity	Unit Price	Amount
STRIPPING (4"-6" DEPTH)	ACRE	3.50	$ 4,050	$ 14,175
ROADWAY EXC. UNCLASSIFIED	CY	77,107.00	$ 20	$ 1,542,140
BORROW EXCAVATION (PERVIOUS MATERIAL)	CY	48,267.00	$ 30	$ 1,448,010

EARTHWORK TOTAL= $ 3,004,325

2 INCH HMA SURF. COURSE & 8 INCH HMA BASE COURSE	LF/lane	27,613.00	$ 80	$ 2,209,040

PAVEMENT TOTAL = $ 2,209,040

RAMPS	LF	1,640.00	$ 55	$ 90,200

DRAINAGE TOTAL= $ 90,200

BEAM GUIDE RAIL	LF	3,100.00	$ 35	$ 108,500
9" X 16" CONCRETE VERTICAL CURB	LF	10,440.00	$ 25	$ 261,000
CANTILEVER SIGN STRUCTURE	UNIT	1.00	$ 90,000	$ 90,000

INCIDENTAL ITEMS TOTAL= $ 459,500

TOPSOIL AND SEEDING (MAIN LINE)	MILE	0.80	$ 112,815	$ 90,252
PLANTING (MAINLINE)	MILE	0.80	$ 64,500	$ 51,600
TOPSOIL, SEEDING, PLANTING (FINGER RAMP)	MILE	0.35	$ 12,500	$ 4,375
TOPSOIL, SEEDING, PLANTING (ACCESS ROAD)	FT	1,800.00	$ 8	$ 14,220

LANDSCAPE TOTAL= $ 160,447

FIELD OFFICE	MILE	1.40	$ 44,260	$ 61,964
MATERIALS FIELD LABORATORY	MILE	1.40	$ 28,970	$ 40,558
EROSION CONTROL DURING CONSTRUCTION	MILE	1.40	$ 64,375	$ 90,125

GENERAL ITEMS TOTAL= $ 192,647

PROJECT SUBTOTAL= $ 6,116,159

LIGHTING, TRAFFIC STRIPES, SIGNS AND DELINEATORS	LS		3% OF PROJ. SUBTOTAL	$ 183,485
MAINTANANCE OF TRAFFIC	LS		3% OF PROJ. SUBTOTAL	$ 183,485
TRAINING	LS		1% OF PROJ. SUBTOTAL	$ 61,162
MOBILIZATION	LS		9% OF PROJ. SUBTOTAL	$ 550,454
PROGRESS SCHEDULE	LS			$ 6,000
CLEARING SITE	LS			$ 45,000
CONSTRUCTION LAYOUT	LS			$ 42,000

PROJECT TOTAL= $ 7,187,744

CONTINGENCIES & ESCALATION (YEAR 2021, 1.1) **CONSTR. ESTIMATE FOR CD= $ 7,906,519**

CONSTRUCTION ENGINEERING AMOUNT (16.2% OF CONSTRUCTION COST)= $ 1,280,856

CONTING. FOR CONSTR. CHANGE ORDER ($25,000+4% OVER $500K) **CHANGE ORDER CONTING.= $ 321,261**

UTILITIES RELOCATIONS BY COMPANIES/OWNERS (2% OF CC)				**$ 158,130**

UTILITY RELOCATION COST FOR CD ESTIMATE $ 158,130

SUMMARY

CONSTRUCTION ESTIMATE FOR CD	**$ 7,906,519**
DESIGN ENGINEERING	**$ 948,782**
CONSTRUCTION ENGINEERING (CE)	**$ 1,280,856**
CONTINGENCIES	**$ 321,261**
UTILITIES:RELOCATIONS BY COMPANIES	**$ 158,130**

TOTAL ESTIMATE: $ 10,615,548

Alternative 4:

This alternative involves a new “half-interchange” on the Route 24 east of the Columbia Turnpike interchange, with on and off ramps to the EB roadway to Campus Drive. Campus Drive intersects Park Avenue (CR 623) at a point roughly ¾ mile south of Columbia Turnpike.

Advantages:

- Provides an alternative for the traffic exiting Route 24 EB destined for Park Avenue SB which may reduce the weaving conflict on Columbia Turnpike.
- Reduces congestion at the Columbia Turnpike and Park Avenue intersection.

Disadvantages:

- Creates a new weaving movement on Route 24 EB between the existing and proposed ramps that will operate at LOS ‘F’.
- Campus Drive serves as an access roadway for several large office building. Not only was a trail built for Office employees to use for exercise during the lunch period, but many people use the roadway itself to walk. The trail and any walking that happens on Campus drive will no longer be possible.
- ROW will be required for the new ramps and roundabout. The majority of the ROW is in wetlands therefore additional ROW will be required for mitigation or additional funds allocated to purchase wetlands from a mitigation bank.
- The new ramps and roundabout will increase the impervious surface above the threshold for Storm Water Management Rules and this alternative will impact the existing drainage basins. Additional ROW will be required for a new basin.
- The new development will be within in Flood Hazard Area/Airport Hazard Area.

TOWNSHIP OF HANOVER and FLORHAM PARK

COUNTY OF MORRIS

ALTERNATE 4					
PARCEL NUMBER	BLOCK	LOT	OWNER	PARCEL TYPE	AREA (acres)
1	1201	6	KBSII 300-600 CAMPUS DRIVE, LLC	Partial	5.630
				TOTAL AREA	5.630

LEGEND:

🟨	PROPOSED ROADWAY
🟧	PROPOSED SHOULDER
🟩	GRASS MEDIAN
⬛	ISLAND
🟥	PROPOSED ROW
* *	WETLAND AREA

NEW JERSEY DEPARTMENT OF TRANSPORTATION

ALTERNATIVE NO. 4
(CAMPUS DRIVE)

ROUTE 24 INTERCHANGE &
COLUMBIA TURNPIKE

IH Engineers, P.C.

11/6/2017

USER: mmarue

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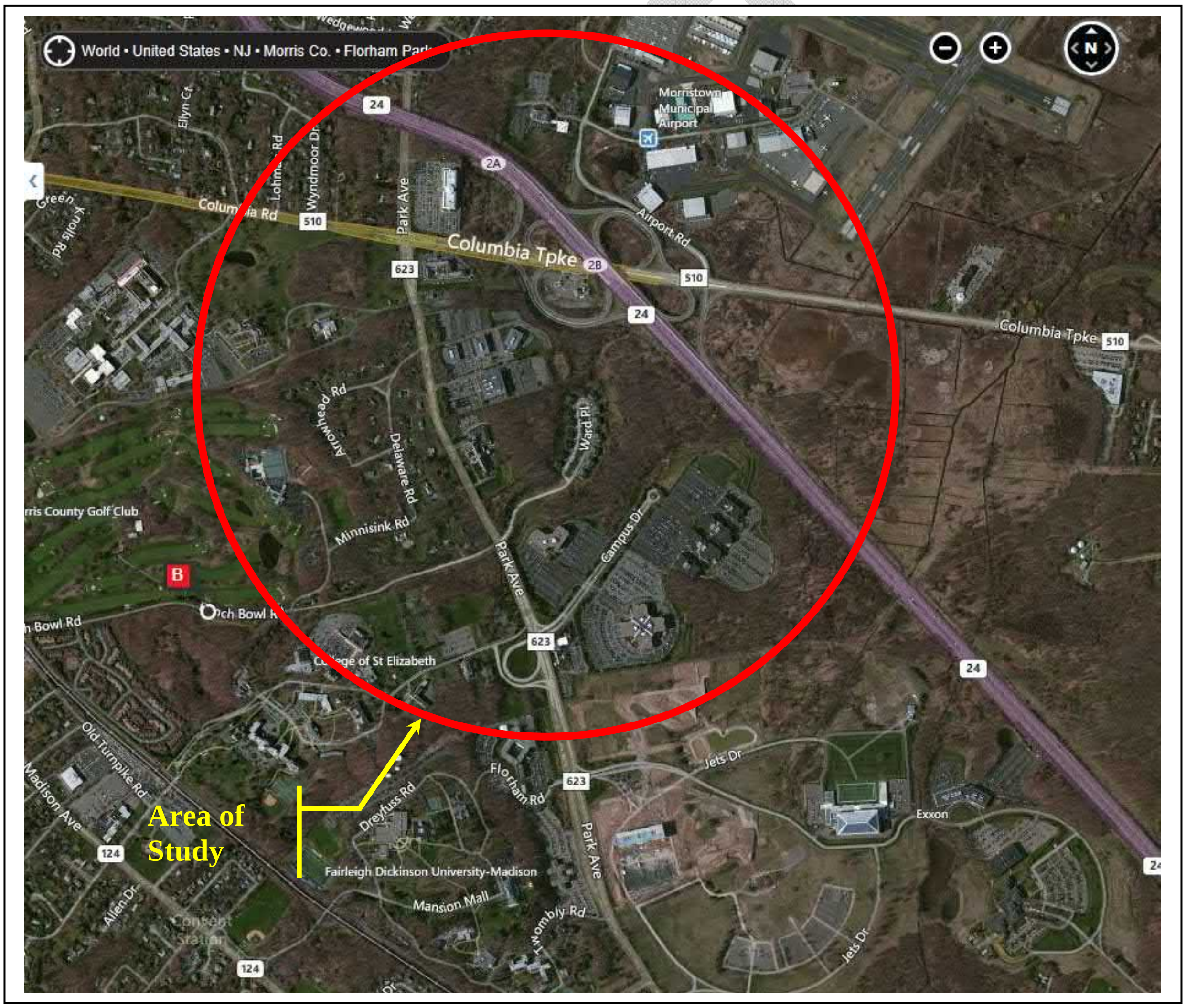
Route 24 Interchange
& Columbia Turnpike

Smart Solutions Study



NJDOT – MORRIS COUNTY

Route 24 Interchange and Columbia Turnpike – Smart Solution Study

I. BACKGROUND:

The Value Engineering/Smart Solutions Unit was requested to investigate and recommend improvements for the area between the Route 24 EB ramp to Columbia Turnpike and the signalized intersection of Columbia Turnpike and Park Avenue in Morris and Hannover Townships, Morris County. Our goal was to develop some recommendations that would improve the traffic flow between the ramp and the intersection along with provide some improvement to the operation of the intersection that could be investigated further.

The Route 24 EB ramp merges with Columbia Turnpike approximately 650 feet east of the signalized intersection and there is a heavy movement from this ramp to the double left-turn lane at the intersection. In our previous review of this area, Columbia Turnpike was striped as two through lanes but it has since been restriped as a dedicated through lane and a left turn lane. This intersection is currently near capacity with several movements failing and over capacity during the AM peak hours.

The 2007 and 2027 traffic volumes used in our review came from the Florham Park 2027 Transportation Needs Assessment Study conducted by Greenman Pedersen, Inc. for the Borough of Florham Park in 2007. The distribution of the Route 24 ramp traffic at the intersection had to be estimated using information from the 2010 Traffic Impact Study for the General Development Plan for the Honeywell Site conducted by Langan Engineering. This study included a new bypass road that relocated the left turns from this Route 24 EB ramp to a new intersection on Park Avenue south of Columbia. Based upon our analysis it was estimated that approximately ¾ of the AM ramp volume and ½ of the PM ramp volume is making a left at the intersection. Also, left turn volumes coming from this ramp accounted for ⅓ and ¼ of the lefts being made at Park Avenue during the AM & PM peak hours, respectively.

II. BRAINSTORMING IDEAS

Based upon our field trip to the location, along with our brainstorming efforts in the office and the recommendation from the Transportation Needs Study, we were able to come up with several solutions that would improve the weaving problem between the Route 24 ramp and Park Avenue. Unfortunately, most of these improvements would not solve the congestion problems at the intersection in the future. We have summarized our brainstorming ideas below.

1. Create a Signalized T-Intersection with the Route 24 EB ramp to Columbia Turnpike WB (Figure 1)

This concept would widen the ramp to accommodate two lanes at the new intersection and by installing the signal here; it would meter the WB traffic to the Park Avenue signal and eliminate the conflict created by the ramp traffic weaving over to make a left at the signal. Since this section of Columbia Turnpike is divided, the proposed signal would only affect Columbia WB traffic and the EB traffic would continue to be free flow.

Advantages:

- Eliminates the weaving conflict between the ramp and Columbia Turnpike traffic.
- No Right-of-Way would be required.
- Allows for the storage length of the left turn lanes to be extended if necessary.

Disadvantages:

- Potentially could have the ramp traffic back up onto Route 24.
- Does not solve the congestion problem at the Columbia and Park intersection and there would still be approximately 2,000 vehicles turning left in the AM peak hour at Park Avenue in the future.

2. Create a new ramp from Route 24 EB to Park Avenue (Figure 2)

This concept would construct a new ramp from Route 24 EB to Park Avenue to allow vehicles destined to Park Avenue, a direct connection - eliminating the need to weave over two lanes to make a left from Columbia Turnpike.

Advantages:

- Eliminates the weaving conflict between the Route 24 ramp and Columbia Turnpike traffic.
- Provide some congestion relief at the intersection for a short period of time.

Disadvantages:

- Will require one property to be acquired along with some frontage from several other properties.
- Does not solve the congestion problem at the Columbia and Park intersection and there would still be approximately 1,400 vehicles turning left at Park Avenue in the future.
- Design waivers may be needed for a partial interchange and interchange spacing.
- Environmental issues.

3. Create an overpass over Columbia Turnpike for the Route 24 EB ramp and connecting to Park Avenue south of Columbia (Figure 3)

This concept would still allow traffic to exit onto Columbia Turnpike but it would create a direct connection to Park Avenue south of Columbia Turnpike.

Advantages:

- Eliminates the weaving conflict between the ramp and Columbia Turnpike traffic.

Disadvantages:

- Does not solve the congestion problem at the Columbia and Park intersection and there would still be approximately 1,400 vehicles turning left at Park Avenue in the future.
- Will require Right-of-Way for ramp extension.
- Will add another signal on Park Avenue approximately 600 feet south of the Columbia signal.
- Potential Wetlands (stream) impacts.

4. **Create a two-lane modern roundabout at the intersection of Columbia Turnpike and Park Avenue (Figure 4)**

This concept would eliminate the signal at this intersection and replace it with a 2-lane modern roundabout to improve the operation of the intersection and remove the need for the ramp traffic to weave over to make the left.

Advantages;

- Minimum Right-of-Way would be required.
- Signal would be eliminated.
- Safer due to low angle, low speed crashes.
- Less conflicting moves.
- No maintenance required.

Disadvantages;

- Public acceptance
- Projected traffic volumes may exceed the capacity of the roundabout.

5. **Create a triple left turn lane on Columbia Turnpike WB and separate the left turns originating from the ramp from Columbia Turnpike lefts (Figure 5)**

This concept would split the Columbia Turnpike traffic into two separate lanes in advance of the merge from the Route 24 EB ramp; one for left turning moves only and one for thru and right turns prior to the Route 24 ramp. These lanes would be separated by an island and it would extend to the intersection (similar to Route 1 and Quakerbridge Road). The lane with the left turns would eventually widen to two lanes. When the Route 24 ramp merged it would have its own lane and any lefts would only have to weave with the thru/right turning traffic on Columbia. At the intersection there would be a third left turn lane along with separate thru and right turn lanes.

Advantages:

- Additional capacity for left turn moves.
- Ramp traffic wishing to make a left at Park Avenue will only have to weave with the Columbia Turnpike thru and right turning traffic.

Disadvantages:

- This unorthodox configuration would have to be approved by Traffic Engineering.
- Will require Right-of-Way for widening.
- Unfamiliar traffic pattern for motorists.

6. Create an overpass for Park Avenue to go over Columbia Turnpike with a far side ramp from Columbia Turnpike WB to Park Avenue SB (Figure 6)

This concept would grade separate Park Avenue over Columbia Turnpike and a far side two-way connector road would be built from Columbia Turnpike to Park Avenue. The road from Columbia WB to Park SB would have to be a double lane, free flow ramp because of the approximate 2,000 vehicles that would have been making a left to Park Avenue SB. The connector road would address the left turns that would have been made from the remaining three legs and be signalized at both ends. There may be a potential weave problem along Columbia Turnpike between the Route 24 ramp and the new connector road. If this weave is a problem perhaps a new ramp from Route 24 EB to Park Avenue also be added.

Advantages:

- Eliminates the long-term congestion problem at the Columbia and Park intersection.
- Improves traffic flow in the area.

Disadvantages:

- Will require extensive Right-of-Way.
- May be cost prohibitive.
- Environmental issues.

7. Eliminate ramp from Rt. 24 EB to Columbia Turnpike WB and eliminate ramp from Columbia Turnpike EB to Rt. 24 EB and create new intersection on Columbia Turnpike (Figure 7)

This concept would eliminate ramp from Rt. 24 EB to Columbia Turnpike WB and ramp from Columbia Turnpike EB to Rt. 24 EB and create new intersection on Columbia Turnpike to accommodate the moves that were removed.

Advantages:

- Eliminate the weave on Columbia Turnpike.
- Increase the stacking distance.

Disadvantages:

- Will not accommodate the left turns from Columbia Turnpike to Park Avenue in 2027 built year.
- Additional traffic signal on Columbia Turnpike.

8. Create an SPUI (Single Point Urban Interchange) or Diverging Diamond Interchange at Park Avenue and Columbia Turnpike Intersection (Figure 8)

This concept would grade separate Park Avenue over Columbia Turnpike using Single Point Urban Interchange or Diverging Diamond Interchange.

Advantages:

- Eliminates the congestion problem at the Columbia and Park intersection.
- Improves traffic flow in the area.

Disadvantages:

- High Right-of-Way impacts.
- Will be expensive to construct.

9. Create a new Ramp/Overpass from Columbia WB to Park Avenue along with a new Ramp from Route 24EB to Park Avenue (Figure 9)

This concept is combination of two previous ideas (#2 and #3) with a slight modification that combines the lefts from Columbia Turnpike WB with the Columbia Turnpike WB traffic destined to Route 24 EB. The end result will address those extremely high lefts (1900 vehicles/hr in 2027) at Park Avenue. The ramp from Figure #2 should take about $^{1}/_{3}$ of the lefts and the ramp from Columbia turnpike (overpass) will take the remaining $^{2}/_{3}$. The only issue is the proximity of 2 traffic signals which will have to be evaluated further.

Advantages;

- Eliminates the congestion problem at the Columbia and Park intersection.
- Improves traffic flow in the area.

Disadvantages;

- High Right-of-Way impacts.
- Will be expensive to construct.
- Additional traffic signal on Park Avenue.

10. Create a new Ramp from Route 24 EB Columbia WB to Park Avenue (Figure 10)

This concept will create a new ramp connecting directly to Park Avenue and remove this volume from the Columbia Turnpike & Park Avenue intersection. This idea has an extremely high environmental impacts, so it would be an opportunity for partnering with Morris County. Morris County would be responsible for the location and the cost of this ramp including all DEP permits, and NJDOT would be responsible Rt. 24 widening. This concept would serve as cost sharing project, and let the local township to take some ownership of the traffic problems that were created from urban sprawling.

Advantages;

- Improves the congestion problem at the Columbia and Park intersection.
- Improves traffic flow in the area.
- Cost sharing opportunity
- Might provide acceptable LOS without structures

Disadvantages;

- Extremely high environmental impact.
- High Right-of-Way impacts.
- Additional traffic signal on Park Avenue.

III. Summary of Findings:

There were several ideas that would help improve the weaving problem between the Ramp 24 SB ramp and Park Avenue but they did not address the main issue which was the congestion and failing movements at the signalize intersection of Columbia Turnpike and Park Avenue. Given the anticipated growth this intersection will require significant improvements and any improvements made to relieve the Route 24 weave problem will be insignificant. In order to accommodate the 2027 traffic growth, grade separation option will be needed at this intersection, and possibly a combination with other ideas.

Furthermore, this intersection is located within the local municipality jurisdiction, and funding for this project should be the responsibility of the local township and the new/proposed development. This is a perfect example of urban sprawling, and NJDOT should not fund this type of projects. At the very least, cost sharing should be pursued further.

The Office of Value Engineering recommends that the problem statement should be submitted to the Department and go through the normal process.

IV. Action Taken:

A first meeting was held on April 11th with NJDOT Upper Management, and the directive was low cost, minimal ROW take option should be pursued. One low cost solution discussed was to combine idea #1 and idea #5 – hence, Alternative #11A and #11B emerged. The second meeting was held on May 2nd to discuss these concepts.

a) <u>Create a Double Left Turn Lanes on Columbia Turnpike WB with One Shared Left/Through Lane and One Through Lane and Signalize T-Intersection with the Route 24 EB ramp to Columbia Turnpike WB (Figure 11A)</u>

This concept is a combination of idea #1 (new two lane ramp with metering traffic signal on Columbia Turnpike WB) and idea #5 (triple left turn lanes from Columbia Turnpike WB at the intersection). After further evaluation, a double left turn lanes and a shared left/through lane and another through lane and a right lane was evaluated. Also, there will be a 15' ROW take along Park Avenue to accommodate the additional left turn lane. The estimated construction cost for this concept is **$1.6 Million**.

Advantages:

- Additional capacity for left turn moves on Columbia Turnpike to Park Ave.
- Eliminates the weaving conflict between the ramp and Columbia Turnpike traffic.
- Allows for the storage length of the left turn lanes to be extended if necessary.

Disadvantages:

- The shared left/through lane turned into a left turn lane only and reduced the capacity of the through move.
- Unfamiliar traffic pattern for motorists.
- Minor Right-of-Way would be required.

The traffic analysis indicate a double left and a shared through lane at Columbia Turnpike and Park Ave. triggers a split phase for Columbia (less green time, more yellow and red). The resulting backups in the AM peak cut off the existing and proposed ramp system of Route 24 from entering Columbia Turnpike. Analysis also showed that 3 out of the 4 approaches are still failing (LOS F) in 2027. Hence, this concept was dismissed.

b) Create a Triple Left Turn Lanes on Columbia Turnpike WB with Two Through Lanes and Signalize T-Intersection with the Route 24 EB ramp to Columbia Turnpike WB (Figure 11B)

This concept is a variation of concept #11A except that it has triple left turn lanes and two through lanes and a right lane on Columbia Turnpike. Therefore, in addition to the 15' ROW take along Park Avenue to accommodate the additional left turn lane, there will be 15' ROW take along Columbia Turnpike (MetLife frontage, and residential frontage past Park Avenue) to accommodate the additional through lane. The estimated construction cost for this concept is **$3.5 Million**.

Advantages:

- One full additional left turn lane for left turn moves on Columbia Turnpike to Park Ave.
- Eliminates the weaving conflict between the ramp and Columbia Turnpike traffic.
- Allows for the storage length of the left turn lanes to be extended if necessary.

Disadvantages:

- Unfamiliar traffic pattern for motorists.
- High Right-of-Way would be required.

The traffic analysis the approach delay at Columbia Turnpike WB at Park Ave. is reduced significantly as compared to the existing condition and Concept #11A in the year 2027 due to the additional left turn lane, but three out of the 4 approaches are still failing (LOS F). Since the cost is high and the benefit is low, this concept was dismissed.

Since both alternatives (11A and 11B) were dismissed, the office of Value Engineering and Traffic Engineering will further evaluate the following:

- Adaptive signal is recommended at Columbia Turnpike & Park Avenue intersection with any concepts.
- Revisit brainstorming idea #2 which is constructing a new ramp from Route 24 EB to Park Avenue to allow vehicles destined to Park Avenue, a direct connection - eliminating the need to weave over two lanes to make a left from Columbia Turnpike. Hence, Alternatives #12A and #12B were emerged as a short term solution.
- Revisit brainstorming idea #10 and further evaluated for long term solution.

A third meeting was held on May 22nd with NJDOT Upper Management to discuss Alternatives #12A & #12B, and Idea #10.

c) Create a new ramp from Route 24 EB to Park Avenue with no widening in Park Avenue (Figure 12A)

This concept is a variation of brainstorming idea #2 except that the exit ramp from Route 24 EB will be held close to Route 24 to minimize ROW impacts, and will have the stop control at the end of the ramp. The existing ramp from Route 24 EB to Columbia Turnpike EB will be removed since both exit ramps from Route 24 are too close, and would create confusion to motoring public. No construction estimate is available.

Advantages and disadvantages are described under the brainstorming idea #2. The analysis showed that the Alternative 12A will operate safer, but will not alleviate the congestion.

d) Create a new ramp from Route 24 EB to Park Avenue with widening in Park Avenue (Figure 12B)

This concept is a variation of Alternative 12A except that there will be 15’ widening along Park Avenue from the end of the exit ramp, carrying it through Columbia turnpike for a three through lanes, then taper back to two lanes. No construction estimate is available, but it may cost upward of 5 Million.

Advantages and disadvantages are described under the brainstorming idea #2. The analysis showed that the Alternative 12B will alleviate the congestion for the approximately first 5 years then it will deteriorate as the traffic volumes increases.

e) Create a new Ramp from Route 24 EB Columbia WB to Park Ave. (Figure 10)

Advantages and disadvantages are described under the brainstorming idea #10. No construction estimate is available, but preliminary findings showed the following potential fatal flaws:

- There are no place to construct the ramp to tie to Park Avenue since the vicinity area is fully developed. Also, there are numerous utility poles and wetland that would need to be addressed.
- The new traffic signal at the terminus of the proposed ramp may not operate properly due to the proximity of the adjacent traffic signal.
- There will be an incomplete interchange at this location, and FHWA will not participate.

