Transportation Analysis

Concourse North

Orange County, FL

Prepared for:

BPL Maitland Concourse North, LLC

And

Maitland Concourse South Phase II Property Owners Association, Inc.

October 2015

Transportation Analysis

Concourse North

Orange County, FL

Prepared for:

BPL Maitland Concourse North, LLC

And

Maitland Concourse South Phase II Property Owners Association, Inc.

Prepared by:

Kimley-Horn and Associates, Inc.

CA # 696

Orlando, FL

October 2015

Michael R. Woodward
P.E. #70009

TABLE OF CONTENTS

INTRODUCTION 1
PLANNED IMPROVEMENTS 1
EXISTING TRAFFIC VOLUMES 3
PROJECT TRAFFIC 4
FUTURE TRAFFIC VOLUMES 5
ANALYSIS 7
PRELIMINARY SIGNAL WARRANT ANALYSIS 10
PRE-SIGNAL OPERATION 10
TURN LANE LENGTHS 13
CONCLUSION 14

LIST OF TABLES

Table 1. Daily Trip Generation 4
Table 2. AM Peak-Hour Trip Generation 5
Table 3. PM Peak-Hour Trip Generation 5
Table 4. AM Peak-Hour Intersection Performance Measures 9
Table 5. PM Peak-Hour Intersection Performance Measures 9
Table 6. AM Peak-Hour, Pre-Signalization Performance 12
Table 7. PM Peak-Hour, Pre-Signal Performance 12
Table 8. Turn Lane Lengths 13

LIST OF FIGURES

Figure 1. Project Location 1
Figure 2. Concourse East Intersection (prior to signalization) 2
Figure 3. Proposed Maitland Blvd and Hope Road Intersection Configuration 3
Figure 4. 2020 AM and PM Peak-Hour Turning Movement Volumes 6
Figure 5. Intersection Geometry 7

LIST OF APPENDENCIES

A. Striping Plans for SR 414 Widening
B. Traffic Data
C. Non-Project Traffic
D. Project Traffic
E. Model Plots
F. Project Site Plan
G. SYNCHRO Intersection Summary Reports
H. Pre-Signalization Volume Development Worksheets, SYNCHRO, and SimTraffic Reports

Introduction

Kimley-Horn and Associates has been retained to provide a transportation analysis for the proposed Maitland Concourse North development in Orange County, Florida. The location of the proposed development is shown in Figure 1 along with the location of a new intersection, referred to herein as the Concourse East intersection. A transportation analysis for this project was submitted in June of this year. Some of the assumptions from that analysis have since changed, mainly that the widening of Maitland Boulevard is now programmed for construction. Kimley-Horn received comments on the analysis from City staff in September of 2015, related to topics such as the amount of development, the status of the widening, queue lengths, and intersection configuration. This revised analysis addresses the City's comments.

Figure 1: Project Location

Planned Improvements

Two planned improvements were considered as part of this analysis: the widening of Maitland Boulevard, from Hope Road to Maitland Avenue; and the I-4 Ultimate improvements.

The widening of Maitland Boulevard (SR 414) (Financial Project ID: 424217-1) is funded for construction in year 2018. Since this improvement is within the first three

years of FDOT's work program, it has been assumed to be complete for the purpose of this transportation analysis. The project includes the widening of Maitland Blvd from four to six lanes with limits from Hope Road to just east of Maitland Avenue. The widening of Maitland Boulevard includes converting the full median at Lake Faith Villas to a directional median opening and providing for a signalized intersection at the Concourse East intersection with dual southbound left turn lanes and dual eastbound left turn lanes. Until a traffic signal is warranted, one of the dual left turn lanes will be striped out. When a signal is installed, the second left turn lanes will be put in operation. Figure 2 illustrates the striping plan for this intersection. Plan sheets for the intersection are provided in Appendix A.