The analysis showed that it will alleviate the congestion for the approximately first 5 years then it will deteriorate as the traffic volumes increases. The total overall delay at Columbia Turnpike and Park Avenue would be very similar to Alternative 12B.

Based on the results of these studies, the office of Value Engineering finds that the traffic congestion issue at Columbia Turnpike and Park Avenue is not due to the ramps off Route 24, but rather due to the local business development in the vicinity of Jets training facility off Park Avenue that drew high number of traffic to this location. The Department will analyze the cost benefit of these improvements, however, the analysis showed that any of these improvements will have a short term improvement that lasts approximately 5 years.

Next meeting is scheduled on 6/3/14 at 9 AM

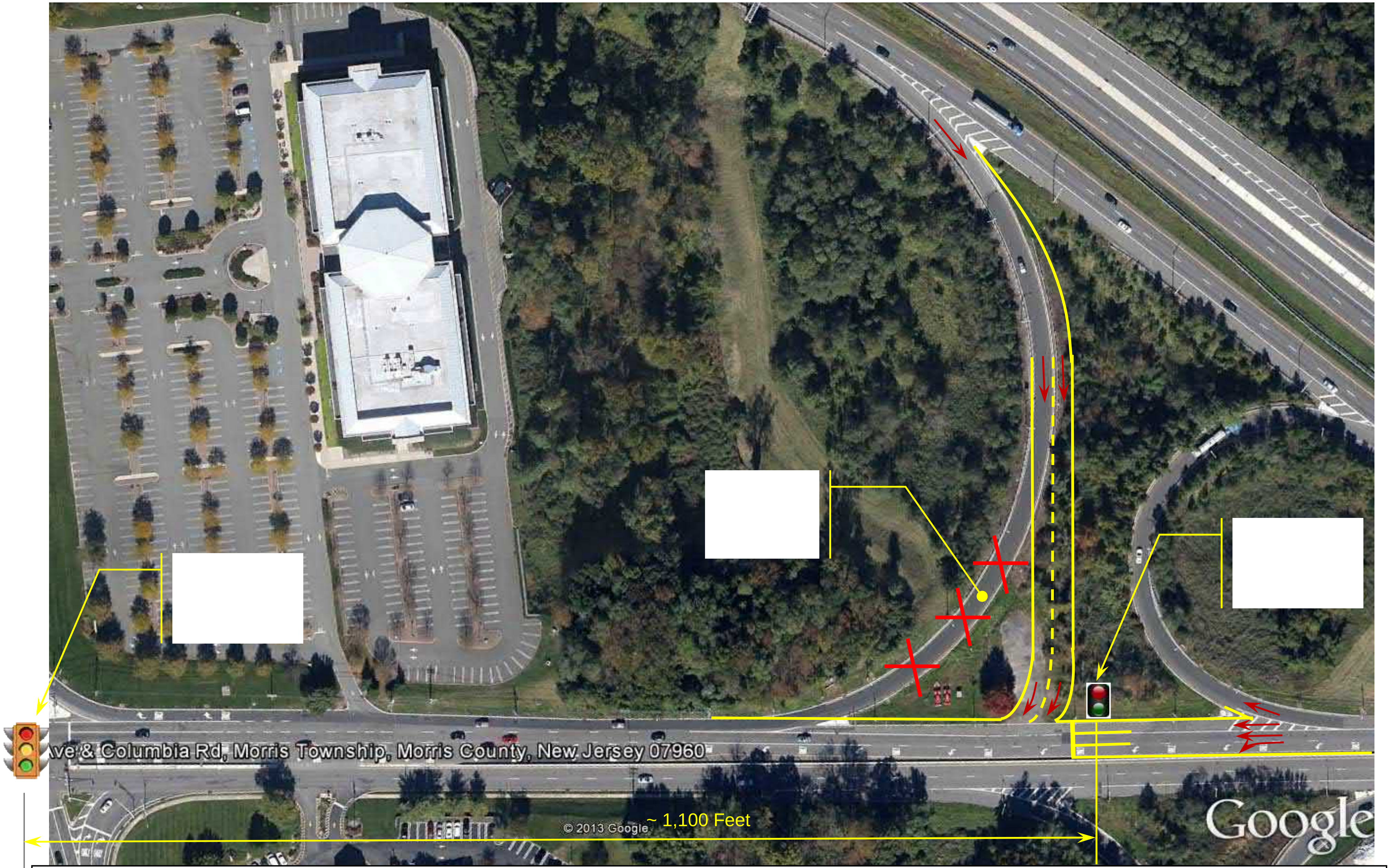
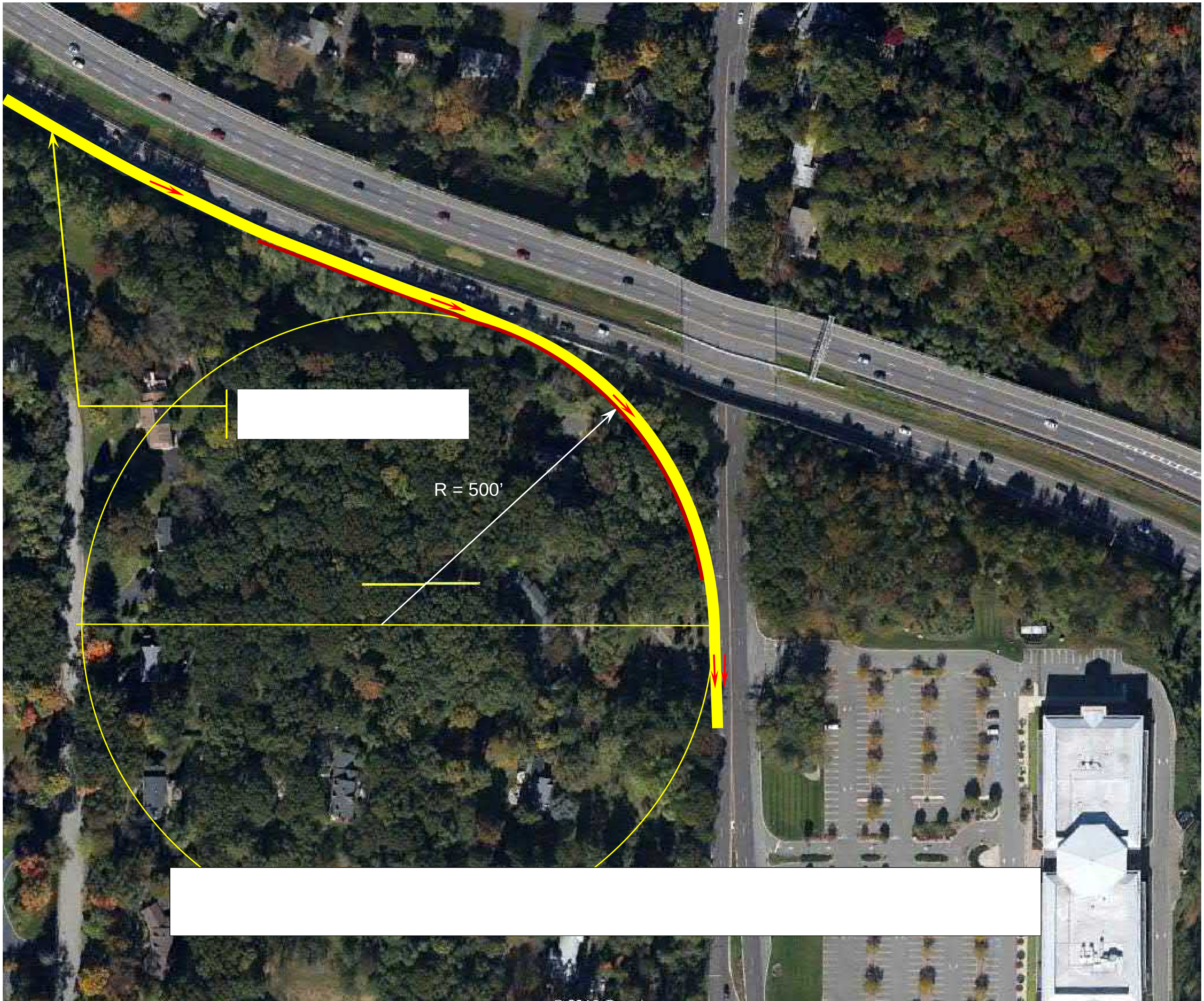


Figure #1 - Create a Signalize T-Intersection with the Route 24 EB ramp to Columbia Turnpike WB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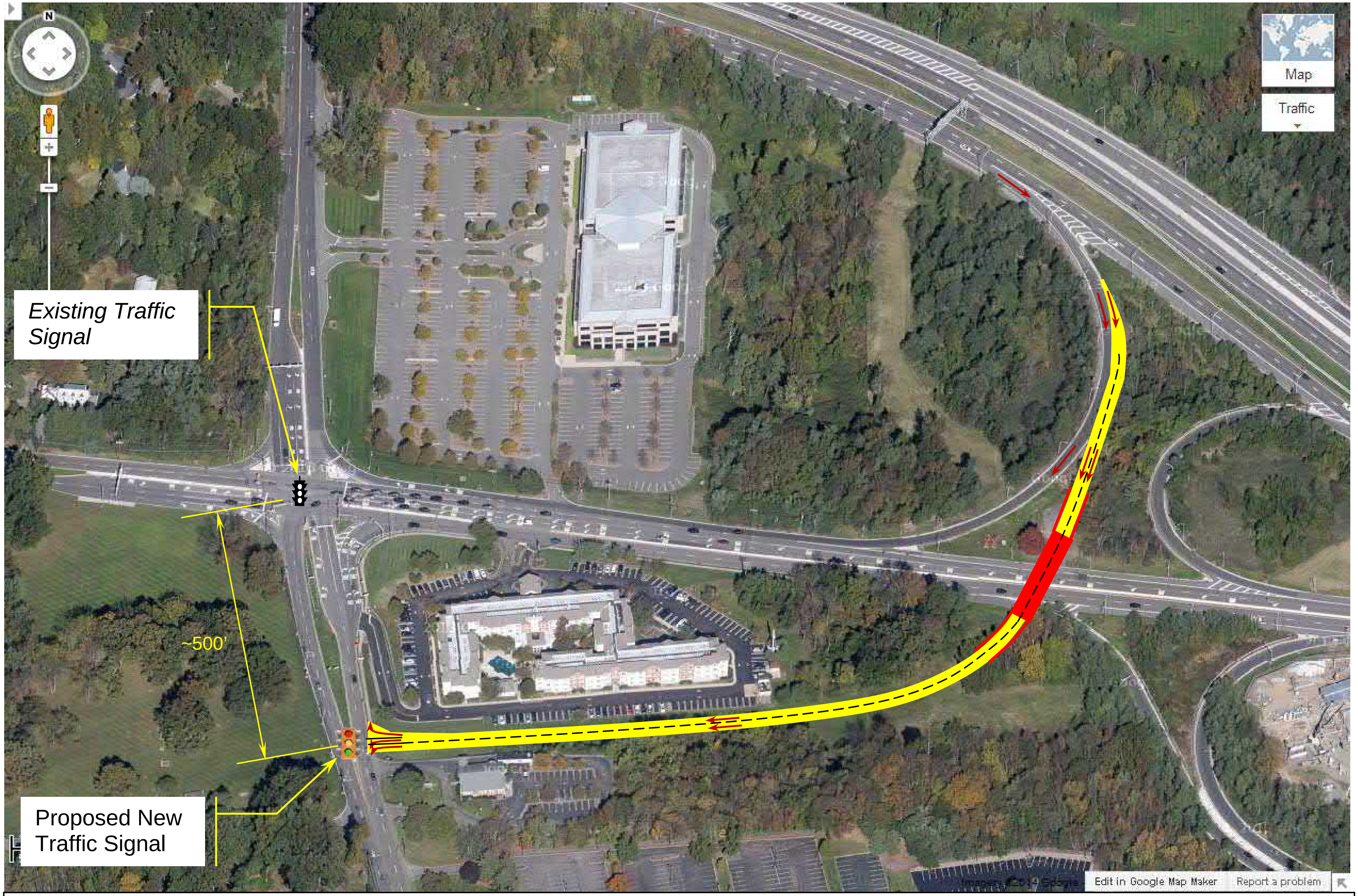
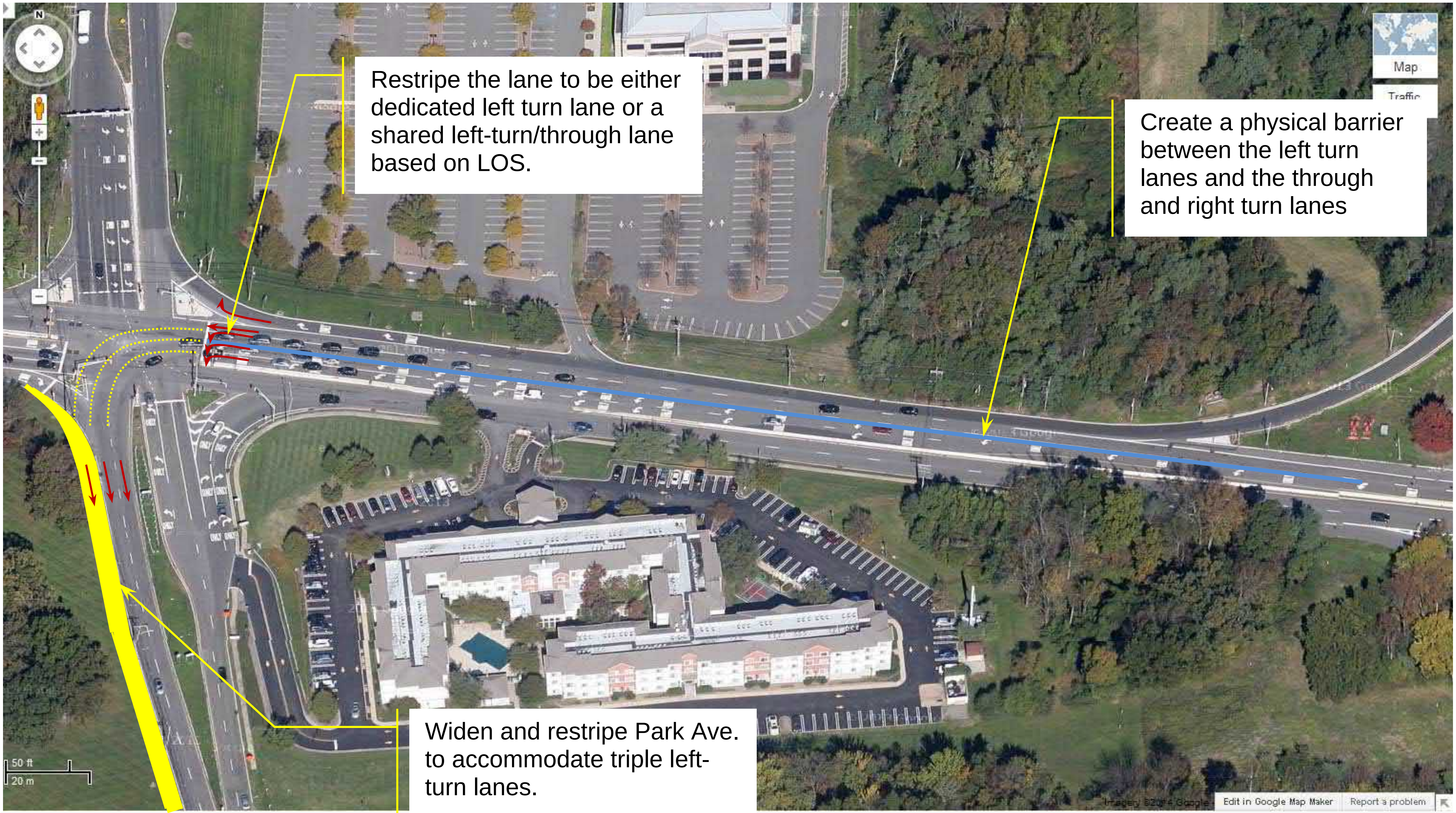


Figure 3 - Create an Overpass over Columbia Turnpike for the Route 24 EB Ramp and Connecting to Park Avenue South of Columbia Turnpike

Figure 4 - Create a two-lane roundabout at the intersection of Columbia Turnpike and Park Avenue.



Restripe the lane to be either dedicated left turn lane or a shared left-turn/through lane based on LOS.

Create a physical barrier between the left turn lanes and the through and right turn lanes

Widen and restripe Park Ave. to accommodate triple left-turn lanes.

Figure 5 - Create a Triple Left Turn Lanes on Columbia Turnpike WB and Separate Left Turns from Rt. 24 EB Exit Ramp from Columbia Turnpike Left Turns

Figure 6 - Create an overpass for Park Avenue to go over Columbia Turnpike with a far side ramp from Columbia Turnpike WB to Park Avenue SB

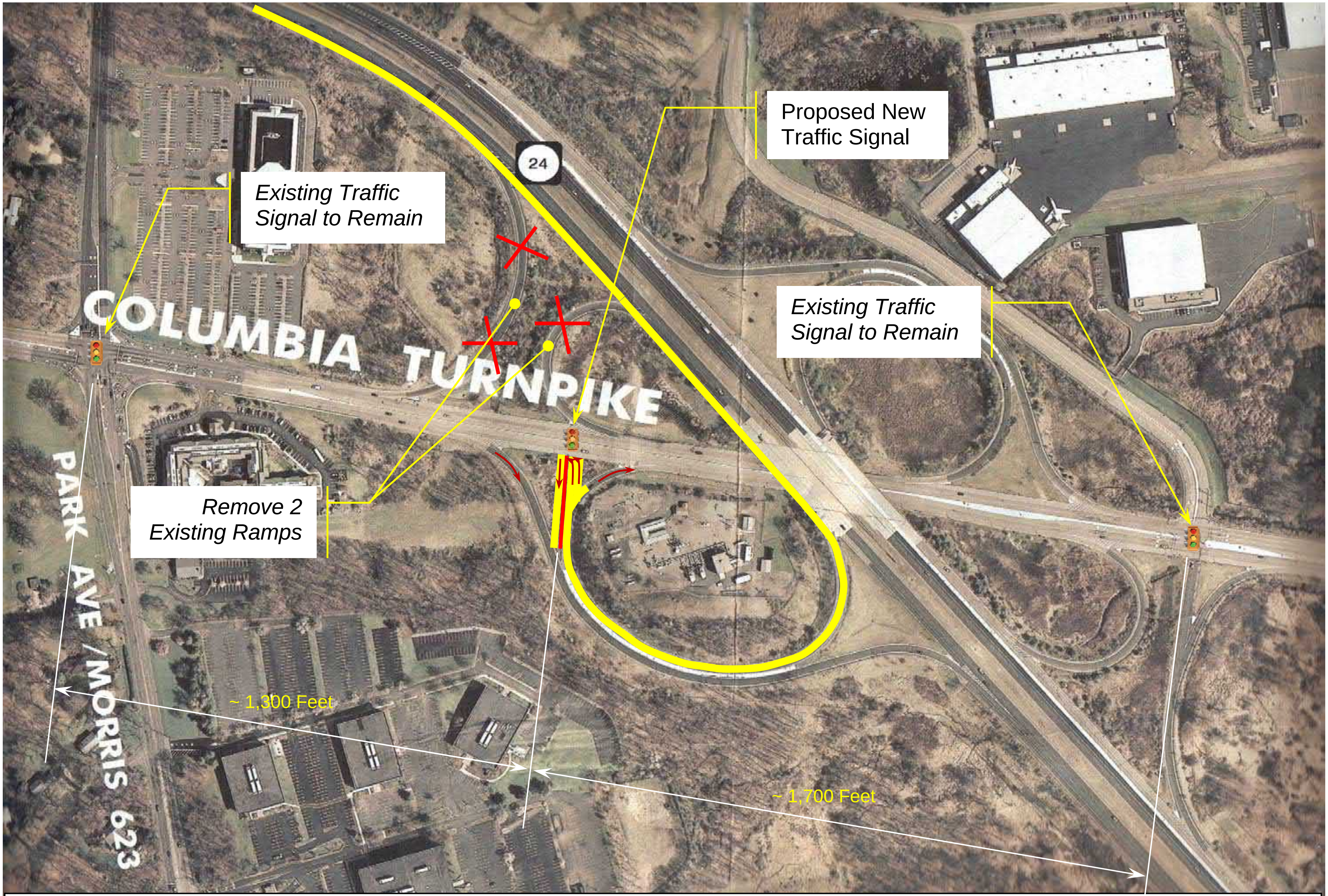
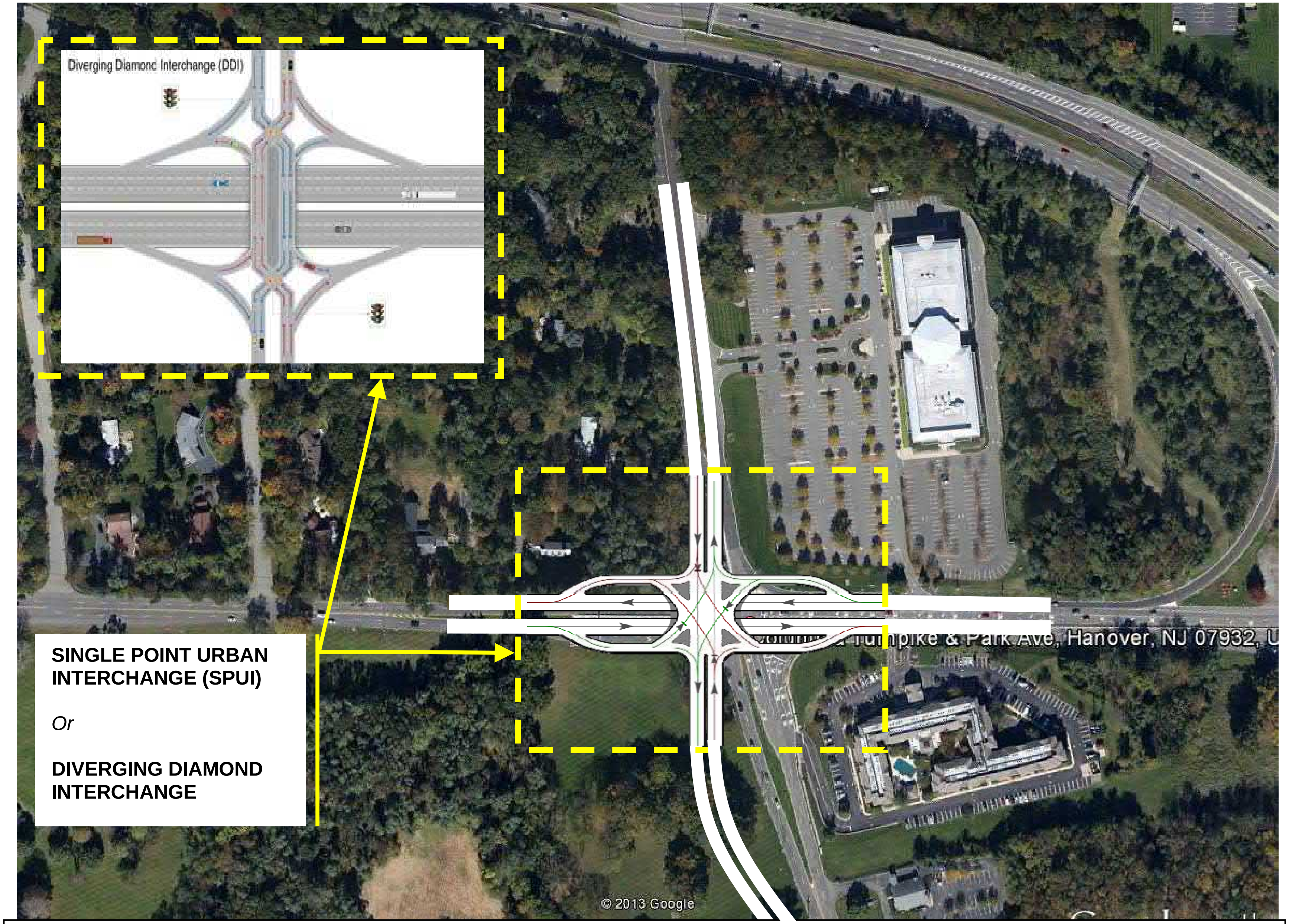


Figure 7 - Eliminate Ramp from Rt. 24 EB to Columbia Turnpike WB and Eliminate Ramp from Columbia Turnpike WB to Rt. 24 EB and create New Intersection on Columbia Turnpike



SINGLE POINT URBAN INTERCHANGE (SPUI)

Or

DIVERGING DIAMOND INTERCHANGE

Figure 8 - Create an SPUI (Single Point Urban Interchange) or Diverging Diamond Interchange at Park Avenue and Columbia Turnpike Intersection

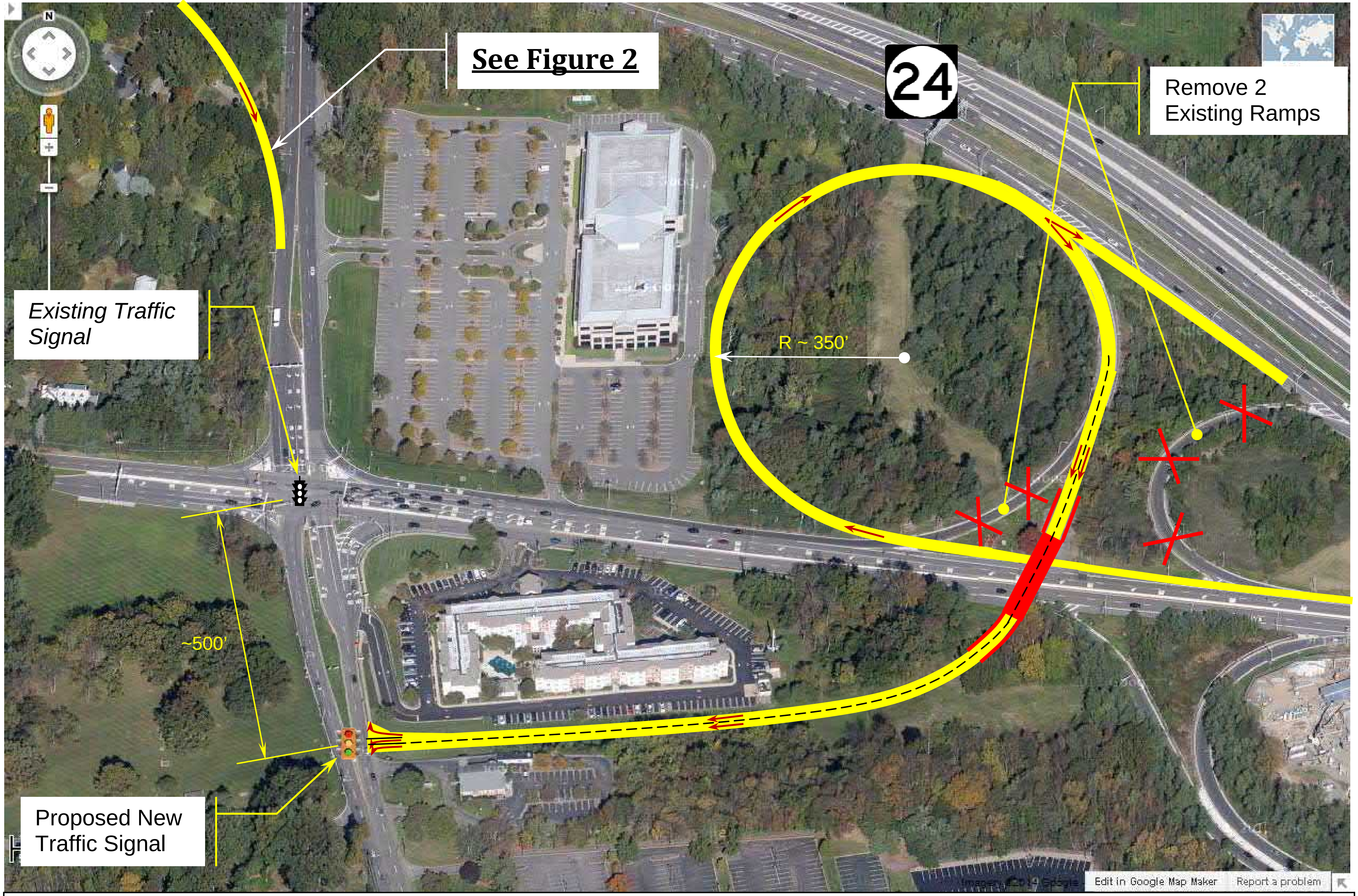


Figure 9 - Create an Overpass from Columbia Turnpike WB and Connecting to Park Avenue and Combined with Figure 2 which is Create a New Ramp from Route 24 EB to Park Ave.

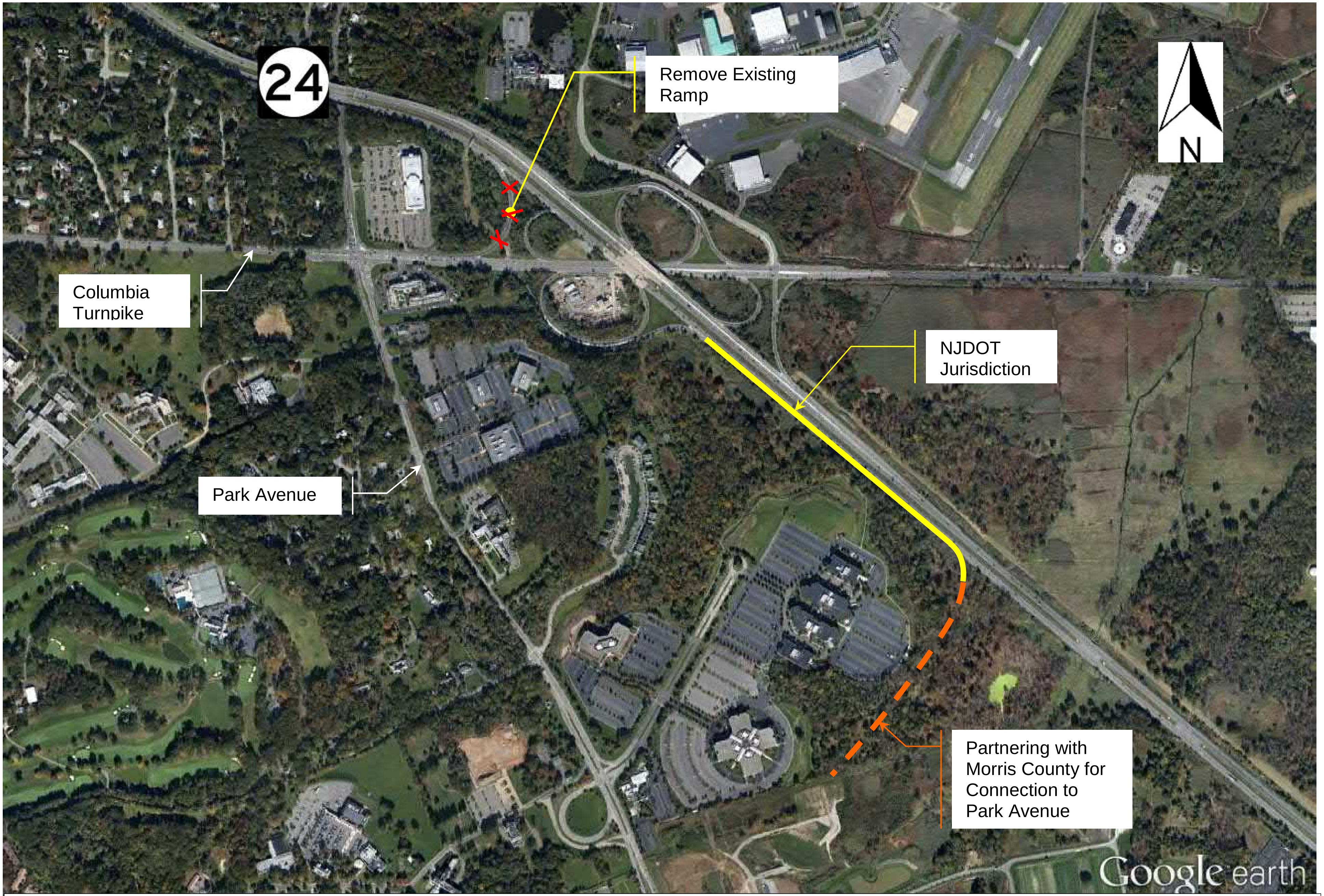
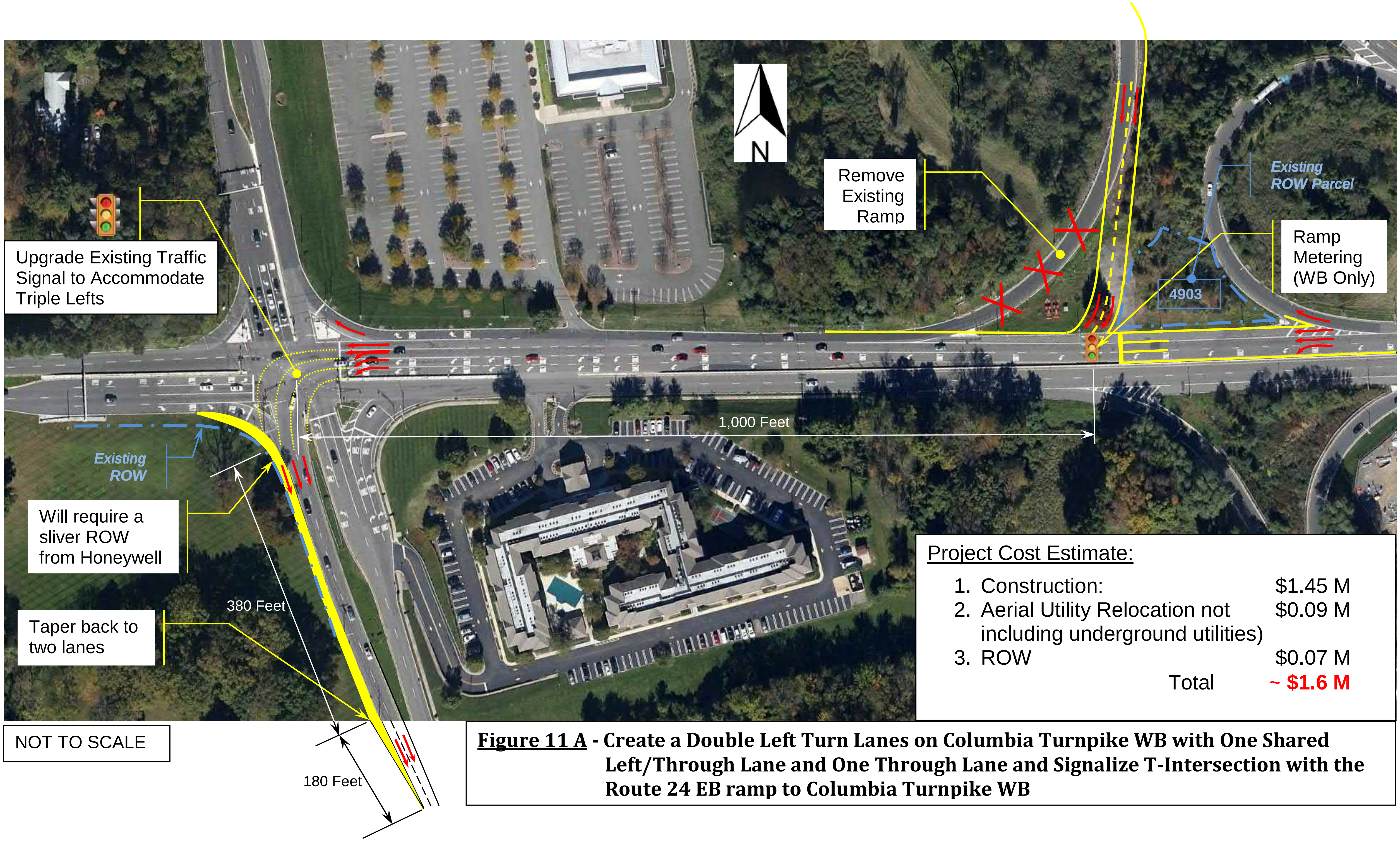


Figure 10 - Create a new exit ramp from Route 24 EB and Connecting to Park Avenue

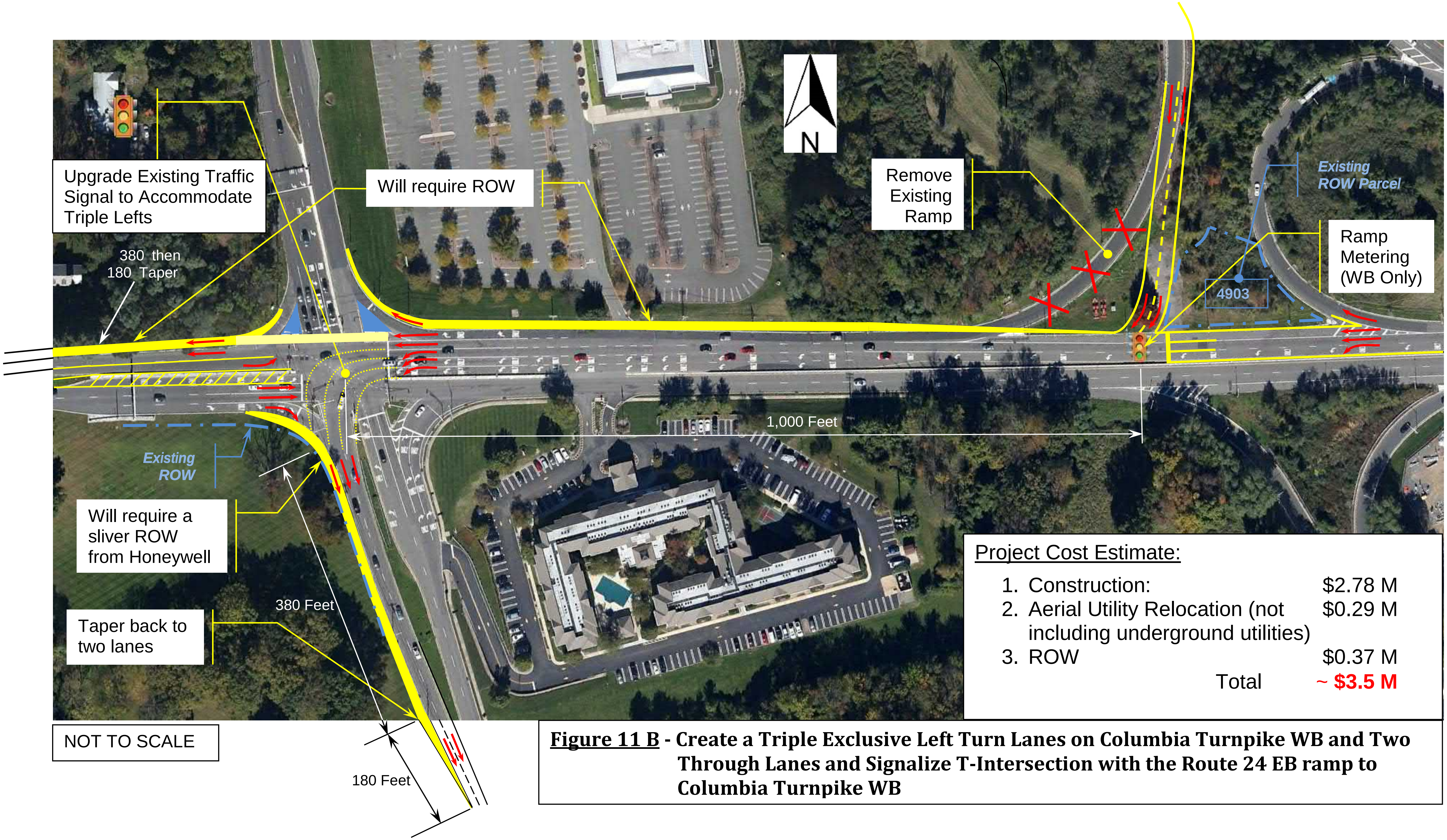


NOT TO SCALE

Project Cost Estimate:

1.	Construction:	$1.45 M
2.	Aerial Utility Relocation not including underground utilities)	$0.09 M
3.	ROW	$0.07 M
	Total	~ **$1.6 M**

<u>Figure 11 A</u> - Create a Double Left Turn Lanes on Columbia Turnpike WB with One Shared Left/Through Lane and One Through Lane and Signalize T-Intersection with the Route 24 EB ramp to Columbia Turnpike WB

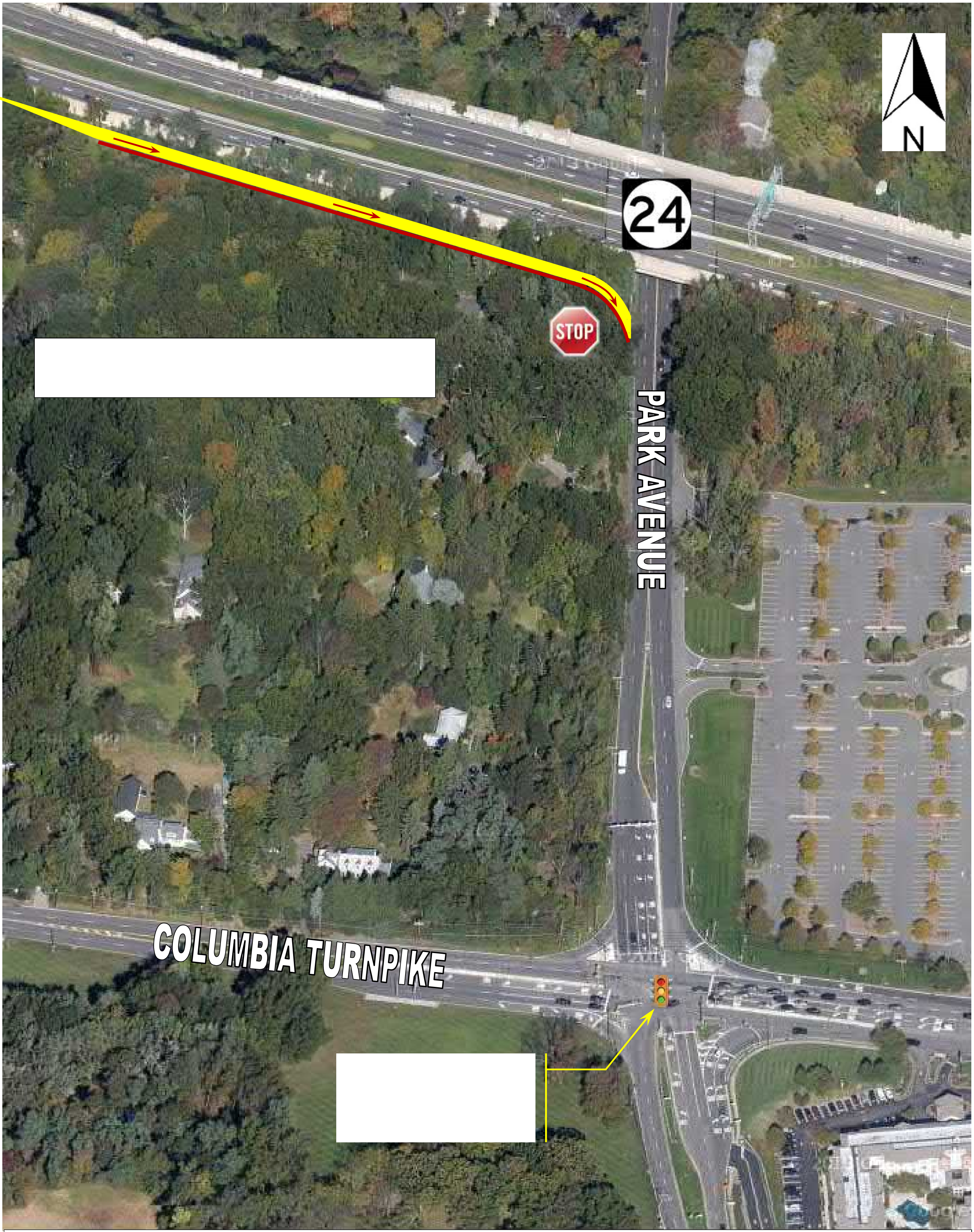


Project Cost Estimate:

1.	Construction:	$2.78 M
2.	Aerial Utility Relocation (not including underground utilities)	$0.29 M
3.	ROW	$0.37 M
	Total	~ $3.5 M

NOT TO SCALE

Figure 11 B - **Create a Triple Exclusive Left Turn Lanes on Columbia Turnpike WB and Two Through Lanes and Signalize T-Intersection with the Route 24 EB ramp to Columbia Turnpike WB**


24
STOP
PARK AVENUE
COLUMBIA TURNPIKE
N

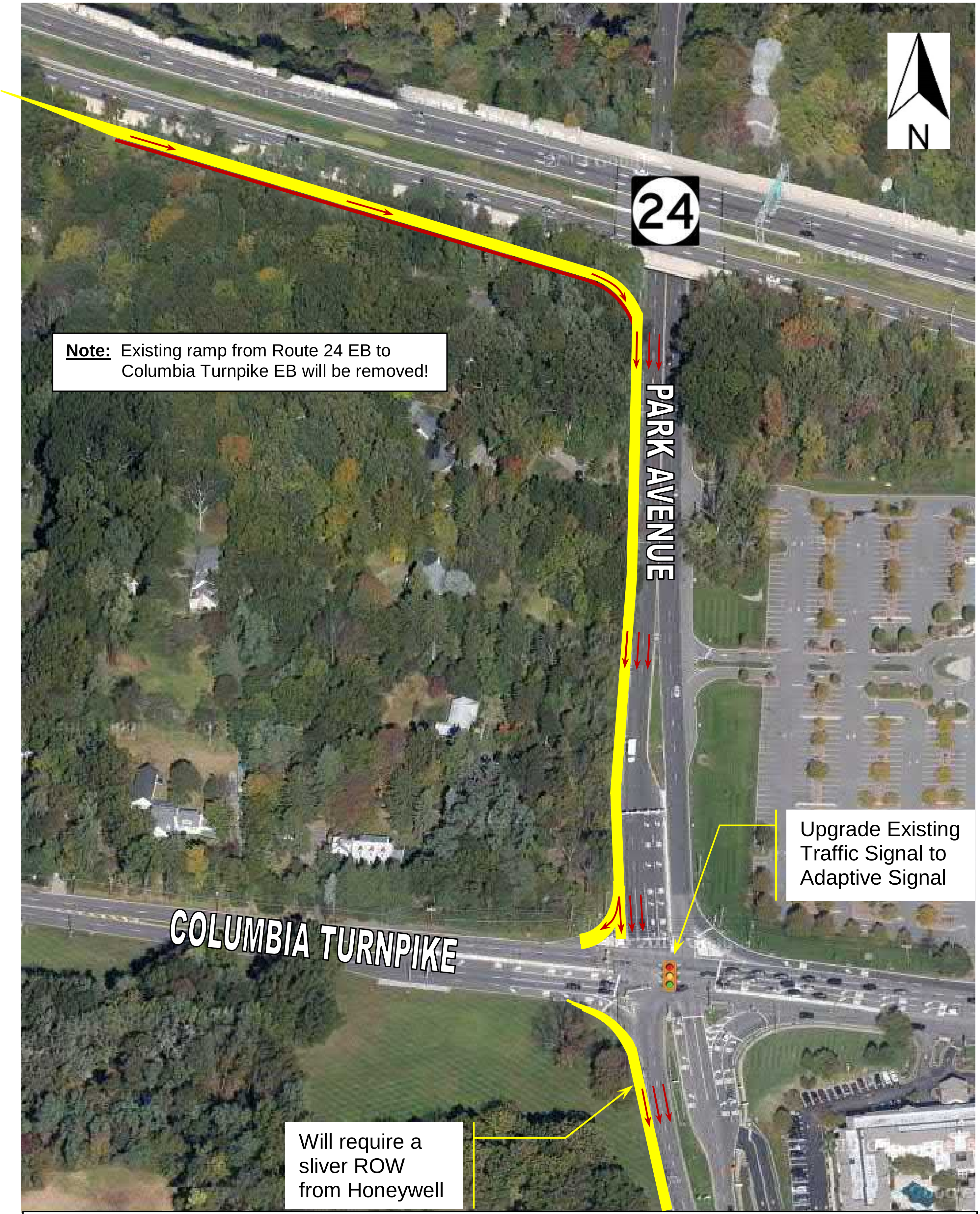
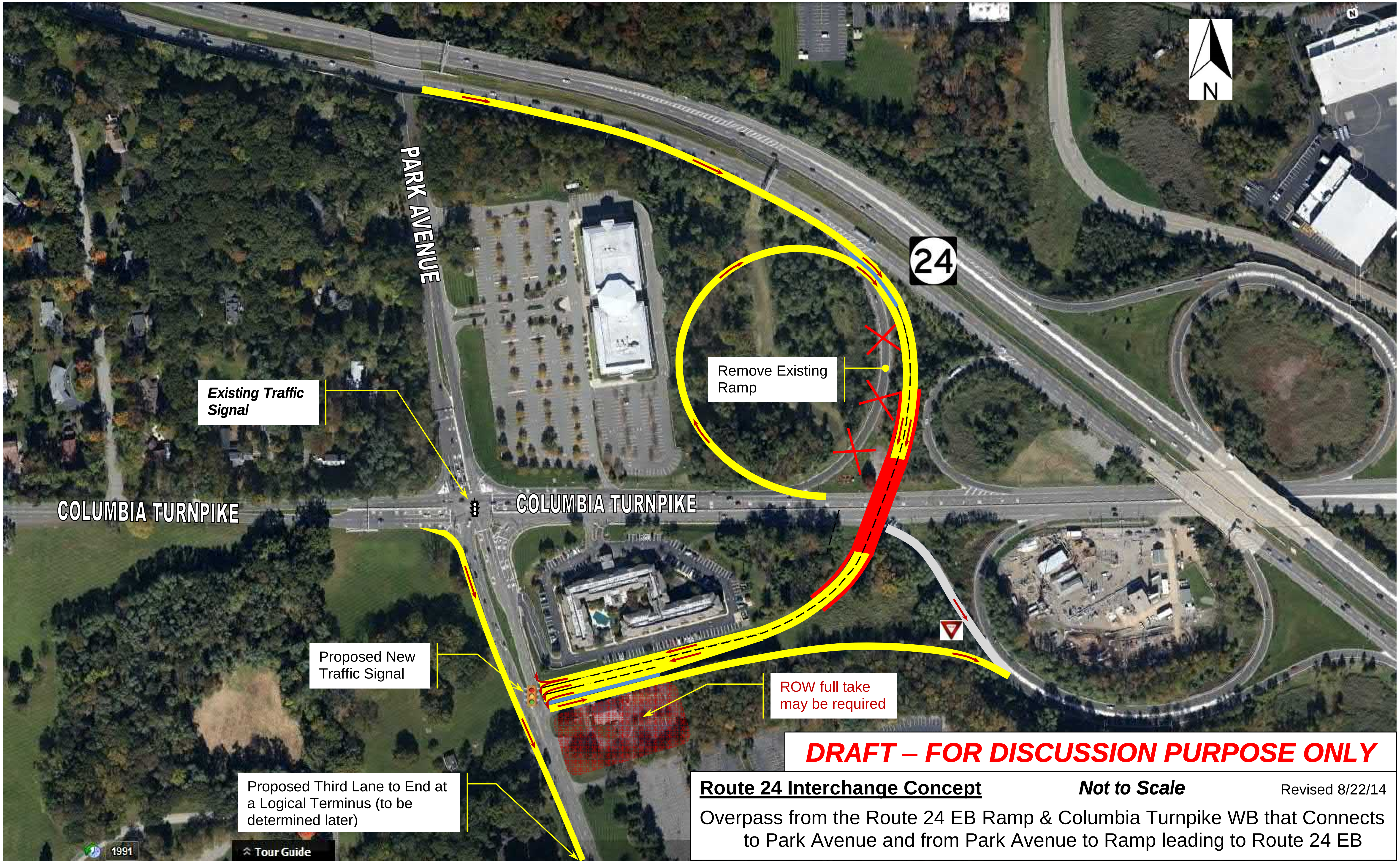


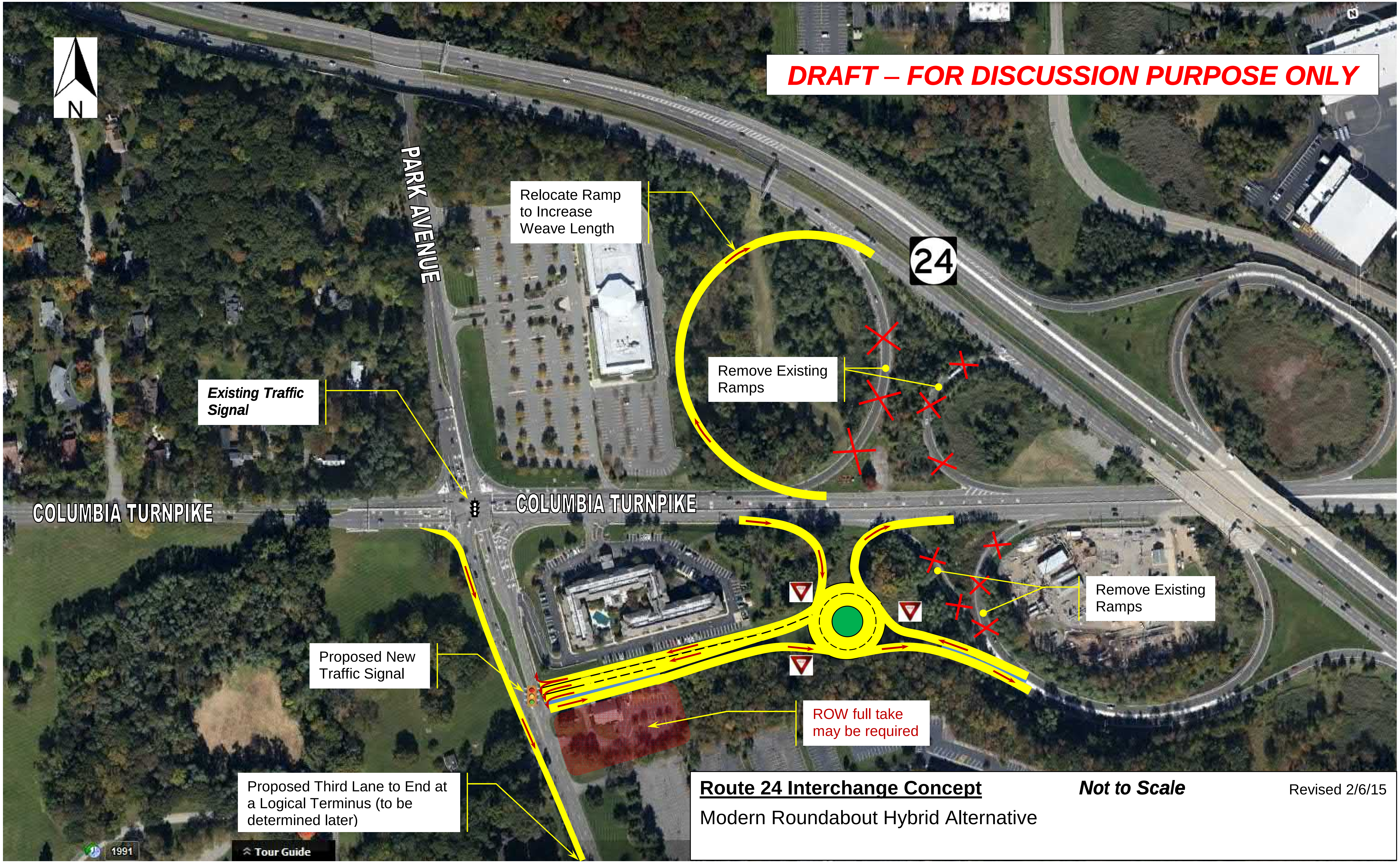
Figure 12B - New Ramp from Rt. 24 EB to Park Ave. (with Widening)



DRAFT – FOR DISCUSSION PURPOSE ONLY

Route 24 Interchange Concept ***Not to Scale*** Revised 8/22/14

Overpass from the Route 24 EB Ramp & Columbia Turnpike WB that Connects to Park Avenue and from Park Avenue to Ramp leading to Route 24 EB



Route 24 Interchange Concept

Modern Roundabout Hybrid Alternative

Not to Scale

Revised 2/6/15

ALTERNATIVE MATRIX

ROUTE 24 and COLUMBIA TURNPIKE RAMP IMPROVEMENTS

	No Build	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6	Alternative 7	Alternative 8	Alternative 9	Alternative 10	Alternative 11A	Alternative 11B	Alternative 12A	Alternative 12B
Description		Create a Signalize T-Intersection with the Route 24 EB ramp to Columbia Turnpike WB	Create a new ramp from Route 24 EB to Park Avenue	Create an overpass over Columbia Turnpike for the Route 24 EB ramp and connecting to Park Avenue south of Columbia	Create a two lane modern roundabout at the intersection of Columbia Turnpike and Park Avenue	Create a triple left turn lane on Columbia Turnpike WB and separate the left turns originating from the ramp from Columbia Turnpike lefts	Create an overpass for Park Avenue to go over Columbia Turnpike with a far side ramp from Columbia Turnpike WB to Park Avenue SB	Eliminate ramp from Rt. 24 EB to Columbia Turnpike WB and eliminate ramp from Columbia Turnpike EB to Rt. 24 EB and create new intersection on Columbia turnpike	Create an SPUI (Single Point Urban Interchange) or Diverging Diamond Interchange at Park Avenue and Columbia Turnpike Intersection	Create a new Ramp/Overpass from Columbia WB to Park Avenue along with a new Ramp from Route 24 EB to Park Avenue	Create a new Ramp from Route 24 EB Columbia WB to Park Avenue	Create a Triple Left Turn Lanes on Columbia Turnpike WB with One Shared Left/Through Lane and Signalize T-Intersection with the Route 24 EB ramp to Columbia Turnpike WB	Create a Triple Exclusive Left Turn Lanes on Columbia Turnpike WB and Two Through Lanes and Signalize T-Intersection with the Route 24 EB ramp to Columbia Turnpike WB	New Ramp from Rt. 24 EB to Park Ave. (No Widening)	New Ramp from Rt. 24 EB to Park Ave. (With Widening)
Eliminate Weave on Columbia Turnpike	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Address 2007 Left Turns on Columbia Tpk WB at Park	No	No	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Address 2027 Left Turns on Columbia Tpk WB at Park	No	No	No	No	No	No	Possible	No	Possible	No	No	No	No	No	No
Grade Separated (Bridge)	No	No	No	Yes	No	No	Yes	No	Yes	Yes	No	No	No	No	No
Utility Impacts	None	None	Medium	Medium	Minor	Low-Medium	High	Minor	Major	Major	High	Medium	High	Low	High
ROW Impacts	None	Minor	Medium - Requires acquistion of few residential homes	High	Minor	Minor	High	Minor	High	Very High	Very High	Medium	High	Low	High
Access Impacts	None	None	Minor	Minor	Medium	Minor	Medium-High	Minor	High	Medium-High	Medium-High	Medium	High	Low	High
Environmental Impacts	None	Minor	Medium	High	Minor	Low-Medium	High	Minor	High	Very High	**Extremely High**	Low	High	Medium	High
Construction Cost	None	$	$$	$$$	$	$	$$$$	$	**$$$$$**	$$$$	$$$$	1.6 M±	3.5 M±	~ 3M?	~ 5M?
Traffic Operations	None	No	Imrprove for 2007 Fail in 2027	Improve Moderately	Imrprove for 2007 Fail in 2027	Imrprove for 2007 Fail in 2027	Improve Moderately	No	Improve Moderately	Imrprove for 2007 Fail in 2027	Imrprove for 2007 Fail in 2027	Imrprove for 2007 Fail in 2027	Imrprove for 2007 Fail in 2027	Imrprove for 2007 Fail in 2027	Imrprove for 2007 Fail in 2027
Likehood of Acceptance	Not to Morris County	Fair - Just a band-aid fix	Fair	Not Likely	Not Likely; Public do not like roundabouts	Possible	Not Likely	Not Likely	Not Likely	Possible	Not Likely - Needs Partnering with Morris County	Possible	Possible	Possible	Possible
Likehood of Construction	Most Likely	Possible	Possible	Not likely	Not Likely	Possible	Not Likely	Not Likely	Not Likely	Possible	Not Likely - DEP	Possible	Possible	Possible	Possible
Value/$	N/A	High	Medium	Low	High	High	Medium	Medium	Low	Low	Low	High	Medium	High	Medium

Updated 6/4/14

Prepared by: Value Engineering Unit

From: Brian M. Stankus <bstankus@ihengineers.com>
Sent: Friday, October 21, 2016 2:07 PM
To: nlinnik@ihengineers.com
Cc: kshah@ihengineers.com
Subject: FW: Rt.24, EB Ramp to CR 510
Attachments: CR 510 and Park Ave.pdf; CR 510 from Park Av to Rt 24.pdf

Maybe I never uploaded it to the server, but I really thought I had at least given you hard copies.

I am running out the door – maybe we can discuss details on Monday. Have a good weekend.

--B

From: Gary Patterson [mailto:gpatterson@ihengineers.com]
Sent: Thursday, May 19, 2016 11:00 AM
To: bstankus@ihengineers.com
Cc: jkorunow@ihengineers.com
Subject: FW: Rt.24, EB Ramp to CR 510

Brian,
FYI. We should probably ask him to copy you on all correspondence…

From: Shah, Dashrath [mailto:Dashrath.Shah@dot.nj.gov]
Sent: Thursday, May 19, 2016 9:32 AM
To: jkorunow@ihengineers.com; Gary Patterson
Cc: D'Arcy, Edward
Subject: FW: Rt.24, EB Ramp to CR 510

FYI

Dashrath Shah
Principal Engineer-Team D
Division of Project Management
NJDOT
(609)530-3713

From: LiSanti, Daniel
Sent: Thursday, May 19, 2016 8:43 AM
To: Shah, Dashrath
Cc: Azam, Sophia; Boucher, Amon
Subject: Rt.24, EB Ramp to CR 510

Hello Dashrath:

The Bureau of Transportation Data and Safety has received your Safety Management System Information request dated May 3, 2016. In response to your Safety Management System ranking request for Route 24, EB Ramp to CR 510, Hanover and Morris Townships, Morris County, we have determined the following:

- Route 24, MP 2.09, EB Ramp to CR 510 is within limits of Route 24, MP 0.2 to 2.20, roadway segment which is ranked #69 on our preliminary 2015 NJDOT Corridor Segment List (2011-2013 crash data). This list has not been approved to date but we expect final approval soon. We do not expect the ranking to change significantly. Upon final approval, we will provide you with the final ranking.

In response to your Safety Management System ranking request for CR 510 (Columbia Avenue), Park Avenue to Route 24, MP 14.23 to 14.60, and the signalized intersection of Columbia Avenue and Park Avenue, MP 14.23, Hanover and Morris Townships, Morris County, we are unable to provide a ranking. Our Safety Management System provides rankings for locations under the state's jurisdiction, this location, per SLD, appears to be under the jurisdiction of the county. The MPO's, in this case NJTPA, have list which include county and local roads. This location may be ranked on one of NJTPA's list. For your use, a crash check was performed for both Columbia Avenue, Park Avenue to Route 24, and at the signalized intersection of Columbia Avenue and Park Avenue for the years 2011-2013, see attached files.

If you have any questions or require additional information, please do not hesitate to contact us.

Thanks

Daniel LiSanti, PE
Project Manager
Transportation Data & Safety
New Jersey Department of Transportation
P.O. Box 600
Trenton, NJ 08625-0600
Office Phone: (609) 530-4692
Daniel.LiSanti@dot.nj.gov

From: Azam, Sophia
Sent: Tuesday, May 03, 2016 10:40 AM
To: LiSanti, Daniel
Subject: FW: Rt.24, EB Ramp to CR 510

Please assign. Thanks

From: Shah, Dashrath
Sent: Tuesday, May 03, 2016 10:39 AM
To: Bertucci, Philip; Chan, Kiong; Levinton, Ira; Barretts, Chris; Lewis, Jim; Hawkinson, Bruce; Azam, Sophia; Longworth, John; Jamerson, John; Abraham, Antoun; Roessner, Chrissa; Appesh, Nart; Maniar, Nipa; Amin, Padmanabha; Dube, Richard; Pinto, Frank
Cc: D'Arcy, Edward
Subject: Rt.24, EB Ramp to CR 510

Hi everybody,
Find attached the shotgun memo for the above subject project.
Each unit is requested to provide the input/information relevant to this project.

Thanks

Dashrath Shah
Principal Engineer-Team D
Division of Project Management

NJDOT
(609)530-3713

Appendix “R”

Cost Estimates

IH ENGINEERS, P.C.
www.ihengineers.com

Project No.: Route 24 & Columbia Turnpike
Project Desc.:
Page No. of
Calculated By: AB Date 8/4/2017
Checked By: NSL Date 8/8/2017

103 College Road East, 1st Floor, Princeton, NJ 08540
(609) 734-8400, (609) 734-8405 (fax)

ALTERNATIVE 1

ITEM DESCRIPTION	Unit	Quantity	Unit Price	Amount
STRIPPING (4"-6" DEPTH)	ACRE	3.70	$ 4,050	$ 14,985
ROADWAY EXC. UNCLASSIFIED	CY	27,350.00	$ 40	$ 1,094,000

EARTHWORK TOTAL= $ 1,108,985

2 INCH HMA SURFACE COURSE & 8 INCH BASE COARSE	LF	9,450.00	$ 80	$ 756,000
2 INCH HMA SURFACE COURSE & 2 INCH BASE COARSE	LF	2,670.00	$ 16	$ 42,720

PAVEMENT TOTAL= $ 798,720

BRIDGE STRUCTURE	SF	8,250.00	$ 225	$ 1,856,250

STRUCTURE TOTAL= $ 1,856,250

URBAN AREA	MILE	0.25	$ 544,280	$ 136,070
RAMPS	LF	7,200.00	$ 55	$ 396,000

DRAINAGE TOTAL= $ 532,070

BEAM GUIDE RAIL	LF	975.00	$ 46	$ 44,850
9" X 16" CONCRETE VERTICAL CURB	LF	1,050.00	$ 35	$ 36,750
RETAINING WALL	SF	38,000.00	$ 110	$ 4,180,000
BLOCK CURB	LF	350.00	$ 30	$ 10,500
TANGENT GUIDE RAIL TERMINAL	UNIT	2.00	$ 2,650	$ 5,300

INCIDENTAL ITEMS TOTAL= $ 4,277,400

TOP SOIL AND SEEDING	MILE	1.30	$ 112,815	$ 146,660
PLANTING	MILE	1.30	$ 64,500	$ 83,850

LANDSCAPE TOTAL= $ 230,510

FIELD OFFICE	MILE	1.30	$ 44,260	$ 57,538
MATERIALS FIELD LABORATORY	MILE	1.30	$ 28,970	$ 37,661
EROSION CONTROL DURING CONSTRUCTION	MILE	1.30	$ 64,375	$ 83,688

GENERAL ITEMS TOTAL= $ 178,887

TRAFFIC SIGNAL	LS	1.00	$ 200,000	$ 200,000

TRAFFIC SIGNAL TOTAL= $ 200,000

PROJECT SUBTOTAL= $ 9,182,821

LIGHTING, TRAFFIC STRIPES, SIGNS AND DELINEATORS	LS	3% OF PROJ. SUBTOTAL		$ 275,485
MAINTANANCE OF TRAFFIC	LS	1.5% OF PROJ. SUBTOTAL		$ 137,742
TRAINING	LS	1% OF PROJ. SUBTOTAL		$ 91,828
MOBILIZATION	LS	10% OF PROJ. SUBTOTAL		$ 918,282
PROGRESS SCHEDULE	LS	1.00		$ 8,000
CLEARING SITE	LS	1.00		$ 115,000
CONSTRUCTION LAYOUT	LS	1.00		$ 87,000

PROJECT TOTAL= $ 10,816,158

CONTINGENCIES & ESCALATION (YEAR 2021, 1.1) **CONSTR. ESTIMATE FOR CD= $ 11,897,774**

CONSTRUCTION ENGINEERING AMOUNT (9.5% OF CONSTRUCTION COST)= $ 1,130,289

CONTING. FOR CONSTR. CHANGE ORDER ($205,000+3% OVER $5M) **CHANGE ORDER CONTING.= $ 411,933**

UTILITIES RELOCATIONS BY COMPANIES/OWNERS (9% OF CC)				$ 1,070,800

UTILITY RELOCATION COST FOR CD ESTIMATE $ 1,070,800

SUMMARY

CONSTRUCTION ESTIMATE FOR CD	**$ 11,897,774**
CONSTRUCTION ENGINEERING (CE)	**$ 1,130,289**
CONTINGENCIES	**$ 411,933**
UTILITIES:RELOCATIONS BY COMPANIES	**$ 1,070,800**

TOTAL ESTIMATE: $ 14,510,796

IH ENGINEERS, P.C.
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103 College Road East, 1st Floor, Princeton, NJ 08540
(609) 734-8400, (609) 734-8405 (fax)

Project No.: Route 24 & Columbia Turnpike
Project Desc.:
Page No. of
Calculated By: AB Date 8/8/2017
Checked By: NSL Date 8/9/2017

ALTERNATIVE 2

ITEM DESCRIPTION	Unit	Quantity	Unit Price	Amount
STRIPPING (4"-6" DEPTH)	ACRE	5.00	$ 4,050	$ 20,250
ROADWAY EXC. UNCLASSIFIED	CY	71,806.00	$ 40	$ 2,872,240
			EARTHWORK TOTAL=	**$ 2,892,490**
2 INCH HMA SURF. COURSE & 8 INCH HMA BASE COURSE	LF	15357	80	$ 1,228,560
2 INCH HMA SURF. COURSE & 2 INCH HMA BASE COURSE	LF	4823	16	$ 77,168
			PAVEMENT TOTAL =	**$ 1,305,728**
URBAN AREA	MILE	0.54	$ 544,280	$ 293,911
RAMPS	LF	4,460.00	$ 55	$ 245,300
			DRAINAGE TOTAL=	**$ 539,211**
BEAM GUIDE RAIL	LF	812.50	$ 46	$ 37,375
9" X 16" CONCRETE VERTICAL CURB	LF	1,050.00	$ 35	$ 36,750
RETAINING WALL	SF	26,711.00	$ 110	$ 2,938,210
BLOCK CURB	LF	350.00	$ 30	$ 10,500
TANGENT GUIDE RAIL TERMINAL	UNIT	3.00	$ 2,100	$ 6,300
			INCIDENTAL ITEMS TOTAL=	**$ 3,029,135**
TOP SOIL AND SEEDING	MILE	2.40	$ 112,815	$ 270,756
PLANTING	MILE	2.40	$ 64,500	$ 154,800
			LANDSCAPE TOTAL=	**$ 425,556**
FIELD OFFICE	MILE	1.40	$ 44,260	$ 61,964
MATERIALS FIELD LABORATORY	MILE	1.40	$ 28,970	$ 40,558
EROSION CONTROL DURING CONSTRUCTION	MILE	1.40	$ 64,375	$ 90,125
			GENERAL ITEMS TOTAL=	**$ 192,647**
TRAFFIC SIGNAL	LS	1.00	$ 200,000	$ 200,000
			TRAFFIC SIGNAL TOTAL=	**$ 200,000**
			PROJECT SUBTOTAL=	**$ 8,584,767**
LIGHTING, TRAFFIC STRIPES, SIGNS AND DELINEATORS	LS		3% OF PROJ. SUBTOTAL	$ 257,543
MAINTANANCE OF TRAFFIC	LS		1.5% OF PROJ. SUBTOTAL	$ 128,772
TRAINING	LS		1% OF PROJ. SUBTOTAL	$ 85,848
MOBILIZATION	LS		10% OF PROJ. SUBTOTAL	$ 858,477
PROGRESS SCHEDULE	LS	1.00		$ 8,000
CLEARING SITE	LS	1.00		$ 115,000
CONSTRUCTION LAYOUT	LS	1.00		$ 87,000
			PROJECT TOTAL=	**$ 10,125,406**
CONTINGENCIES & ESCALATION (YEAR 2021, 1.1)			**CONSTR. ESTIMATE FOR CD=**	**$ 11,137,947**
			CONSTRUCTION ENGINEERING AMOUNT (12.2% OF CONSTRUCTION COST)=	**$ 1,358,830**
CONTING. FOR CONSTR. CHANGE ORDER ($205,000+3% OVER $5M)			**CHANGE ORDER CONTING.=**	**$ 389,138**
UTILITIES RELOCATIONS BY COMPANIES/OWNERS (9% OF CC)				$ 1,002,415
			UTILITY RELOCATION COST FOR CD ESTIMATE	**$ 1,002,415**

SUMMARY

CONSTRUCTION ESTIMATE FOR CD	**$ 11,137,947**
CONSTRUCTION ENGINEERING (CE)	**$ 1,358,830**
CONTINGENCIES	**$ 389,138**
UTILITIES:RELOCATIONS BY COMPANIES	**$ 1,002,415**
TOTAL ESTIMATE:	**$ 13,888,330**

IH ENGINEERS, P.C.
www.ihengineers.com

103 College Road East, 1st Floor, Princeton, NJ 08540
(609) 734-8400, (609) 734-8405 (fax)

Project No.: Route 24 & Columbia Turnpike
Project Desc.:
Page No. of
Calculated By: AB Date 8/8/2017
Checked By: NSL Date 8/9/2017

ALTERNATIVE 3

ITEM DESCRIPTION	Unit	Quantity	Unit Price	Amount
STRIPPING (4"-6" DEPTH)	ACRE	1.97	$ 4,050	$ 7,979
ROADWAY EXC. UNCLASSIFIED	CY	20,850.00	$ 40	$ 834,000
BORROW EXCAVATION ZONE 3	CY	10,000.00	$ 20	$ 200,000

EARTHWORK TOTAL= $ 1,041,979

2 INCH HMA SURF. COURSE & 8 INCH HMA BASE COURSE	LF	9122	80	$ 729,760
2 INCH HMA SURF. COURSE & 2 INCH HMA BASE COURSE	LF	13412	16	$ 214,592

PAVEMENT TOTAL = $ 944,352

URBAN AREA	MILE	0.58	$ 544,280	$ 315,682
RAMPS	LF	2,200.00	$ 55	$ 121,000

DRAINAGE TOTAL= $ 436,682

BEAM GUIDE RAIL	LF	237.50	$ 46	$ 10,925
9" X 16" CONCRETE VERTICAL CURB	LF	1,050.00	$ 35	$ 36,750
RETAINING WALL	SF	8,000.00	$ 110	$ 880,000
BLOCK CURB	LF	350.00	$ 30	$ 10,500

INCIDENTAL ITEMS TOTAL= $ 938,175

TOP SOIL AND SEEDING	MILE	1.00	$ 112,815	$ 112,815
PLANTING	MILE	1.00	$ 64,500	$ 64,500

LANDSCAPE TOTAL= $ 177,315

FIELD OFFICE	MILE	1.00	$ 44,260	$ 44,260
MATERIALS FIELD LABORATORY	MILE	1.00	$ 28,970	$ 28,970
EROSION CONTROL DURING CONSTRUCTION	MILE	1.00	$ 64,375	$ 64,375

GENERAL ITEMS TOTAL= $ 137,605

TRAFFIC SIGNAL	LS	1.00	$ 200,000	$ 200,000

TRAFFIC SIGNAL TOTAL= $ 200,000

PROJECT SUBTOTAL= $ 3,876,108

LIGHTING, TRAFFIC STRIPES, SIGNS AND DELINEATORS	LS	3% OF PROJ. SUBTOTAL		$ 116,283
MAINTANANCE OF TRAFFIC	LS	1.5% OF PROJ. SUBTOTAL		$ 58,142
TRAINING	LS	1% OF PROJ. SUBTOTAL		$ 38,761
MOBILIZATION	LS	10% OF PROJ. SUBTOTAL		$ 387,611
PROGRESS SCHEDULE	LS	1.00		$ 6,000
CLEARING SITE	LS	1.00		$ 45,000
CONSTRUCTION LAYOUT	LS	1.00		$ 42,000

PROJECT TOTAL= $ 4,569,905

CONTINGENCIES & ESCALATION (YEAR 2021, 1.1) **CONSTR. ESTIMATE FOR CD= $ 5,026,895**

CONSTRUCTION ENGINEERING AMOUNT (12.2% OF CONSTRUCTION COST)= $ 613,281

CONTING. FOR CONSTR. CHANGE ORDER ($205,000+3% OVER $5M) **CHANGE ORDER CONTING.= $ 205,807**

UTILITIES RELOCATIONS BY COMPANIES/OWNERS (9% OF CC)				$ 452,421

UTILITY RELOCATION COST FOR CD ESTIMATE $ 452,421

SUMMARY

	CONSTRUCTION ESTIMATE FOR CD	**$ 5,026,895**
	CONSTRUCTION ENGINEERING (CE)	**$ 613,281**
	CONTINGENCIES	**$ 205,807**
	UTILITIES:RELOCATIONS BY COMPANIES	**$ 452,421**

TOTAL ESTIMATE: $ 6,298,404

IH ENGINEERS, P.C.
www.ihengineers.com

103 College Road East, 1st Floor, Princeton, NJ 08540
(609) 734-8400, (609) 734-8405 (fax)

Project No.: Route 24 & Columbia Turnpike
Project Desc.:
Page No. of
Calculated By: KS Date 4/15/2020
Checked By: Date

ALTERNATIVE 3 rev

ITEM DESCRIPTION	Unit	Quantity	Unit Price	Amount
STRIPPING (4'-6' DEPTH)	ACRE	2.26	$ 4,050	$ 9,153
ROADWAY EXC. UNCLASSIFIED	CY	7,050.00	$ 50	$ 352,500
BORROW EXCAVATION ZONE 3	CY	10,000.00	$ 20	$ 200,000
			EARTHWORK TOTAL=	**$ 561,653**
2 INCH HMA SURF. COURSE & 8 INCH HMA BASE COURSE	LF	8150	80	$ 652,000
2 INCH HMA SURF. COURSE & 2 INCH HMA BASE COURSE	LF	26000	16	$ 416,000
			PAVEMENT TOTAL =	**$ 1,068,000**
URBAN AREA	MILE	0.58	$ 544,280	$ 315,682
RAMPS	LF	2,200.00	$ 55	$ 121,000
			DRAINAGE TOTAL=	**$ 436,682**
BEAM GUIDE RAIL	LF	237.50	$ 46	$ 10,925
9" X 16" CONCRETE VERTICAL CURB	LF	1,050.00	$ 35	$ 36,750
RETAINING WALL	SF	8,000.00	$ 110	$ 880,000
BLOCK CURB	LF	350.00	$ 30	$ 10,500
			INCIDENTAL ITEMS TOTAL=	**$ 938,175**
TOP SOIL AND SEEDING	MILE	1.00	$ 112,815	$ 112,815
PLANTING	MILE	1.00	$ 64,500	$ 64,500
			LANDSCAPE TOTAL=	**$ 177,315**
FIELD OFFICE	MILE	1.00	$ 44,260	$ 44,260
MATERIALS FIELD LABORATORY	MILE	1.00	$ 28,970	$ 28,970
EROSION CONTROL DURING CONSTRUCTION	MILE	1.00	$ 64,375	$ 64,375
			GENERAL ITEMS TOTAL=	**$ 137,605**
TRAFFIC SIGNAL	LS	1.00	$ 200,000	$ 200,000
			TRAFFIC SIGNAL TOTAL=	**$ 200,000**
			PROJECT SUBTOTAL=	**$ 3,519,430**
LIGHTING, TRAFFIC STRIPES, SIGNS AND DELINEATORS	LS	3% OF PROJ. SUBTOTAL		$ 105,583
MAINTANANCE OF TRAFFIC	LS	1.5% OF PROJ. SUBTOTAL		$ 52,791
TRAINING	LS	1% OF PROJ. SUBTOTAL		$ 35,194
MOBILIZATION	LS	10% OF PROJ. SUBTOTAL		$ 351,943
PROGRESS SCHEDULE	LS	1.00		$ 6,000
CLEARING SITE	LS	1.00		$ 45,000
CONSTRUCTION LAYOUT	LS	1.00		$ 42,000
			PROJECT TOTAL=	**$ 4,157,942**
CONTINGENCIES & ESCALATION (YEAR 2021, 1.1)			**CONSTR. ESTIMATE FOR CD=**	**$ 4,573,736**
			CONSTRUCTION ENGINEERING AMOUNT (12.2% OF CONSTRUCTION COST)=	**$ 557,996**
CONTING. FOR CONSTR. CHANGE ORDER ($205,000+3% OVER $5M)			**CHANGE ORDER CONTING.=**	**$ 192,212**
UTILITIES RELOCATIONS BY COMPANIES/OWNERS (9% OF CC)				$ 411,636
			UTILITY RELOCATION COST FOR CD ESTIMATE	**$ 411,636**

SUMMARY

CONSTRUCTION ESTIMATE FOR CD	**$ 4,573,736**
CONSTRUCTION ENGINEERING (CE)	**$ 557,996**
CONTINGENCIES	**$ 192,212**
UTILITIES:RELOCATIONS BY COMPANIES	**$ 411,636**
TOTAL ESTIMATE:	**$ 5,735,581**

IH ENGINEERS, P.C.
www.ihengineers.com

103 College Road East, 1st Floor, Princeton, NJ 08540
(609) 734-8400, (609) 734-8405 (fax)

Project No.: Route 24 & Columbia Turnpike
Project Desc.:
Page No. of
Calculated By: NSL Date 11/2/2017
Checked By: Date

ALTERNATIVE 4

ITEM DESCRIPTION	Unit	Quantity	Unit Price	Amount
STRIPPING (4"-6" DEPTH)	ACRE	3.50	$ 4,050	$ 14,175
ROADWAY EXC. UNCLASSIFIED	CY	77,107.00	$ 20	$ 1,542,140
BORROW EXCAVATION (PERVIOUS MATERIAL)	CY	48,267.00	$ 30	$ 1,448,010

EARTHWORK TOTAL= $ 3,004,325

ITEM DESCRIPTION	Unit	Quantity	Unit Price	Amount
2 INCH HMA SURF. COURSE & 8 INCH HMA BASE COURSE	LF/lane	27,613.00	$ 80	$ 2,209,040

PAVEMENT TOTAL = $ 2,209,040

ITEM DESCRIPTION	Unit	Quantity	Unit Price	Amount
RAMPS	LF	1,640.00	$ 55	$ 90,200

DRAINAGE TOTAL= $ 90,200

ITEM DESCRIPTION	Unit	Quantity	Unit Price	Amount
BEAM GUIDE RAIL	LF	3,100.00	$ 35	$ 108,500
9" X 16" CONCRETE VERTICAL CURB	LF	10,440.00	$ 25	$ 261,000
CANTILEVER SIGN STRUCTURE	UNIT	1.00	$ 90,000	$ 90,000

INCIDENTAL ITEMS TOTAL= $ 459,500

ITEM DESCRIPTION	Unit	Quantity	Unit Price	Amount
TOPSOIL AND SEEDING (MAIN LINE)	MILE	0.80	$ 112,815	$ 90,252
PLANTING (MAINLINE)	MILE	0.80	$ 64,500	$ 51,600
TOPSOIL, SEEDING, PLANTING (FINGER RAMP)	MILE	0.35	$ 12,500	$ 4,375
TOPSOIL, SEEDING, PLANTING (ACCESS ROAD)	FT	1,800.00	$ 8	$ 14,220

LANDSCAPE TOTAL= $ 160,447

ITEM DESCRIPTION	Unit	Quantity	Unit Price	Amount
FIELD OFFICE	MILE	1.40	$ 44,260	$ 61,964
MATERIALS FIELD LABORATORY	MILE	1.40	$ 28,970	$ 40,558
EROSION CONTROL DURING CONSTRUCTION	MILE	1.40	$ 64,375	$ 90,125

GENERAL ITEMS TOTAL= $ 192,647

PROJECT SUBTOTAL= $ 6,116,159

ITEM DESCRIPTION	Unit	Quantity	Unit Price	Amount
LIGHTING, TRAFFIC STRIPES, SIGNS AND DELINEATORS	LS	3% OF PROJ. SUBTOTAL		$ 183,485
MAINTANANCE OF TRAFFIC	LS	3% OF PROJ. SUBTOTAL		$ 183,485
TRAINING	LS	1% OF PROJ. SUBTOTAL		$ 61,162
MOBILIZATION	LS	9% OF PROJ. SUBTOTAL		$ 550,454
PROGRESS SCHEDULE	LS			$ 6,000
CLEARING SITE	LS			$ 45,000
CONSTRUCTION LAYOUT	LS			$ 42,000

PROJECT TOTAL= $ 7,187,744

CONTINGENCIES & ESCALATION (YEAR 2021, 1.1) **CONSTR. ESTIMATE FOR CD= $ 7,906,519**

CONSTRUCTION ENGINEERING AMOUNT (16.2% OF CONSTRUCTION COST)= $ 1,280,856

CONTING. FOR CONSTR. CHANGE ORDER ($25,000+4% OVER $500K) **CHANGE ORDER CONTING.= $ 321,261**

ITEM DESCRIPTION	Unit	Quantity	Unit Price	Amount
UTILITIES RELOCATIONS BY COMPANIES/OWNERS (2% OF CC)				**$ 158,130**

UTILITY RELOCATION COST FOR CD ESTIMATE $ 158,130

SUMMARY

CONSTRUCTION ESTIMATE FOR CD	**$ 7,906,519**
DESIGN ENGINEERING	**$ 948,782**
CONSTRUCTION ENGINEERING (CE)	**$ 1,280,856**
CONTINGENCIES	**$ 321,261**
UTILITIES:RELOCATIONS BY COMPANIES	**$ 158,130**

TOTAL ESTIMATE: $ 10,615,548

ROW COST ESTIMATE STATING THAT THESE COSTS ARE FROM TAX RECORDS ONLY AND DO NOT INCLUDE ADDITIONAL FEES ASSOCITED WITH ROW

ROW COST

Alternative 1

	Block	Lot	Area	Land Value	Purchase	Cost
1	9101	4	16.800	$8,421,000	0.321	$160,901
2	9201	12	2.700	$260,800	0.010	$966
3	1201	1	16.722	$2,172,200	Access	$0
4	1201	1	16.722	$2,172,200	0.093	$12,081
5	1201	1	16.722	$2,172,200	0.524	$68,068
6	4802	1	8.490	$4,970,000	2.273	$1,330,602
7	4802	2	3.500	$760,000	3.300	$716,571
8	4902	1	8.690	$2,247,500	1.311	$339,065
9	4802	2	3.500	$760,000	1.081	$234,731
10	4903	1	0.451	$146,600	0.451	$146,600
					9.364	$3,009,585

Alternative 2

	Block	Lot	Area	Land Value	Purchase	Cost
1	9101	4	16.800	$8,421,000	0.316	$158,395
2	9201	12	2.700	$260,800	0.012	$1,159
3	1201	1	16.722	$2,172,200	Access	$0
4	1201	1	16.722	$2,172,200	0.094	$12,211
5	1201	1	16.722	$2,172,200	0.295	$38,321
6	4802	1	8.490	$4,970,000	2.126	$1,244,549
7	4802	2	3.500	$1,240,300	3.500	$1,240,300
8	4902	1	8.690	$2,247,500	1.272	$328,978
9	4902	2	1.080	$377,600	1.080	$377,600
10	4903	1	0.451	$146,600	0.451	$146,600
					9.146	$3,548,113

Alternative 3

	Block	Lot	Area	Land Value	Purchase	Cost
1	9101	4	16.800	$8,421,000	0.321	$160,901
2	9201	12	2.700	$260,800	0.010	$966
3	9502	1	0.662	$219,200	0.100	$33,112
4	9502	2	1.084	$232,500	0.038	$8,150
5	9502	3	1.757	$244,200	0.036	$5,004
6	1201	1	16.722	$2,172,200	Access	$0
7	1201	1	16.722	$2,172,200	0.093	$12,081
8	1201	1	16.722	$2,172,200	0.456	$59,235
9	4802	1	8.490	$4,970,000	0.269	$157,471
10	4802	1	8.490	$4,970,000	1.882	$1,101,713
11	4802	2	3.500	$1,240,300	3.500	$1,240,300
12	4902	1	8.690	$2,247,500	0.391	$101,125
					7.096	$2,880,057

Alternative 3 (Revised)

	Block	Lot	Area	Land Value	Purchase	Cost
1	9101	4	16.800	$8,421,000	0.200	$100,150
2	9201	12	2.700	$260,800	0.028	$2,666
3	9502	1	0.662	$219,200	0.054	$17,947
4	9502	2	1.084	$232,500	0.049	$10,402
5	9502	3	1.757	$244,200	0.032	$4,420
6	1201	1	16.722	$2,172,200	3.870	$502,664
7	4802	1	8.490	$4,970,000	0.259	$151,734
8	4802	1	8.490	$4,970,000	1.882	$1,101,713
9	4802	2	3.500	$1,240,300	0.056	$19,845
10	4902	1	8.690	$2,247,500	0.435	$112,504
					6.864	$2,024,044

Alternative 4

	Block	Lot	Area	Land Value	Purchase	Cost
1	1201	6	64.800	$14,210,000	5.630	$1,234,603
					5.630	$1,234,603

Appendix “S”

Alternatives Matrix

CONCEPT DEVELOPMENT REPORT
Improvements at Route 24 and Columbia Turnpike Interchange
Morris Township and Hannover Township, Morris County, New Jersey
Alternatives Matrix

Alternatives	Description	Meets Purpose and Need	Construction Cost *	ROW Acquisition Required	Benefits	Disadvantages
“No-Build”	No work will be completed to extend the useful life of the structure.	No	**$0.00**	0		
Alternative 1	An overpass will be constructed over Columbia Turnpike diverting traffic from the Route 24 EB ramp to Columbia Turnpike WB to a new signalized intersection on Park Avenue approximately 600’ south of the Columbia Turnpike intersection. The existing ramp from Route 24 EB to Columbia Turnpike WB will be closed. A new ramp connecting the new signalized intersection at Park Avenue NB to the Ramp leading to Route 24 EB will also be constructed.	No	**$14,510,796**	10 Parcels 9.565 ($3,009,585)	• Eliminates the weaving conflict between the Route 24 EB ramp (Exit 2A) and Columbia Turnpike WB traffic. • Reduces congestion at the Columbia Turnpike and Park Avenue intersection, including the WB Columbia Turnpike left turn onto Park Avenue SB.	• There will be three moves on Columbia Turnpike WB very close to each other namely the Exit to Route 24 EB, the Exit to Park Avenue via the flyover ramp and at the intersection of Park Avenue NB, which may create confusion to motorist. • Right-of-way will be required. • Environmental issues will be created. • Will be costly due to the new structure, land acquisition and environmental issues. • Will add another signal on Park Avenue approximately 600 feet south of the Columbia Turnpike signal. • Based on NJDEP Website, the widening on Park Avenue SB involves groundwater contamination, critical environmental and historic sites, and the highland planning area. All the constraints will need investigation, permits and necessary measures to satisfy the permit conditions which will increase time and cost. • At the intersection of Columbia Turnpike and Park Avenue, multiple movements will continue to operate at LOS ‘F’ during both peak hours.
Alternative 2	A new two lane modern roundabout will be constructed to the south of Columbia Turnpike connecting Columbia Turnpike EB, Park Avenue and Route 24 EB. The ramp from Route 24 EB to Columbia WB will be removed and the ramp from Columbia Turnpike WB to Route 24 EB will be pushed further north to provide greater weave distance to the ramp from Route 24 EB to Columbia Turnpike EB. The existing ramps to and from Columbia Turnpike EB will be relocated to the proposed roundabout. Finally a new traffic signal will be provided at the new ramp intersection at Park Avenue.	No	**$13,888,330**	10 Parcels 9.146 ($3,548,113)	• Eliminates the weaving conflict between the Route 24 EB ramp (Exit 2A) and Columbia Turnpike WB traffic. • Reduces congestion at the Columbia Turnpike and Park Avenue intersection, including the WB Columbia Turnpike left turn onto Park Avenue SB. • Modern roundabouts typically will provide safe operation with low crash severity.	• Public acceptance. • During the morning peak hour, the WB roundabout approach will operate at LOS ‘F’. Weaving movement on Route 24 EB between ramps will also operate at LOS ‘F’. • Right-of-way will be required. • Environmental issues will be created. • Will be costly due to land acquisition and environmental issues. • Will add another signal on Park Avenue approximately 600 feet south of the Columbia signal. • Based on NJDEP Website, the widening on Park Avenue SB has groundwater contamination, critical environmental and historic sites, and the highland planning area. All the constraints will need investigation, permits and necessary measures to satisfy the permit conditions which will increase time and cost. • At the intersection of Columbia Turnpike and Park Avenue, multiple movements will continue to operate at LOS ‘F’ during both peak hours.
Alternative 3	A barrier or island will be constructed on Columbia Turnpike WB to the east of the entering traffic from Route 24 EB Ramp to prevent these vehicles from weaving over to the left onto Park Avenue SB. The ramps to and from Columbia Turnpike EB and Route 24 EB will be modified to bring traffic to Park Avenue at a new signalized intersection. The modifications will accommodate the vehicles that can no longer turn left at Park Avenue from Columbia Turnpike WB. The ramp from Columbia Turnpike EB to Route 24 EB will be closed and traffic diverted to the new ramp connection at Park Avenue.	No	**$6,298,404**	12 Parcels 7.096 ($2,880,057)	• Eliminates the weaving conflict between the Route 24 EB ramp (Exit 2A) and Columbia Turnpike WB traffic. • Reduces congestion at the Columbia Turnpike and Park Avenue intersection, including the WB Columbia Turnpike left turn onto Park Avenue SB	• Weaving movement on Route 24 EB between ramps will operate at LOS ‘F’ during the morning peak hour. • Right-of-way will be required. • Environmental issues will be created. • Will be costly due to land acquisition and environmental issues. • Will add another signal on Park Avenue approximately 600 feet south of the Columbia signal. • Based on NJDEP Website, the widening on Park Avenue SB has groundwater contamination, critical environmental and historic sites, and the highland planning area. All the constraints will need investigation, permits and necessary measures to satisfy the permit conditions which will increase time and cost. • At the intersection of Columbia Turnpike and Park Avenue, multiple movements will continue to operate at LOS ‘F’ during both peak hours.

Alternative 3Rev (PPA)	This alternative was developed as the property which was to be purchased for alternative 3 is no longer available. The property owner was granted a permit to build the new hotel. A barrier or island will be constructed on Columbia Turnpike WB to the east of the entering traffic from Route 24 EB Ramp to prevent these vehicles from weaving over to the left onto Park Avenue SB. The ramps to and from Columbia Turnpike EB and Route 24 EB will be modified to bring traffic to Park Avenue at a new signalized intersection. The modifications will accommodate the vehicles that can no longer turn left at Park Avenue from Columbia Turnpike WB. The ramp from Columbia Turnpike EB to Route 24 EB will be closed and traffic diverted to the new ramp connection at Park Avenue.	No	**$5,735,581**	10Parcels 6.864 ($ 2,024,044)	• Eliminates the weaving conflict between the Route 24 EB ramp (Exit 2A) and Columbia Turnpike WB traffic. • Reduces congestion at the Columbia Turnpike and Park Avenue intersection, including the WB Columbia Turnpike left turn onto Park Avenue SB. • The new ramp will be constructed over an existing parking lot reducing the quantity of new impervious surface. • The new ramp will be an additional 350' further south of the intersection with Columbia Turnpike than Alternative 3 providing less conflict with the two signalized intersections.	• Weaving movement on Route 24 EB between ramps will operate at LOS 'F' during the morning peak hour. • Right-of-way will be required. • Will add another signal on Park Avenue approximately 950' south of the Columbia signal. • At the intersection of Columbia Turnpike and Park Avenue, multiple movements will continue to operate at LOS 'F' during both peak hours.
Alternative 4	This alternative involves a new "half-interchange" on the Route 24 east of the Columbia Turnpike interchange, with on and off ramps to the EB roadway to Campus Drive. Campus Drive intersects Park Avenue (CR 623) at a point roughly ¾ mile south of Columbia Turnpike	No	**$7,076,213**	1 Parcel 5.630 ($1,234,603)	• Provides an alternative for the traffic exiting Route 24 EB destined for Park Avenue SB which may reduce the weaving conflict on Columbia Turnpike. • Reduces congestion at the Columbia Turnpike and Park Avenue intersection.	• Creates a new weaving movement on Route 24 EB between the existing and proposed ramps that will operate at LOS 'F'. • Campus Drive serves as an access roadway for several large office buildings with multiple access driveways. Access is not allowed on ramps as per the Access Management Code. • Right-of-way will be required. If the driveways are revoked for the office buildings they will become land locked and therefore a problem for the Department. • Environmental issues will be created including impacting an existing drainage basins and wetland. • Will be costly due to land acquisition and environmental issues. • The new development will be within in Flood Hazard Area/Airport Hazard Area.

- Construction cost includes design, utility relocation and construction. ROW and Access costs are not included in the Construction Cost.

Appendix “T”

Risk Register

NJDOT RISK MANAGEMENT

PROJECT RISK REGISTER

Rte 24 and Columbia Turnpike Interchange

Project Manager:	Edward D'Arcy
Designer:	IH Engineers, P.C.
NJDOT Project Job No.:	
NJDOT UPC #:	154330
Municipality(ies):	Morris Township & Hannover Township
County(ies):	Morris
Initial Register Date:	
Last Register Update:	10/26/2016

Project Name: Improvementa at Route 24 & Columbia Turnpike Interchange

Risk Rank & ID		Risk Statement & Category			Risk Analysis Matrix						Risk Response Strategy & Response Planning				
			Risk Category			Risk Impact									
Risk Rank	Unique ID #	Risk Statement	Initial Risk Owner	Risk May Occur In	Risk Probability	Schedule	Cost	Schedule Score	Cost Score	Final Score	Risk Response Strategy	Risk Response Action Plan	Final Risk Owner	Action Plan Status	Risk Last Updated
1	1	As a result of uncertain quantities and unit costs during CD (and PE), variations to the cost estimate may occure which could lead to lack of available funding	Project Management	Preliminary Engineering	5 - Very High	4 - Moderate	4 - Moderate	20	20	40	Mitigate Threat	Development of the cost estimate using the CCEG ans Trns-port, along with updates during each project phase, should help reduce quantity and unit cost uncertinity	Designer and NJDOT	Plan To Be Developed	
9	2	As a result of weather or backlogs, delays obtaining aerial mapping and supplimental field survey may occure which would lead to schedule delay	Survey	Preliminary Engineering	1 - Very Low	2 - Low	1 - Very Low	2	1	3	Mitigate Threat	The schedule should be developed such that aerial/ground survey are performed concurrently in the fall. Include a schedule contingency to account for unanticipated weather delays, such as snow.	Designer and NJDOT	Plan To Be Developed	
2	3	As a result of aerial electric primary crossing in the vicinity of the project, additional utility relocations could be required thus delaying project schedule and increasing cost	Utilities	Preliminary Engineering	2 - Low	4 - Moderate	2 - Low	8	4	12	Mitigate Threat	Existing and proposed aerial electrical primary proximities should be investigated during Preliminary Engineering phase to ensure the required offsets and clearances are met.	Designer and NJDOT	Plan To Be Developed	
4	4	As a result of delays in approval of the interchange modification report, delays completing PE may occure, which would postpone initiation of FD	Project Management	Preliminary Engineering	2 - Low	2 - Low	2 - Low	4	4	8	Mitigate Threat	Incorporate conceptual signing plan into the draft Interchange Modification report as soon as feasible and submit revised draft report for review to concern authority	Designer and NJDOT	Plan To Be Developed	
4	5	As a result of construction, unacceptable congestion/queuing may occure along the detour/construction areas which would lead to late TCP changes	Project Management	Construction	2 - Low	2 - Low	2 - Low	4	4	8	Avoid Threat	A TMP needs to be developed in PE phase to analyze the TCP and detours, identify potential congestion areas and mitigation measures. These measures will be implemented and monitored during construction	Designer and NJDOT	Plan To Be Developed	
4	6	As a result of property owner(s) disagreements on proposed access and ROW changes, delays or changes to cost to cure reports and ROW process process may occure, which would lead to schedule and cost increases.	Right of Way	Final Design	2 - Low	2 - Low	2 - Low	4	4	8	Mitigate Threat	The community, stakeholders and affacted property owners should continue to be involved in the PE phase of the project so that ROW acquisition and access changes can occure more smoothly in FD	NJDOT	Plan To Be Developed	
4	7	As a result of detalied wetland delineation, Highlands Planning Area, stormwater mangement requirements, wetland mitigations, presence of active NJDEP enforcement cases & historic field, involvement with regulated material or contaminated site etc which are unforeseen environmental conditions may occure in design, which would lead to new environmental impacts and/or change	Environmental	Final Design	2 - Low	2 - Low	2 - Low	4	4	8	Mitigate Threat	Wetland delineation should occure in PE when base mapping is prepared to identify the exact areas and impacts of the PPA	NJDOT	Plan To Be Developed	
4	8	As a result of additional new pavement added to the proposed improvements, stormwater management is triggered thus increasing project cost and delaying project schedule	Drainage	Preliminary Engineering	2 - Low	2 - Low	2 - Low	4	4	8	Mitigate Threat	Current anticipated net impervious and disturbance areas are well above the maximum 0.25 acre and 1.00 acre allowable limits. Area delineation should occure in PE when base mapping is prepared to identify the exact areas and impacts of the PPA	Designer and NJDOT	Plan To Be Developed	
2	9	As a result of aerial utilities crossing the existing and proposed traffic signal standards, mast arms, and lighting potentially leading to unforeseen utility conflicts which would lead to schedule delays and cost increases.	Utilities	Preliminary Engineering	2 - Low	4 - Moderate	2 - Low	8	4	12	Mitigate Threat	Estimated utilities relocation need to be determined as part of the Preliminary Engineering phase for Preliminary Preferred Alternative (PPA) in order to ensure feasibilty and account for utilities costs.	Designer and NJDOT	Plan To Be Developed	

Appendix “U”

Quantitative Risk Analysis Report

(Not Applicable)

Appendix “V”

Utility Risk Assessment Plan

(Not Applicable)

Appendix "W"

Complete Streets Checklist

NJDOT Complete Streets Checklist

Background

The New Jersey Department of Transportation's Complete Streets Policy promotes a "comprehensive, integrated, connected multi-modal network by providing connections to bicycling and walking trip generators such as employment, education, residential, recreational and public facilities, as well as retail and transit centers." The policy calls for the establishment of a checklist to address pedestrian, bicyclist and transit accommodations "with the presumption that they shall be included in each project unless supporting documentation against inclusion is provided and found to be justifiable."

Complete Streets Checklist

The following checklist is an accompaniment to NJDOT's Complete Streets Policy and has been developed to assist Project Managers and designers develop proposed alternatives in adherence to the policy. Being in compliance with the policy means that Project Managers and designers plan for, design, and construct all transportation projects to provide appropriate accommodation for bicyclists, pedestrians, and transit users on New Jersey's roadways, in addition to those provided for motorists. It includes people of all ages and abilities. The checklist applies to all NJDOT projects that undergo the Capital Project Delivery (CPD) Process and is intended for use on projects during the earliest stages of the Concept Development or Preliminary Engineering Phase so that any pedestrian or bicycle considerations are included in the project budget. The Project Manager is responsible for completing the checklist and must work with the Designer to ensure that the checklist has been completed prior to advancement of a project to Final Design.

Using the Complete Streets Checklist

The Complete Streets Checklist is a tool to be used by Project Managers and designers throughout Concept Development and Preliminary Engineering to ensure that all developed alternatives reflect compliance with the Policy. When completing the checklist, a brief description is required for each **"Item to be Addressed"** as a means to document that the item has been considered and can include supporting documentation.

CONCEPT DEVELOPMENT CHECKLIST

Instructions:
For each box checked, please provide a brief description for how the item is addressed, not addressed or not applicable and include documentation to support your answer.

Item to be Addressed	Checklist Consideration	YES	NO	N/A	Required Description
Existing Bicycle, Pedestrian and Transit Accommodations	Are there accommodations for bicyclists, pedestrians (including ADA compliance) and transit users included on or crossing the current facility? **Examples include (but are not limited to):** Sidewalks, public seating, bike racks, and transit shelters	☐	☒	☐	Sidewalk exists on North-East corner of the intersection. There are no facilities like public seating, bike racks and transit shelters on Park Avenue and Columbia Turnpike.
Existing Bicycle and Pedestrian Operations	Has the existing bicycle and pedestrian suitability or level of service on the current transportation facility been identified?	☐	☒	☐	There are limited to no shoulders and limited side walk along the project area.
	Have the bicycle and pedestrian conditions within the study area, including pedestrian and/or bicyclist treatments, volumes, important connections and lighting been identified?	☐	☒	☐	There are no adequate existing facilities for bicycle and pedestrian
	Do bicyclists/pedestrians regularly use the transportation facility for commuting or recreation?	☐	☒	☐	The limited bus service is to the office complexes.
	Are there physical or perceived impediments to bicyclist or pedestrian use of the transportation facility?	☐	☒	☐	There are no physical or perceived impediments to cyclists or pedestrians.
	Is there a higher than normal incidence of bicyclist/pedestrian crashes within the study area?	☐	☒	☐	There are no incidences of cyclist/pedestrian crashes recorded within the study area

Item to be Addressed	Checklist Consideration	YES	NO	N/A	Required Description
	Have the existing volumes of pedestrian and/or bicyclist crossing activity at intersections including midblock and nighttime crossing been collected/provided?	☐	☒	☐	There are no existing cyclist/pedestrian volumes
Existing Transit Operations	Are there existing transit facilities within the study area, including bus and train stops/stations?	☒	☐	☐	There are limited Bus services off Park Avenue, Bus stops at Park Place and Campus Drive.
	Is the transportation facility on a transit route?	☐	☒	☐	This is a local service Morris – Florham Park-Madison.
	Is the transportation facility within two miles of "park and ride" or "kiss and go" lots?	☐	☒	☐	There is a RR station (Convent Station on Morris and Essex Line)
	Are there existing or proposed bicycle racks, shelters, or parking available at these lots or transit stations? Are there bike racks on buses that travel along the facility?	☒	☐	☐	There are existing bicycle racks at Madison Train Station
Existing Motor Vehicle Operations	Are there existing concerns within the study area, regarding motor vehicle safety, traffic volumes/congestion or access?	☒	☐	☐	There are safety concerns with the weave from vehicles exiting 24 EB to Park Avenue SB and the volumes in the intersection during the peak periods.
Existing Truck/Freight Operations	Are there existing concerns within the study area, regarding truck/freight safety, volumes, or access?	☐	☒	☐	No concerns with the truck traffic or volume.
Existing Access and Mobility	Are there any existing access or mobility considerations, including ADA compliance?	☒	☐	☐	There are no pedestrian crossings or ADA compliant curb ramps within the intersection. There

Item to be Addressed	**Checklist Consideration**	**YES**	**NO**	**N/A**	**Required Description**
					are no bicycle lanes within the project limits.
	Are there any schools, hospitals, senior care facilities, educational buildings, community centers, residences or businesses of persons with disabilities within or proximate to the study area?	☒	☐	☐	Normandy Elementary School – 1.2 mi The Morristown – Beard School – 1.5 mi Salem Drive Elementary School – 1.5 mi The Academy of Saint Elizabeth - Catholic Girls School – 1.6 mi Whippany Park High School - Public – 1.7 mi Woodland Avenue Elementary School – 2.1 mi St. Elizabeth College – 1.4 mi Drew University – 2.5 mi Fairleigh Dickinson University – 2.7 mi are within the proximate to the study area.
Land Usage	Have you identified the predominant land uses and densities within the study area, including any historic districts or special zoning districts?	☒	☐	☐	Residential in the NW quadrant. Townhouses under construction in the SW quadrant. The remainder is commercial.
	Is the transportation facility in a high-density land use area that has pedestrian/bicycle/motor vehicle and transit traffic?	☒	☐	☐	The facility accomodates motor vehicle and transit traffic, however, it is not

Item to be Addressed	Checklist Consideration	YES	NO	N/A	Required Description
					compatible with pedestrians and cyclists
Major Sites	Have you identified the major sites, destinations, and trip generators within or proximate to the study area, including prominent landmarks, employment centers, recreation, commercial, cultural and civic institutions, and public spaces?	☒	☐	☐	Jets Training Camp, Morristown Airport, Numerous office buildings and downtown Florham Park, Madison and Morristown.
Existing Streetscape	Are there existing street trees, planters, buffer strips, or other environmental enhancements such as drainage swales within the study area?	☒	☐	☐	There are street trees, planters, buffer strips or other environmental enhancement.
Existing Plans	Are there any comprehensive planning documents that address bicyclist, pedestrian or transit user conditions within or proximate to the study area? **Examples include (but are not limited to):** • SRTS Travel Plans • Municipal or County Master or Redevelopment Plan • Local, County and Statewide Bicycle and Pedestrian Plans • Sidewalk Inventories • MPO Transportation Plan • NJDOT Designated Transit Village	☒	☐	☐	The following study reports are available: 1. Florham Park Local Traffic Study – 2027 Transportation Needs Assessment Study. 2. Route 24 Interchange and Columbia Turnpike – smart Solution study. 3. Circulation Plan Element – Township of Hanover Master Plan 4. Review of Existing & Future Conditions to various Intersections due to the potential

Item to be Addressed	Checklist Consideration	YES	NO	N/A	Required Description
					Redevelopment of the Former Exxon Research facility.

PROJECT MANAGER SIGN-OFF

Statement of Compliance	YES	NO	If NO, Please Describe Why (refer to Exemptions Clause)
The Preliminary Preferred Alternative (PPA) accommodates bicyclists and pedestrians as set forth in the New Jersey Department of Transportation's Complete Streets Policy.	☐	☐	

Appendix “X”

Life Cycle Cost Analyses

(Not Applicable)

Appendix “Y”

Systems Engineering Review Form

(Not Applicable)

Appendix “Z”

Preliminary Engineering Public Involvement Action Plan

PUBLIC INVOLVEMENT ACTION PLAN (PIAP)

Improvements at Route 24 and Columbia Turnpike Interchange
Morris Township, Borough of Florham and Hanover Township
Morris County, New Jersey

PURPOSE:
The purpose of this project is to develop recommendations that would improve the traffic flow between the Route 24 EB Ramp 2A and the Columbia Turnpike intersection with Park Avenue along with providing improvements to the operation of the intersection that could be investigated further.

PROJECT HISTORY:
Operational Deficiency:

The Route 24 EB Ramp 2A merges with Columbia Turnpike approximately 650’ east of the signalized intersection of Columbia Turnpike and Park Avenue. At this intersection there is a heavy AM left turn movement on the Columbia Turnpike WB approach that currently utilizes a double left turn lane.

Columbia Turnpike WB is impacted by the vehicles entering from Route 24 EB Ramp 2A weaving to the left turn lanes to Park Avenue SB. There is inadequate length for this movement to operate smoothly. This creates congestion that backs up onto the Route 24 mainline during the morning peak.

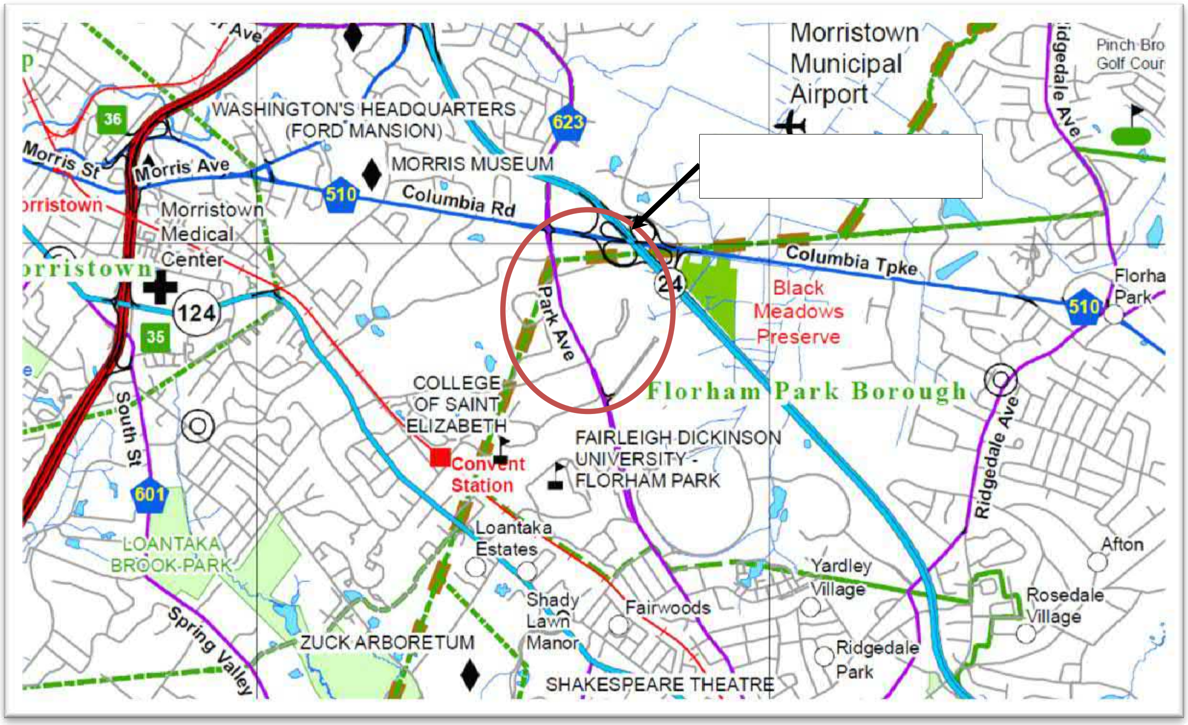
The intersection of Columbia Turnpike and Park Avenue operates at or close to capacity during both peak hours. During the morning peak hours, the WB left and SB through movements operate at unacceptable levels of service. During the evening peak hour, the NB approach operates at marginal levels of service.

DATA COLLECTION:
During this study the information was collected from NJDOT management system units especially from CMS, Value Engineering, ROW, Bureau of Landscape Architecture and Environmental Solutions, crash data, and as-built plans.

CRASH DATA:
Crash Data were obtained from NJDOT and county personals. As the project is not on NJDOT road, the crash analysis was not available. The following response from NJDOT Safety Management System:

Route 24, MP 2.09, EB Ramp to CR 510 is within limits of Route 24, MP 0.2 to 2.20, roadway segment which is ranked #69 on our preliminary 2015 NJDOT Corridor Segment List (2011-2013 crash data). This list has not been approved to date but we expect final approval soon. We do not expect the ranking to change significantly. Upon final approval, we will provide you with the final ranking.

In response to your Safety Management System ranking request for CR 510 (Columbia Avenue), Park Avenue to Route 24, MP 14.23 to 14.60, and the signalized intersection of Columbia Avenue and Park Avenue, MP 14.23, Hanover and Morris Townships, Morris County, we are unable to provide a ranking. Our Safety Management System provides rankings for locations under the state's jurisdiction, this location, per SLD, appears to be under the jurisdiction of the county.



Project Location Map

PIAP GOALS:

Public participation is required to ensure that the community's issues and concerns are identified and addressed in the study outcome and consequently achieve community "ownership" of the proposed project. Public participation is a critical element in the successful implementation of the NJDOT Transportation Program. The PIAP goals are:

- Promote an on-going public partnership between the Department and the community where the project is located.
- Ensure early, frequent and continuous consultation with the public, notification of the affected parties, and provide opportunities for citizen input in the identification of the solutions.
- Assist in building public support for, and agreement on the problem definition.
- Identify early in the process any potential "fatal flaws" that would prevent the advancement of the project or its ability to adequately address the identified problem(s) and the identification of potential impacts associated with each identified solutions.

The PIAP is intended to establish a public involvement process that is dynamic in nature so that it can evolve with the progress of the project, and serve as a framework for Public Involvement through the other phases of project development.

PIAP IMPLEMENTATION:

The Concept Development phase of the project development includes the collection, review and analysis of background data and existing physical features; the development of alternatives; and the selection the PPA.

The proposed public involvement process during the Preliminary Engineering Phase is outlined as follows:

Communication Methods

1. Develop and maintain a contact/mailing list of key project stakeholders, including, but not limited to, County and Township Officials, property owners, businesses, neighborhood associations, civic and cultural groups, environmental organizations, associations of low income, minority, elderly, and disabled constituents, etc. An initial stakeholders list can be found on page 6 (six) of this document. Stakeholders may be added throughout the project process as pertinent individuals/groups become evident.
2. Investigate the need for a Community Advisory Committee and/or a Business Advisory Committee to allow for efficient coordination between the community and its businesses with the NJDOT.
3. Develop visualization techniques, such as display boards, site photographs and traffic simulations prior to meetings to be utilized, where appropriate, to illustrate various concepts. Prepare handouts/fact sheets for distribution for each meeting summarizing the project status, various alternatives and eventually the PPA.
4. Identify and develop appropriate communication methods based on the results of the Environmental Justice Screening and input from OCR that may include, where appropriate, handouts/fact sheets in foreign languages, notices in foreign language newspapers, availability of interpreters, etc.

Meetings

1. If deemed necessary, hold smaller key stakeholder meetings with property owners, businesses, neighborhood associations, Parent Teacher Associations, civic and cultural groups, environmental organizations, associations of low income, minority, elderly, and disabled constituents, etc., who might be impacted by the project.
2. Hold a Local Officials Briefing – Governing Body to present the PPA to the Morris Township, Borough of Florham and Hanover Township for their acceptance and to request a Resolution of Support from each entity for the project. Minutes of the meeting will be prepared and distributed to the attendees for comment.
3. Hold Public Information Center (PIC) to solicit public comments on the project. Minutes of the meeting will be prepared and distributed for comment.

Evaluate the Public Involvement and make recommendations for the (Final Design Phase). This will ensure that the public involvement efforts remain seamless from one project development phase to another.

Preliminary Engineering Meeting Schedule:

Activity	Target Audience	Objective	Tentative
Local Officials Briefing – Governing Body	County and Municipal Officials	Present the project to officials for their acceptance; Request a Resolution of Support	TBD
Public Information Center (PIC)	General Public, impacted and interested parties, key stakeholders, etc.	Present project and solicit comments	TBD

PIAP DELIVERABLES:

Meeting Minutes:

Minutes will be prepared for all public involvement meetings. The minutes will be comprehensive and include an action item list. The minutes will be completed within five (5) business days of the meeting and distributed to all of the attendees.

Display Boards:

Display boards will be utilized to illustrate the proposed improvements to the local officials and the public. Project display boards may include project aerials and Preliminary Engineering Plans.

KEY PROJECTS STAKEHOLDERS

The following is a list of the key stakeholders identified to date for this project:

Morris County		
Christopher Vitz – Engineer	973-285-6758	cvitz@co.morris.nj.us
Danielle Ferland - Asst. Bridge Engineer	973-829-8622	dferland@co.morris.nj.us
Morris Township		
Peter Mancuso - Twp. Committee	973-704-1937	mancuso@att.net
Jim Slate	973-326-7443	jslate@morristwp.com
Lt. Ed Conrads - Morris Twp. PD	973-326-7454	econrads@mtpd1422.com
Mark Osterhoudt -Morris Twp. PD	973-326-7436	mosterhoudt@mtpd1422.com
Jesse Kaar - Morris Twp. FD	973-326-7462	jkaar@morristwp.com
Borough of Florham Park		
Mark Taylor - Mayor	973-410-5302	mtaylor@fpboro.net
Michael Sgaramella - Engineer	973-410-5473	msgaramella@fpboro.net
Chief Robert Treiber - Florham Park PD	973-377-2200	532@fppd.net
Joseph Orlando - Florham Park PD	973-410-5440	545@fppd.net
Hanover Township		
Dave Leo – Engineering	973-428-2489	dleo@hanovertownship.com
Bryan Pilipie - Hanover PD	973-428-2512	bpilipie@hanoverpolice.com
Borough of Chatham		
Steve Williams – Administrator	973-701-6807	swilliams@chathamborough.org
Borough of Madison		
Robert Vogel – Engineer	973-593-3060	vogelr@rosenet.org
Whippany Township		
Joe Cortright - Whippany FD	973-703-0285	jcortright@whippanyfire.com

Stakeholders may be added throughout the project as pertinent individuals/groups become evident.

Concurrence by

Office of Community and Constituent Relations Date
Anthony Sytko 609-530-2110 Anthony.sytko@dot.nj.gov

Project Manager, Division of Project Management (DPM) Date
Ed D’Arcy 609-530-3631 Edward.darcy@dot.nj.gov

Appendix “AA”

Preliminary Engineering Scope Statement

NJDOT Scope Statement

Preliminary Engineering

Concept Development Report
Improvements at
Route 24 and Columbia Turnpike Interchange
Morris Township, Borough of Florham and Hannover Township
Morris County, New Jersey

Purpose: The Preliminary Engineering Scope Statement lists the proposed project's deliverables and the activities required to create those deliverables. The scope statement also provides a common understanding of the proposed project's scope to stakeholders, subject matter experts, and the designer and lists the proposed project's major objectives. It enables the Project Manager to perform more detailed planning, it helps guide the design team's work during execution, and provides the baseline for evaluating whether change requests or additional work are contained within or outside the proposed project's boundaries.

Notes: The intent of the Preliminary Engineering (PE) Scope Statement is to provide useful project information to designers who are interested in becoming the designer of record for PE and possibly Final Design and Construction for this project. In addition, it will be used to solicit a man-hour estimate and cost proposal. The PE Scope Statement identifies the key elements of PE that are necessary to advance the proposed project to the Final Design (FD) Phase.

The PE Scope Statement is developed by the Division of Project Management (DPM) Project Manager and the Concept Development (CD) Designer near the conclusion of CD, prior to requesting the services of a designer to perform PE. The Scope of Work section is approved by the appropriate Subject Matter Experts (SME).

Section 1 of the document focuses on Proposed Project Identification Information and CD data including the location and description. Section 2 of the document specifies the Scope of Work for PE.

PROPOSED PROJECT IDENTIFICATION INFORMATION

PROPOSED PROJECT SPECIFICS

Proposed Project Name	**Limits**
Concept Development Report Improvements at Route 24 and Columbia Turnpike Interchange, Morris Township, Borough of Florham and Hanover Township Morris County, New Jersey	CR 623 (Park Avenue) - MP 1.57 to MP 2.34 Route 510 (Columbia Turnpike) - MP 14.06 to MP 14.60
NJDOT Project Manager	**NJDOT Executive Regional Manager**
Edward D'Arcy	Atul Shah
Counties	**Municipalities**
Morris Select County 2 Select County 3	Morris Township Hannover Township Borough of Florham Park
UPC Number	154330
DB Number	15433
Legislative District(s)	25 27 _____
Congressional District (s)	11 _____ _____
Route	Route 510, CR 623 and NJ Route 24
Start Milepost	_____
End Milepost	_____
Alternate Route	_____

	_____
	_____
	FY 2016-2017 Study and Development Program
	-
	6 - Intersection Improvements
	NJTPA

PROPOSED PROJECT ESTIMATE

List the Proposed Project estimates for each category from Concept Development.

ROW	$
Utility Relocation	$ 452,421.00
Construction	$ 5,026,895.00
Construction Engineering	$ 613,281.00
Contingencies	$ 205,807.00
Total	$ 6,298,404.00

CONCEPT DEVELOPMENT INFORMATION

Date of Concept Development Report:	_____	**Date of Federal Approval of CD Report:**	_____
Date of CPC decision to advance project to PE:	_____		
CD Designer:	_____		
PE to be Completed by (check one):	☐ In-House ☐ Consultant		

Purpose and Need: The purpose of this project is to develop recommendations that would improve the traffic flow between the Route 24 EB Ramp 2A and the Columbia Turnpike intersection with Park Avenue along with providing improvements to the operation of the intersection that could be investigated further.

The Route 24 EB Ramp 2A merges with Columbia Turnpike approximately 650 feet east of the signalized intersection of Columbia Turnpike and Park Avenue. At this intersection there is a heavy AM left turn movement on the Columbia Turnpike WB approach that currently utilizes a double left turn lane.

Columbia Turnpike WB is impacted by the vehicles entering from Route 24 EB Ramp 2A weaving to the left turn lanes to Park Avenue SB. There is inadequate length for this movement to operate smoothly. This creates congestion that backs up onto the Route 24 mainline during the morning peak.

The intersection of Columbia Turnpike and Park Avenue operates at or close to capacity during both peak hours. During the morning peak hours, the WB left and SB through movements operate at unacceptable levels of service. During the evening peak hour, the NB approach operates at marginal levels of service.

Description of Preliminary Preferred Alternative: A barrier or island will be constructed on Columbia Turnpike WB to the east of the entering traffic from Route 24 EB Ramp to prevent these vehicles from weaving over to the left onto Park Avenue SB. The ramps to and from Columbia Turnpike EB and Route 24 EB will be modified to bring traffic to Park Avenue at a new signalized intersection. The modifications will accommodate the vehicles that can no longer turn left at Park Avenue from Columbia Turnpike WB. The ramp from Columbia Turnpike EB to Route 24 EB will be closed and traffic diverted to the new ramp connection at Park Avenue.

Project Goals and Objectives: It is the intent of this project to fulfill the purpose and address the needs while minimizing impacts to the environment, quality of life, access, right of way and utilities. Any proposed improvements will consider improvements to circulation, as well as impacts to emergency services and road user costs.

PRELIMINARY ENGINEERING INFORMATION (to be filled in upon selection of a designer)

PE Designer:	_____	
FMIS Contract ID Number (e.g., 89 00766):	_____	**Funding Source:** _____
Agreement Number (e.g., 2001PM03):	_____	

PRELIMINARY ENGINEERING DELIVERABLES

3.1 Preliminary Engineering Initiation

☒ Kickoff Meeting Minutes

3.2 Roadway Engineering

☒ Control Survey Report
☒ Topographic Survey
☒ Base Maps
☒ Preliminary Drainage Design Report
☐ Traffic Engineering Facility Location
☒ Constructability and Maintenance Review Comments
☐ Preliminary ITS Facility Design Plans
☐ Updated Preliminary Detour and Construction Staging Plans
☒ Preliminary Roadway Plans
☒ Pavement Design Data
☒ Pavement Recommendation
☒ Lighting Warrant Analysis Report
☒ Initial Deforestation/ Reforestation Plan
☒ Preliminary Construction Schedule

3.3 Structural Engineering

☐ Structural Design Recommendation Summary
☒ Preliminary Geotechnical Engineering Report

3.4 Right of Way and Access

☒ Project Access Plan
☒ Access Impact Summary
☒ Right of Way Report
☒ Right of Way Impact Plan
☒ Initial Right of Way Estimate

3.5 Utility Engineering

☒ Utility Base Plans
☒ Utility Letter No. 2
☒ Utility Engineering Funding Authorization
☒ Utility Agreement
☒ Subsurface Utility Engineering Test Pit Report
☒ Updated Base Plans (With Identified Conflicts)
☐ Railroad Diagnostic Team Meeting Memo of Record

3.6 Quality Management

☐ PE Quality Management Certification

3.7 Communications

☒ Design Communications Report

3.8 Environmental Documents

Technical Environmental Studies

☐ Air Study
☐ Noise Study
☐ Ecology Study
☐ Hazardous Waste Study
☐ Socio-Economic Study
☐ Cultural Resources Study

Section 4(f)

☐ Individual Section 4(f) Evaluation
☐ Programmatic Section 4(f) Evaluation
☐ De Minimis Section 4(f) Evaluation
☐ Net Benefit Section 4(f) Evaluation
☐ Executive Order 215 (E.O. 215) Document
☐ Environmental Impact Statement
☐ Record of Decision (ROD)
☐ Categorical Exclusion Document
☐ Certified Categorical Exclusion Document
☒ Environmental Assessment
☐ Finding of No Significant Impact (FONSI)
☒ Environmental Commitments/Plan Sheets
☐ Historic Sites Council Concurrence

3.9 Preliminary Engineering Report

☒ Approved Project Plan
☒ Construction Cost Estimate
☒ Design Exception Report
☒ Final Design Scope Statement
☐ Project Management Plan (Major Projects
☒ Alternatives Analysis Report
☒ Core Group Meeting Minutes
☒ Final Design Public Involvement Action Plan
☒ Complete Streets Checklist

3.10 Contracts

Final Design Addendum

☒ Final Design Designer Fee Proposal
☒ Final Invoice

Final Design Independent Cost Estimate

☒ Summary Independent Cost Estimate Report
☒ Final Design Schedule
☒ Final Design Budget
☒ Notice of Authorization

3.11 Preliminary Engineering Approvals

☒ Capital Program Screening Committee Recommendation
☒ Capital Program Committee Approval
☒ FHWA Approval

SUMMARY OF COMMITMENTS

List any commitments made to the public, local officials or other government agencies:

Project Commitment	Unit Requesting the Commitment	Unit Fulfilling Commitment	Special Needs

List any anticipated commitments that may be made:

APPROVAL

Name	Title	Date Approved
	Manager Bureau of Landscape Architecture and Environmental Solutions	
Edward D’Arcy	Project Manager Division of Project Management	
Atul Shah	Executive Regional Manager Division of Project Management	
	Director Division of Project Management	

[redacted]

PRELIMINARY ENGINEERING SCOPE OF WORK

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Page

NOTE: The PE Designer will perform the tasks associated with PE as so marked, in preparation for Final Design. The Project Manager will review and negotiate the proposal, execute the Agreement and instruct the designer to begin work. The Project Manager will direct the proposed project through PE.

Right of Way

Activity No.	Activity Name	Execute	Responsible Unit	Comments
3110	Prepare ROW Report	☒ Yes ☐ No	☒ Designer	
3115	Initiate ROW Impact Plan	☒ Yes ☐ No	☒ Designer	
3120	Hold ROW Kickoff Meeting	☒ Yes ☐ No	☒ ROW ☒ DPM ☒ Designer	
3125	Prepare Initial ROW Estimate	☒ Yes ☐ No	☒ ROW ☒ DPM	

Total Number of Parcels: 11

1. Fee Parcel /Easements

Number of fee parcels (partial):	10	**Number of fee parcels (entire):**	1	**Number of residential relocations:**	
Number of permanent easements (E parcels):		**Number of temporary easements:**		**Number of commercial relocations:**	

2. List any known or potential environmental problems or issues that may impact Right of Way processes or decisions (cross reference with the Environmental section of the Scope Statement document: _____

3. List any environmentally sensitive parcels (ESPs), underground storage tanks, freshwater wetlands: wetlands

4. Identify Riparian Parcels (currently flowed), Easements and/or Green Acres Diversions by contacting NJDEP for any Right of Way to be acquired: _____

5. Identify parcels that can be eliminated by design change modifications and attempts to mitigate damages suffered by the remaining properties. _____

6. Decision to expand parcel for further use or contingency. _____

7. List the number of Non Real Estate Engineering (NRE) parcels. _____

8. List any commitments and conditions made to the public or to private property owners that may impact Right of Way processes or decisions: _____

9. Green Acres mitigation method: ☐ **Dollar Reimbursement** ☐ **Property Replacement**

ADDITIONAL INPUT

This section has been provided for the CD designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

Examples of information for this section include number and type of parcels, known environmental problems, riparian parcels, public commitments, etc.

Access

Activity No.	Activity Name	Execute	Responsible Unit	Comments
3105	Prepare Project Access Plan and Access Impact Summary	☒ Yes ☐ No	☒ DPM ☒ Designer ☒ OAD	

Number of Adjustments:	1	**Number of Modifications:**	1	**Number of Revocations:**	1

1. Note any pending agreements or access applications within the proposed project limits: _____

2. Are proposed left turn lanes in compliance with the Access Level? ☐ Yes ☒ No

3. Is the proposed Typical Section of the roadway in compliance with the Highway Access Code? ☐ Yes ☐ No

4. Total No. of Driveways impacted: 3

5. Any commercial properties with access modifications and/or Revocations that have potential impacts to site parking slots, circulations and operation of business? ☐ Yes ☒ No
If yes, provide details of impact with Block and Lot Nos. _____

6. Any commercial properties that will require necessary assistance in the establishment of the alternative access (as per NJAC 16:47-4.33)? ☒ Yes ☐ No
If yes, provide details of assistance with Block and Lot Nos. Block 4802-Lot 1, Block 1201-Lot 1

7. Any commercial properties that will require the preparation of an Access Impact Assistance (AIA) report? ☐ Yes ☐ No
If yes, provide Block and Lot Nos. _____

ADDITIONAL INPUT

This section has been provided for the CD designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

Examples of information for this section include number of driveways impacted, pending agreements or major access permit applications, driveway modifications causing circulation issues, alternative access issues, Access Impact Assistance issues, etc.

Drainage Management
Regional Maintenance
Hydrology and Hydraulics

Activity No.	Activity Name	Execute	Responsible Unit	Comments
3085	Prepare Preliminary Drainage Design	☒ Yes ☐ No	☒ DPM ☒ Designer	

Drainage Management

1. Identify all existing drainage deficiencies as per the Drainage Management System: None

Regional Maintenance

2. Identify all existing drainage deficiencies (undersized system, excessive spread into travel lanes, insufficient inlets, flooding at low points, etc.): None

Hydrology and Hydraulics

3. List proposed improvements including outfalls (especially tidal): _____

4. Is compliance with Stormwater Management rules triggered (> 1/4 acre new impervious surface, or 1 acre disturbance)? ☒ Yes ☐ No

5. Identify all NJDEP permits required: Freshwater Watlands, Stormwater Management, Highland Rules/Prevention Area, Morris County Soil Conservation District Certification

6. List proposed structural Best Management Practices (BMP) (e.g., Bioretention System, Constructed Wetlands, extended detention basins, infiltration system, wet ponds, porous pavement): Infiltration Basin

7. List proposed nonstructural BMP (e.g., Vegetation and Landscaping, Minimize Site Disturbance, Impervious Area Management, and Time of Concentration Modifications): _____

8. Identify drainage outflow owner: _____ Will property rights need to be acquired? ☒ Yes ☐ No

ADDITIONAL INPUT

This section has been provided for the CD designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

Examples of information for this section include drainage deficiencies, new/improved outfalls, storm water management rules, permits, Best Management Practices (structural and non-structural), easements/right-of-way, etc.

Landscape

Activity No.	Activity Name	Execute	Responsible Unit	Comments
3010	Determine and Calculate Deforested Areas	☒ Yes ☐ No	☒ BLAES ☒ Designer	

1. List any landscape architecture related commitments such as:

a. Wetland or Riparian Mitigation Planting:	
b. Historic Site commitments	
c. Vegetative Screens or Buffers	
d. Noise Barrier Aesthetics:	
e. Architectural Treatments on Bridge Retaining Walls:	
f. Tree Removal Mitigation:	Extensive tree removal required for the proposed ramp. Mitigation will be required.
g. Urban Design Work (paving, streetscapes, etc.):	
h. Aesthetic plantings:	
i. Existing tree preservation and protection:	
j. Reforestation Application:	

2. Anticipated visualization work for in-house and public information meetings:

a. Rendered Plans:	
b. 2D computer generated before & after photographs:	
c. 3D computer generated mode:	

ADDITIONAL INPUT

This section has been provided for the CD designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

Examples of information for this section include screens or buffers, aesthetic plantings, mitigation plantings, reforestation, etc.

Environmental

Activity No.	Activity Name	Execute	Responsible Unit	Comments
3300	Initiate Cultural Resources (Section 106) Process	☒ Yes ☐ No	☐ BLAES ☒ Designer	
3305	Conduct CR Survey	☒ Yes ☐ No	☐ BLAES ☒ Designer	
3310	Prepare CR Survey Report	☒ Yes ☐ No	☐ BLAES ☐ Designer	
3315	Review CR Survey Report	☒ Yes ☐ No	☒ BLAES	
3320	Address Comments on CR Survey Report	☒ Yes ☐ No	☐ BLAES ☒ Designer	
3325	Approve CR Survey Report	☒ Yes ☐ No	☒ BLAES	
3330	Obtain SHPO Concurrence (No Resources, No Effect, No Adverse Effect)	☒ Yes ☐ No	☐ BLAES ☒ SHPO	
3335	Prepare Draft MOA (Adverse Effect Only)	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3340	Obtain SHPO Concurrence (No Adverse Effect with Conditions or Adverse Effect)	☒ Yes ☐ No	☐ BLAES ☒ SHPO	
3345	Obtain FHWA Approval of CR Survey Report	☒ Yes ☐ No	☒ FHWA ☐ BLAES	
3350	Prepare Adverse Effect Documentation & Submit to FHWA (Adverse Effect Only)	☐ Yes ☒ No	☐ BLAES	
3355	FHWA Sends Adverse Effect Documentation to ACHP	☐ Yes ☒ No	☐ FHWA	
3360	ACHP Reviews and Accepts or Declines Participation	☐ Yes ☒ No	☐ ACHP	
3365	Resolve Adverse Effects	☐ Yes ☒ No	☐ BLAES ☐ FHWA	
3370	Circulate MOA for Comment	☐ Yes ☒ No	☐ BLAES	

3375	Prepare Final MOA	☐ Yes ☒ No	☐ BLAES	
3380	Execute the MOA	☐ Yes ☒ No	☐ BLAES ☐ DPM ☐ FHWA ☐ ACHP ☐ SHPO	
3390	Submit Historic Sites Council Application	☐ Yes ☒ No	☐ BLAES ☐ Designer ☐ SHPO	
3395	Present to Historic Sites Council	☐ Yes ☒ No	☐ BLAES ☐ Historic Sites Council	
3400	Inform Jurisdictional Agency Regarding Programmatic Section 4(f) Impacts	☐ Yes ☒ No	☐ BLAES	
3405	Receive Concurrence Regarding Programmatic Section 4(f) Impacts	☐ Yes ☒ No	☐ Jurisdictional Agencies	
3410	Prepare Programmatic Section 4(f) Evaluation	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3420	Prepare De Minimis Section 4(f) Evaluation	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3425	Prepare Programmatic Net Benefit Section 4(f) Evaluation	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3430	NJDOT Reviews Programmatic Section 4(f) Evaluation	☐ Yes ☒ No	☐ BLAES	
3435	Revise Programmatic Section 4(f) Evaluation (NJDOT Comments)	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3440	FHWA Reviews Programmatic Section 4(f) Evaluation	☐ Yes ☒ No	☐ FHWA	
3445	Revise Programmatic Section 4(f) Evaluation (FHWA Comments)	☐ Yes ☒ No	☐ BLAES ☐ Designer ☐ FHWA	
3450	FHWA Approves Programmatic Section 4(f) Evaluation	☐ Yes ☒ No	☐ FHWA	
3460	Inform Jurisdictional Agency Regarding Draft Individual Section 4(f) Impacts	☐ Yes ☒ No	☐ BLAES	
3465	Receive Concurrence Regarding Draft Individual Section 4(f) Impacts	☐ Yes ☒ No	☐ Jurisdictional Agencies	

3470	Prepare Draft Individual Section 4(f) Evaluation	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3475	NJDOT Reviews Draft Individual Section 4(f) Evaluation	☐ Yes ☒ No	☐ BLAES	
3480	Revise Draft Individual Section 4(f) Evaluation (NJDOT Comments)	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3485	FHWA Reviews and Comments on Draft Individual Section 4(f) Evaluation	☐ Yes ☒ No	☐ FHWA	
3490	Revise Draft Individual Section 4(f) Evaluation (FHWA Comments)	☐ Yes ☒ No	☐ BLAES ☐ Designer ☐ FHWA	
3495	Conduct Draft Individual Section 4(f) Legal Sufficiency Review	☐ Yes ☒ No	☐ BLAES ☐ Designer ☐ FHWA	
3500	Circulate Draft Individual Section 4(f) Evaluation	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3505	Prepare Final Individual Section 4(f) Evaluation	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3510	FHWA Approves Final Individual Section 4(f) Evaluation	☐ Yes ☒ No	☐ FHWA	
3520	Inform Green Acres Program and Local Officials	☐ Yes ☒ No	☐ BLAES	
3525	Receive Concurrence on Green Acres Impacts	☐ Yes ☒ No	☐ Green Acres Prog. ☐ Local Officials	
3530	Hold Green Acres Pre-Application Meeting	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3535	Negotiate Green Acres Compensation	☐ Yes ☒ No	☐ BLAES ☐ Designer ☐ Green Acres Prog. ☐ Local Officials ☐ ROW Tech. Support	
3540	Identify Alternatives (EA Only)	☐ Yes ☒ No	☐ BLAES ☐ DPM ☐ Designer	
3545	Prepare EA or EA/4(f)	☐ Yes ☒ No	☐ Designer	
3550	NJDOT Reviews EA	☐ Yes ☒ No	☐ BLAES	

3555	Revise EA (NJDOT Comments)	☐ Yes ☒ No	☐ Designer	
3560	FHWA Reviews EA	☐ Yes ☒ No	☐ FHWA	
3565	Revise EA (FHWA Comments)	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3570	FHWA Approves EA	☐ Yes ☒ No	☐ FHWA	
3575	Conduct Draft Individual Section 4(f) Legal Sufficiency Review (EA)	☐ Yes ☒ No	☐ BLAES ☐ Designer ☐ FHWA	
3580	Circulate EA	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3585	Hold EA Public Hearing and Comment Period	☐ Yes ☒ No	☐ BLAES ☐ Designer ☐ CCR	
3590	Address EA Comments	☐ Yes ☒ No	☐ BLAES ☐ Designer ☐ FHWA	
3595	Submit FONSI Request Package	☐ Yes ☒ No	☐ BLAES	
3600	FHWA Approves Final Individual Section 4(f) (EA)	☐ Yes ☒ No	☐ FHWA	
3605	FHWA Reviews and Issues FONSI	☐ Yes ☒ No	☐ FHWA	
3610	Publish Notice of FONSI Availability	☐ Yes ☒ No	☐ BLAES ☐ Designer ☐ CCR	
3620	Publish Notice of Intent in Federal Register (EIS Only)	☐ Yes ☒ No	☐ BLAES ☐ FHWA	
3625	Invite Cooperating Agencies (EIS Only)	☐ Yes ☒ No	☐ FHWA	
3630	Hold NEPA Scope Meeting (EIS Only)	☐ Yes ☒ No	☐ BLAES ☐ DPM ☐ Designer ☐ FHWA	
3635	Prepare Alternatives Analysis Report	☐ Yes ☒ No	☐ BLAES ☐ DPM ☐ Designer	
3640	Prepare DEIS or DEIS/4(f)	☐ Yes ☒ No	☐ Designer	

3645	NJDOT Reviews DEIS	☐ Yes ☒ No	☐ BLAES	
3650	Revise DEIS (NJDOT Comments)	☐ Yes ☒ No	☐ Designer	
3655	FHWA Reviews DEIS	☐ Yes ☒ No	☐ FHWA	
3660	Revise DEIS (FHWA Comments)	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3665	FHWA Approves DEIS to Circulate	☐ Yes ☒ No	☐ FHWA	
3670	Publish Notice of Availability in Federal Register (DEIS)	☐ Yes ☒ No	☐ BLAES ☐ EPA	
3675	Circulate DEIS	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3680	Hold EIS Public Hearing and Comment Period	☐ Yes ☒ No	☐ BLAES ☐ CCR ☐ Designer	
3685	Address Public and Agency Comments	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3690	Select Final Alternative	☐ Yes ☒ No	☐ DPM ☐ FHWA ☐ SME's	
3215	Present to Capital Program Screening Committee	☐ Yes ☒ No	☐ DPM	
3220	Capital Program Committee Approves Final Alternative	☐ Yes ☒ No	☐ DPM ☐ CPC	
3700	Prepare and Submit FEIS	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3705	FHWA Reviews and Comments on FEIS	☐ Yes ☒ No	☐ FHWA	
3710	Address FEIS Comments	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3715	FHWA Reviews FEIS for Legal Sufficiency and Approval	☐ Yes ☒ No	☐ BLAES ☐ Designer ☐ FHWA	
3720	Publish EIS Notice of Availability in Newspaper	☐ Yes ☒ No	☐ BLAES ☐ CCR	
3725	Publish FEIS Notice in Federal Register	☐ Yes ☒ No	☐ BLAES ☐ EPA	

3730	FHWA Publishes ROD in Federal Register	☐ Yes ☒ No	☐ FHWA	
3735	Circulate FEIS	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3740	Conduct Air Quality Study	☒ Yes ☐ No	☒ BLAES ☒ Designer	
3745	Prepare Air Quality TES	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3750	NJDOT Reviews Air Quality TES	☐ Yes ☒ No	☐ BLAES	
3755	Address Air Quality TES Comments	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3760	Approve Air Quality TES	☐ Yes ☒ No	☐ FHWA ☐ BLAES	
3765	Conduct Ecology Study	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3770	Prepare Ecology TES	☒ Yes ☐ No	☒ BLAES ☒ Designer	
3775	NJDOT Reviews Ecology TES	☐ Yes ☒ No	☐ BLAES	
3780	Address Ecology TES Comments	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3785	Approve Ecology TES	☐ Yes ☒ No	☐ BLAES	
3790	Conduct Socio-Economic Study	☒ Yes ☐ No	☒ BLAES ☒ Designer	
3795	Prepare Socio-Economic TES	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3800	NJDOT Reviews Socio-Economic TES	☐ Yes ☒ No	☐ BLAES	
3805	Address Socio-Economic TES Comments	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3810	Approve Socio-Economic TES	☐ Yes ☒ No	☐ BLAES	
3815	Conduct Noise Study	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3820	Prepare Noise TES	☐ Yes ☒ No	☐ BLAES ☐ Designer	

3825	NJDOT Reviews Noise TES	☐ Yes ☒ No	☐ BLAES	
3830	Address Noise TES Comments	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3835	Approve Noise TES	☐ Yes ☒ No	☐ BLAES ☐ FHWA	
3840	Conduct Hazardous Waste Study	☒ Yes ☐ No	☒ BLAES ☒ Designer	
3845	Prepare Hazardous Waste TES	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3850	NJDOT Reviews Hazardous Waste TES	☐ Yes ☒ No	☐ BLAES	
3855	Address Hazardous Waste TES Comments	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3860	Approve Hazardous Waste TES	☐ Yes ☒ No	☐ BLAES	
3865	Hold Public Information Center	☒ Yes ☐ No	☒ BLAES ☒ CCR ☒ Designer ☒ DPM	
3870	Prepare CED	☒ Yes ☐ No	☒ BLAES ☒ Designer	
3875	NJDOT Reviews and Approves CED	☒ Yes ☐ No	☒ BLAES	
3880	Initiate Environmental Technical Studies	☐ Yes ☒ No	☐ BLAES	
3890	Prepare Certified Categorical Exclusion (CCED) Document	☐ Yes ☐ No	☐ BLAES	
3900	Review and Approve Certified Categorical Exclusion Document (CCED)	☐ Yes ☐ No	☐ BLAES	
3910	Prepare Draft EO 215 Document	☐ Yes ☐ No	☐ BLAES ☐ Designer	
3920	NJDOT Reviews Draft EO 215 Document	☐ Yes ☐ No	☐ BLAES	
3925	Revise Draft EO 215 Document (NJDOT Comments)	☐ Yes ☐ No	☐ BLAES ☐ Designer	
3930	NJDEP Reviews EO 215 Document	☐ Yes ☐ No	☐ NJDEP	

3940	Address NJDEP Comments and Prepare Final EO 215 Document	☐ Yes ☐ No	☐ BLAES ☐ Designer	
3945	NJDEP Approves EO 215 Document	☐ Yes ☐ No	☐ NJDEP	

Anticipated Environmental Document: ☐ CCED ☒ CED ☐ EA ☐ EIS ☐ EO 215

Total Number of Permits**:** 3

1. List any environmental impacts and/or issues: _____
2. List any environmental commitments (made in approved environmental documents, through Memoranda of Agreement with environmental agencies, other commitments made to the public, local officials or other government agencies such as 4f, Section 106 (historic architecture, archaeology), air, noise, hazardous waste and ecology: _____
3. Check the environmental clearances or permits required on the project:

Federal

☐ U.S. Coast Guard (Bridge)
☐ USACOE Section 404 (Individual/Nationwide) discharge of fill
☐ USACOE Section 10 (Navigable Waters)
☐ USACOE Section 9 (Dam or Dike)
☐ National (or State) Wild & Scenic Rivers
☐ USDOA Forms AS-1006
☐ Section 7 Endangered Species Consultation
☐ NMFS Essential Fish Habitat Study

State

☐ CAFRA
☐ NJDEP Water Lowering
☐ NJDEP Riparian
☐ Hazardous Waste Site Investigation (SI/RI)
☐ HazWaste Remedial Action Work plan
☐ NJDEP Sanitary Facilities
☐ NJDEP Tidal Wetlands
☐ NJDEP Waterfront Development
☒ NJDEP Freshwater Wetlands
☒ NJDEP NJPDES Stormwater Construction GP (RFA)
☐ NJDEP Pollutant Discharge
☐ NJDEP Flood Hazard Area
☐ NJDEP Water Quality Certificate

Other

☐ Delaware River Basin Commission
☐ Delaware & Raritan Canal Commission
☐ Hackensack Meadowlands Commission
☐ Pinelands Commission
☒ Highlands Commission
☐ State Agriculture Development Commission

ADDITIONAL INPUT

This section has been provided for the CD designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

Examples of information for this section include a list of the anticipated NEPA document, type of permits anticipated, anticipated environmental impacts and environmental commitments made in CD if any, etc.

It is anticipated that an EA or an EIS Document will be required.

Risk & Value Engineering

Activity No.	Activity Name	Execute	Responsible Unit	Comments
		☐ Yes ☐ No		

Total Estimated Cost including Construction, ROW and Utilities: ☒ $1-10 million ☐ $10-20 million ☐ $20-$40 million ☐ >$40 million
Value Engineering Analysis Performed? ☒ Yes ☐ No
Risk Analysis to be Performed? ☐ Yes ☒ No

ADDITIONAL INPUT

This section has been provided for the CD designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

Examples of information for this section include Value Engineering Analysis, Risk Analysis, and Cost information

An extensive Value Engineering Analysis was performed prior to Concept Development.
A Risk Register was prepared during Concept Development.

Utilities

Activity No.	Activity Name	Execute	Responsible Unit	Comments
3035	Prepare Utility Base Plans	☒ Yes ☐ No	☒ Designer	
3040	Establish Utility Engineering Funding	☒ Yes ☐ No	☒ DPM ☒ Designer ☒ Program Coord.	
3045	Send Letter No. 2 and Plans to Utility Company	☒ Yes ☐ No	☐ DPM ☒ Designer ☐ Utility Co.	
3050	Prepare Utility Agreement	☒ Yes ☐ No	☒ DPM ☒ Designer	
3055	Update Base Plans and Identify Conflicts	☒ Yes ☐ No	☐ DPM ☒ Designer ☐ Utility Co.	
3060	Execute Utility Agreement	☒ Yes ☐ No	☒ DPM ☒ Utility Co. ☒ DAG	
3080	Conduct Subsurface Utility Engineering (SUE)	☒ Yes ☐ No	☐ DPM ☒ Designer ☒ SUE Contractor ☐ Utility Co.	
3985	Update Utility Risk Assessment Plan	☒ Yes ☐ No	☐ DPM ☒ Designer	

Total Number of Utility Companies: _____

Utility Type	Utility Company	Size (Units of Measure)	Location (aerial/underground)
Gas	PSE&G , NJ Natural Gas	Pipe	Underground
Electric	JCP&L	Volts	Overhead
Cable	Cablevision	Pairs/ Strands	Overhead
Telephone	Verizon	Pairs/ Strands	Overhead
Water	Southeast Morris County Municipal Utility Authority (SMCMUA)	Pipe	Underground
Sewer	Morris Township Sewer	Pipe	Underground
Fiber-Optic (non-Department)			
Other:	Algonquin Gas Transmission Line		Underground
Other:	Texas Eastern Gas Transmission Line		Underground
Other:			
Other:			

Preliminary Engineering

1. Identify if the Utility Discover and Verification requires sub-surface utility exploration: no
2. Is a SUE (Subsurface Utility Engineering) Consultant required? ☒ Yes ☐ No
3. Identify Potential Conflicts: _____
4. Identify Temporary Relocations that are needed during construction: _____
5. Number of poles? Approximately 25
6. Number of guy wires on existing poles? Approximately 8
7. Are there cell towers or substations? _____
8. Can utility relocations be avoided or performed in advance of the project? Advance of the project
9. Can utility design/construction be performed by designer/contractor? _____
10. Can ROW needed for utilities be identified? Yes

ADDITIONAL INPUT

This section has been provided for the CD designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

Examples of information for this section include location of cell towers, location/presence of fiber optic lines, etc.

Jurisdiction

Activity No.	Activity Name	Execute	Responsible Unit	Comments
		☐ Yes ☐ No		

Total Number of Maps: _____ Total Number of Agreements: _____

Are there streetscape or esthetic items intended for this project? ☐ Yes ☐ No

If yes, has a resolution of support been acquired for jurisdictional assignment? ☐ Yes ☐ No ☐ NA

ADDITIONAL INPUT

This section has been provided for the CD designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

Examples of information for this section include the anticipated number of maps and agreements, presence of streetscape or aesthetic treatments, local approval of such, etc.

Geometrics & Roadway

Activity No.	Activity Name	Execute	Responsible Unit	Comments
3030	Prepare Horizontal & Vertical Geometry	☒ Yes ☐ No	☐ DPM ☒ Designer	
3070	Prepare Preliminary Roadway Plans	☒ Yes ☐ No	☐ DPM ☒ Designer ☐ SME’s	
3135	Prepare Construction Cost Estimate	☒ Yes ☐ No	☐ DPM ☒ Designer	
3165	Finalize Project Plan	☒ Yes ☐ No	☒ DPM ☒ Designer	

Construction Plans/Estimated Number of Sheets

Roadway and Bridges

1	Key Map	30	Grades	5	Method of Cross Sections
2	Estimate-Distribution of Quantities	30	Traffic Control and Staging Plans	60	Cross Sections
3	Typical Sections	30	Traffic Control Plans	10	Alternate Retaining Wall System
1	Plan Sheet Index	_____	ITS Plans	1	Estimate of Quantities – Bridge
30	Construction Plans	5	Electrical Details	1	Earthwork Summary
10	Environmental Plans	6	Traffic Signal Plans	1	Earthwork Chart Sheet
8	Profiles	30	Highway Lighting Plans	5	Non-standard Roadway Construction Details
3	Ties	5	Landscape Plans	_____	Non-standard Bridge Construction Details
		30	Traffic Signing and Striping Plans	10	Drainage Plans

Right of Way Documents

1	Entire Tract Map	1	Tabulation Sheets	11	Individual Property Maps (IPM)
30	General Property Parcel Maps	11	Parcel Descriptions	3	Alignment Sheets

Other Documents

_____	Jurisdictional Maps	30	Utility Agreements Plans	_____	Railroad Crossing Element Plans
1	Project Specific Specifications				

Are there any additional documents? ☐ Yes ☒ No

Please identify any additional documents: _____

1. Existing Roadway(s):

	Roadway No. 1	**Roadway No. 2**	**Roadway No. 3**	**Roadway No. 4**
Roadway Name:	Route 510 (Columbia Turnpike)	CR 623 (Park Avenue)		
Posted Speed(s):	**40 MPH**	**35 MPH**		
Highway Classification:	Urban Principal Arterial	Urban Principal Arterial		
Significance (local or regional):				
No. of Interchanges:	1	0		
Traffic Volumes:	24,026(2011)	13,807 (2014)		
Design Speeds:	45 MPH	40 MPH		
Development Class:				
No. of Traffic Signals:	1	2		
No. of Intersections:	1	2		

2. Typical Section(s):

	Typical Section No. 1	**Typical Section No. 2**	**Typical Section No. 3**	**Typical Section No. 4**
Right of Way width:	66' and varies at intersection	66' and varies at intersection		
Number of Lanes:	4 - 5	4		
Lane width & cross slope:	12',Cross Slope varies	12', Cross Slope varies		
Shoulder width & cross slope:	0	0' - 4'		
Median width:	0' - 4'	0' - varies		
Sidewalk/border width:				
Median description and the overall roadway width:	None - curbed	None - Curbed		

3. Intersection/Interchange (describe the existing intersection and/or interchanges including turning and auxiliary lanes.): _____

4. Existing Deficiencies (provide an overview of the existing deficiencies. *Geometric*: Substandard horizontal and vertical sight distance, insufficient sight triangle, substandard vertical clearance, substandard or no shoulders, acceleration/deceleration lanes, etc. *Safety Issues*: check crash data for indicators of specific problems. Substandard/nonexistent guiderail, attenuators, pavement condition, skid resistance, median, etc. Note on substandard guiderail: the project limits should be extended to include upgrading any existing substandard guiderail run that extends beyond the proposed work limits as required by the Design Manual.): Non DOT Roads

5. Proposed Improvements (provide a brief narrative of the proposed improvements and how they address the identified deficiencies. Note changes to be made to profiles, alignment, guiderail, and typical section): _____

6. Bicycle/Pedestrian Compatible? ☐ Yes ☒ No

If no, please explain: No shoulders, sidewalk only on southeast corner, No shopping area only offices and bussiness complexes.

7. List any commitments made to the public, local officials or other government agencies: _____

ADDITIONAL INPUT

This section has been provided for the CD designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

Examples of information for this section include a discussion of substandard design elements, design exceptions, and perhaps a quick description of the proposed geometry if it is unusual, commitments made to the community, etc.

The Project Location is not on NJDOT Road

Design Exceptions

Activity No.	Activity Name	Execute	Responsible Unit	Comments
3150	Prepare Design Exception Report	☐ Yes ☒ No	☐ DPM ☐ Designer ☐ QMS ☐ State Trans. Engr. ☐ FHWA	

1. Design Exception(s):

a. Is a Design Exception required?	☐ Yes	☒ No
b. List substandard features that are to remain and require Design Exception: <u>County Roadway</u>		
c. Has the Design Exception Crash Analysis been received from the Bureau of Safety Programs?	☐ Yes	☐ No
d. Has the Design Exception Crash Data for each controlling substandard design element been requested from the Bureau of Safety Programs?	☐ Yes	☐ No
e. Has FHWA provided preliminary concurrence on the Design Exceptions decisions (a) and (b) above?	☐ Yes	☒ No
f. Has Value Solutions provided Reasonable Assurance on the Design Exceptions decisions (a) and (b) above	☐ Yes	☒ No

ADDITIONAL INPUT

This section has been provided for the CD designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

Examples of information for this section include evidence of subsurface drainage issues, settlement problems, stability problems, etc.

The Project Location is not on NJDOT Road

Pavement

Activity No.	Activity Name	Execute	Responsible Unit	Comments
3960	Obtain Pavement Design Data	☒ Yes ☐ No	☒ DPM ☒ Designer	
3970	Collect Existing Pavement and Subgrade Soil Information	☒ Yes ☐ No	☐ Pvmt. Design Unit ☒ Designer	
3975	Conduct Pavement Testing Program	☒ Yes ☐ No	☐ Pvmt. Design Unit ☒ Designer	
3995	Preform Pavement Lifecycle Cost Analysis	☒ Yes ☐ No	☐ Pvmt. Design Unit ☒ Designer	
3980	Prepare Pavement Recommendation	☒ Yes ☐ No	☐ Pvmt. Design Unit ☒ Designer	

ADDITIONAL INPUT

This section has been provided for the CD designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

Examples of information for this section include evidence of subsurface drainage issues, settlement problems, stability problems, etc.

The Project Location is not on NJDOT Road

Structures

Activity No.	Activity Name	Execute	Responsible Unit	Comments
3100	Prepare Structural Design Recommendation Summary	☐ Yes ☒ No	☐ Designer ☐ SME's	

Total Number of New Bridges:		**Total Number of New Spans:**	
Total Number of Rehab Bridges:		**Total Number of Rehab Spans:**	
Total Number of Replacement Bridges:		**Total Number of Replacement Spans:**	

1. Condition of existing bridge(s):

	Bridge No. 1	Bridge No. 2	Bridge No. 3	Bridge No. 4
a. NJDOT Structure Number:				
b. Year Built:				
c. Date/type of any major modifications:				
d. Type & material of superstructure:				
e. Type and material of substructure:				
f. Feature that is spanned:				
g. Type of roadway it carries:				
h. Vertical Clearance of structure if it spans a roadway or railroad:				
i. Number of Spans:				
j. Length of Structure:				
k. Width of Structure:				
l. Horizontal Clearance of the pier/abutment with respect to the riding lane:				
m. Typical Section (number of lanes, width and cross slope and width of each sidewalk):				

	Bridge No. 1	Bridge No. 2	Bridge No. 3	Bridge No. 4
n. Parapet railing Type:				
o. Identify the structural deficiencies:				
p. Bridges over waterways (Identify scouring evaluation, bridge opening capacity, and frequency of storm):				

<u>2. Proposed Bridge(s)/Bridge Improvements:</u>

	Bridge No. 1	Bridge No. 2	Bridge No. 3	Bridge No. 4
a. Number of spans:				
b. Identify the type of maintenance of traffic that will be used (staging or detour):				
c. Identify the changes to the typical section of the existing structure:				
d. Vertical Clearance of structure if it spans a roadway or railroad:				
e. Length of Structure:				
f. Width of Structure:				
g. Horizontal Clearance of the pier/abutment with respect to the riding lane:				
h. Typical Section (number of lanes, width and cross slope and width of each sidewalk):				
i. Parapet railing Type:				
j. Identify the structural deficiencies:				
k. Coast Guard Permit Required:				

3. Are the minimum vertical clearance requirements over waterways, roadways, railroads met? ☐ Yes ☐ No

a. If no, please explain? _____

4. List other substandard features of proposed bridge: _____

5. Other Existing Structure(s):

a. Identify existing minor structures (Noise barriers, Retaining Walls (cast in place or alternate system), Gabions, High Tower Lighting foundations, Pre-cast Culverts, Culvert extensions, Type and number of Overhead Sign Structures): 2 retaining walls are required for the new ramp

b. Specify type and number of each substandard feature: _____

6. Proposed Other Structure(s):

	Structure No. 1	**Structure No. 2**	**Structure No. 3**	**Structure No. 4**
a. Identify changes in the existing minor structure that are being improved:				
b. List substandard features to be included in the design exception:				
c. Length:				
d. Width:				
e. Number of spans/units:				

ADDITIONAL INPUT

This section has been provided for the CD designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

Examples of information for this section include scour, unusual existing or proposed structural elements, clearances, substandard elements, design exceptions, etc.

Geotechnical

Activity No.	Activity Name	Execute	Responsible Unit	Comments
3095	Prepare Preliminary Geotechnical Engineering Report	☐ Yes ☒ No	☐ Geotechnical Engineering Unit ☐ DPM ☐ Designer	

1. **Is there evidence of subsurface drainage problems?** no
2. **Is there evidence of settlement problems?** no
3. **Is there evidence of stability problems?** no
4. **Is there evidence of scour problems?** NA
5. **Are there existing soil-borings within the project limits?** _____
6. **Are there rock slopes/cuts located within the project limits?** _____
    a. **Are the rock cuts listed in the Rockfall Hazard Rating System?** _____
    b. **Do catchment areas need to be cleaned or modified?** _____
    c. **Are there apparent safety problems with protruding rock, sight lines, rock-fall and substandard existing mitigation measures?** _____
7. **Alternate site exploration (test pits)?** _____

ADDITIONAL INPUT

This section has been provided for the CD designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

Examples of information for this section include rock slope issues, soil borings, scour, unusual existing or proposed structural elements, clearances, etc.

Retaining Walls are required

Survey

Activity No.	Activity Name	Execute	Responsible Unit	Comments
3015	Prepare Control Survey Report	☒ Yes ☐ No	☐ DPM ☒ Designer ☐ Geodetic Survey	
3020	Conduct Topographic Survey	☒ Yes ☐ No	☒ Designer ☐ Geodetic Survey	
3025	Prepare Base Maps	☒ Yes ☐ No	☐ DPM ☒ Designer ☐ Geodetic Survey ☐ CADD Support	

1. **Identify available mapping information (aerial/conventional methods):** aerial
2. **How were the existing and proposed baselines established?** NA
3. **How were the existing and proposed ROW lines established?** tax records
4. **How was the horizontal and vertical control established; and which existing monumentation was used?** NA
5. **Is project in Tidal area?** ☐ **Yes** ☒ **No**

   If yes, then current mean high water elevation must be established in tidal water areas under Tidelands Bureau jurisdiction. _____
6. **Has NJDOT Regional Survey office been contacted regarding existing Control, and as-built plans within the project?** NA
7. **Compliance with MAP filing law required?** ☒ **Yes** ☐ **No**
8. **Has NJDOT Geodetic Survey been contacted regarding existing control within the project?** ☐ Yes ☒ No
9. **Does Primary Control exist within the project limits or immediately adjacent to the project?** ☐ Yes ☒ No

   If yes, what year was control established in? _____

   If no, will primary control be required? yes
10. **Will plans be developed from aerial photogrammetry or as-built plans and conventional survey?** Conventional Survey
11. **Geodetic Survey Services will be provided by:** ☐ In-House ☒ Consultant

ADDITIONAL INPUT

This section has been provided for the CD designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

Examples of information for this section include base mapping obtained in CD, tidal issues, compliance with MAP filing laws, geodetic control issues, etc.

Railroads

Activity No.	Activity Name	Execute	Responsible Unit	Comments
3075	Hold Diagnostic Team Meeting	☐ Yes ☒ No	☐ Railroad Eng. & Safety Unit ☐ DPM ☐ Designer	

Railroads Affected Select RR Line Select RR Line 2 Select RR Line 3 _____ _____ _____

1. **Grade Crossings Affected?** ☐ Yes ☐ No
   a. **How many?** _____
2. **Is there sufficient overhead structure clearance?** ☐ Yes ☐ No
3. **Diagnostic Team Meeting Required:** ☐ Yes ☐ No
4. **Diagnostic Team Meeting Held:** _____ (DATE)

ADDITIONAL INPUT

This section has been provided for the CD designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

Examples of information for this section include presence of at-grade crossings, overhead structure clearances, diagnostic team meetings, etc.

Construction

Activity No.	Activity Name	Execute	Responsible Unit	Comments
3130	Update Preliminary Detour and Construction Staging Plans	☒ Yes ☐ No	☒ Designer ☐ TSSE ☐ SME's	
3145	Conduct Constructability and Maintenance Review	☒ Yes ☐ No	☐ DPM ☒ Designer ☐ Const. Mgmt.	

ADDITIONAL INPUT

This section has been provided for the CD designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

Examples of information for this section include commitments made to local officials or other agencies, staging details, detour discussion, schedule constraints, utility conflicts, etc.

Traffic Engineering

Activity No.	Activity Name	Execute	Responsible Unit	Comments
3090	Determine Traffic Engineering Facility Locations	☐ Yes ☒ No	☐ TSSE ☐ Designer	

Number of New Traffic Signals:	1	**Number of Revised Traffic Signals:**	1
New overhead signs and sign structures	☒ Yes ☐ No	**Revised overhead signs and sign structures**	☒ Yes ☐ No
New Guide Signs	☒ Yes ☐ No	**Revised Guide Signs**	☒ Yes ☐ No
Number of Roundabouts:	none	**Emergency signal pre-emption**	☐ Yes ☒ No
Revised Highway Lighting	☒ Yes ☐ No	**Temporary Lighting "for staging and diversion roadways"**	☐ Yes ☒ No
Raised Pavement Markers	☒ Yes ☐ No		

1. Maintenance of Traffic: (What type of maintenance of traffic will be used during construction, i.e. staging, detour, permanent lane closures, or diversion road): Lane Closer during night hours

2. Identify the number and location of temporary traffic signal(s) required during Staging or Detours: NA

3. Is there an adequate corner ROW cutout for signal equipment installation? ☐ Yes ☒ No

4. Identify if a new or revised traffic signal agreement is required: yes - for the new Park Avenue ramp

5. Identify overhead utility conflicts for traffic signals to be identified and resolved: The roadway widening near intersection will need to relocate the poles.

ADDITIONAL INPUT

This section has been provided for the CD designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

Examples of information for this section include discussion of need for temporary signals, right-of-way constraints (related to traffic signal equipment), utility conflicts, etc.

Electrical Maintenance

Activity No.	Activity Name	Execute	Responsible Unit	Comments
		☐ Yes ☒ No		

1. **Do any elements of this project scope require additional planned maintenance activities that would necessitate an increase in personnel or equipment resources?** ☐ Yes ☐ No

   If yes, provide details: _____

2. **Do any elements of this project scope include new roadway/electrical appurtenances that would require specialized training, equipment or materials to properly maintain the item (e.g., Vortech drainage chamber, ornamental lighting, and brick pavers)?** ☐ Yes ☐ No

   If yes, provide details: _____

3. **Does this project scope include or overlap sections of roadway that are simultaneously being planned or scheduled for Operations maintenance/construction activities?** ☐ Yes ☐ No

   If yes, provide details: _____

4. **Should consideration be given to canceling or postponing the Operations activity?** ☐ Yes ☐ No

   If yes, provide details: _____

ADDITIONAL INPUT

This section has been provided for the CD designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

Examples of information for this section include elements of the design that will necessitate an increase in maintenance personnel or equipment, conflicting or overlapping projects with Operations, etc.

Traffic Operations and Intelligent Transportation System (ITS) Engineering

Activity No.	Activity Name	Execute	Responsible Unit	Comments
3065	Prepare Preliminary ITS Facility Design	☐ Yes ☒ No	☐ Designer ☐ ITS ☐ Traffic Ops	

1. Project scope complies with the requirements of the latest ITS Investment Strategy and ITS Architecture? ☐ Yes ☐ No

2. Traffic Operations (North/ South) has been consulted for needs and impacts? ☐ Yes ☐ No

Identify needs and impacts. _____

3. Transportation Data Development has been consulted for needs and impacts? ☐ Yes ☐ No

Identify needs and impacts. _____

4. Project limits have been visually inspected for the existing ITS facilities? ☐ Yes ☐ No

5. Check if the project includes the construction or relocation of any of the following Intelligent Transportation System (ITS) facilities:

☐ Controlled Traffic Signal Systems (CTSS)
☐ Weigh-in-Motion (WIM)
☐ Closed Circuit TV Cameras (CCTV)
☐ Traffic Volume Stations
☐ Electrical or Communication Installations for the above systems
☐ Other ITS Devices: _____
☐ Dynamic Message Signs (DMS)
☐ Roadway Weather Information Systems (RWIS)
☐ Highway Advisory Radio (HAR)
☐ In-Road Sensors
☐ Traffic Detection systems
☐ Fiber Optic Conduit and/or Cable
☐ Bridge Sensors

6. Check if real time work zone ITS Systems are to be deployed during construction:

☐ Travel Time
☐ Traffic Cameras
☐ Queue Detection
☐ Variable Speed Limit or Advisory
☐ Dynamic Merge
☐ Other _____

ADDITIONAL INPUT

This section has been provided for the CD designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

Examples of information for this section include compliance with latest ITS Investment Strategy and Architecture, consultation with Traffic Ops during CD, etc.

____

Commuter Mobility

Activity No.	Activity Name	Execute	Responsible Unit	Comments
		☐ Yes ☒ No		

ADDITIONAL INPUT

This section has been provided for the CD designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

Examples of information for this section include bicycle and pedestrian compatibility, Complete Streets compliance, presence of bus stops, interruption of pedestrian accommodations during construction, ADA issues, etc.

Technical and Administrative Activities

Activity No.	Activity Name	Execute	Responsible Unit	Comments
3005	Initiate Preliminary Engineering	☒ Yes ☐ No	☐ DPM ☒ Designer	
3160	Prepare Draft Preliminary Engineering Report	☒ Yes ☐ No	☐ DPM ☒ Designer	
3170	Prepare Final Design Scope Statement	☒ Yes ☐ No	☐ SME's ☐ DPM ☒ Designer	
3175	Complete Preliminary Engineering Quality Certification	☒ Yes ☐ No	☒ Designer	
3185	Prepare FD Public Involvement Action Plan	☒ Yes ☐ No	☐ DPM ☒ Designer ☐ CCR	
3195	Prepare Project Management Plan (**Major Projects**)	☐ Yes ☒ No	☐ DPM ☐ Designer	
3200	FHWA Approves Draft Project Management Plan (**Major Projects**)	☐ Yes ☒ No	☐ DPM ☐ Designer ☐ FHWA	
3205	NJDOT Reviews Draft Preliminary Engineering Report	☐ Yes ☒ No	☐ DPM ☐ SME's ☐ Designer	
3210	FHWA Reviews and Approves Preliminary Engineering Report	☐ Yes ☒ No	☐ DPM ☐ Designer ☐ FHWA	
3225	Assess Designer	☒ Yes ☐ No	☒ DPM	
3230	Develop FD Designer Fee Proposal	☒ Yes ☐ No	☒ Designer	
3235	Develop FD Independent Cost Estimate	☒ Yes ☐ No	☒ DPM ☒ OSBM	
3240	Create FD Schedule	☐ Yes ☒ No	☐ DPM ☐ OSBM	
3245	Negotiate FD Addendum	☐ Yes ☒ No	☐ DPM ☐ Designer ☐ OSBM	
3250	Approve FD Schedule	☐ Yes ☒ No	☐ DPM ☐ OSBM	

3255	Develop FD Budget	☐ Yes ☒ No	☐ DPM ☐ OSBM	
3260	Finalize FD Budget	☐ Yes ☒ No	☐ DPM	
3265	Approve FD Budget	☐ Yes ☒ No	☐ DPM ☐ OSBM	
3270	Authorize Final Design	☐ Yes ☒ No	☐ DPM ☐ CIPD	
3275	Execute FD Addendum	☐ Yes ☒ No	☐ DPM ☐ Designer	
3285	Complete PE Closeout	☒ Yes ☐ No	☒ DPM	

1. Have the objectives of the Public Involvement Action Plan (PIAP) been satisfied? ☐ Yes ☒ No

2. Number of Local Workshop Meetings conducted in CD: none

3. Public Information Centers conducted in CD (number of meetings, location & dates): none

4. Number of Officials Briefings conducted in Concept Development: 1

5. List Issues, Commitments or Concerns: _____

6. Is the mailing list up to date? ☐ Yes ☒ No

7. Are the Displays adequate to reuse in PE: ☒ Yes ☐ No

8. Resolution of Support Number: _____

Resolution of Support Date: _____

9. Other Coordination:

a. List additional organizations (Historic Society, Chamber of Commerce, Board of Education, Fire Company's etc.) or authorities (NJ Transit, NJ Turnpike, NJ Highway Authority, Port Authority, etc.) that have interest in the project: _____

b. Proposed Formal Public Involvement Program (estimate number of Official Briefings and Public Info Centers/Meetings/Hearings): _____

c. If additional displays are required, provide the specifics (number, scale, special graphics 3D, simulations, models, etc): _____

d. If a mailing list is required, provide the approximate number of property owners: _____

Who is responsible for putting the mailing list together and providing mail labels? ☒ Consultant? ☐ In-house Design ☐ Other (Specify) _____

e. If handouts are required (provide the specifics, number, size, color or black and white, mapping, etc): _____

f. List special needs (i.e. Community Involvement Sub-Consultant, Facility Needs, Interpreter, Website, etc.): _____

g. Traffic Staging: How many lanes of traffic need to be maintained? _____

What will be the available working hours? _____

Can the project duration be significantly reduced by reducing the number of stages? _____

Can detours be used? detours are lengthy

h. Schedule - Identify scheduling constraints (environmental, seasonal construction limitations, community). _____

What is the optimum period to start construction? _____

i. Is the scope focused on replacement or rehabilitation of road/bridge? _____

Is condition likely to change/deteriorate between scoping and construction? no

ADDITIONAL INPUT

This section has been provided for the CD designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

Summary of Approvals

SME Unit	Manager	Approval	SME Involved	Remarks
Right of Way	John Miksits			
Access	Paul Ignari			
Drainage Management	Sue Gresavage			
Regional Maintenance	Nart Appesh			
Hydrology and Hydraulics	Joseph Sweger			
Landscape	Joseph Sweger			
Environmental	Joseph Sweger			
Risk & Value Engineering	Robert Siley			
Utilities				
Jurisdiction				
Geometrics & Roadway	Robert Abitz			
Pavement	Sue Gresavage			
Structures				
Geotechnical				
Survey				
Railroads				
Construction	Al Balluch			

Traffic Engineering	Chris Barretts			
Electrical Maintenance				
Traffic Operations & ITS				
Commuter Mobility	Eise Bremer-nei			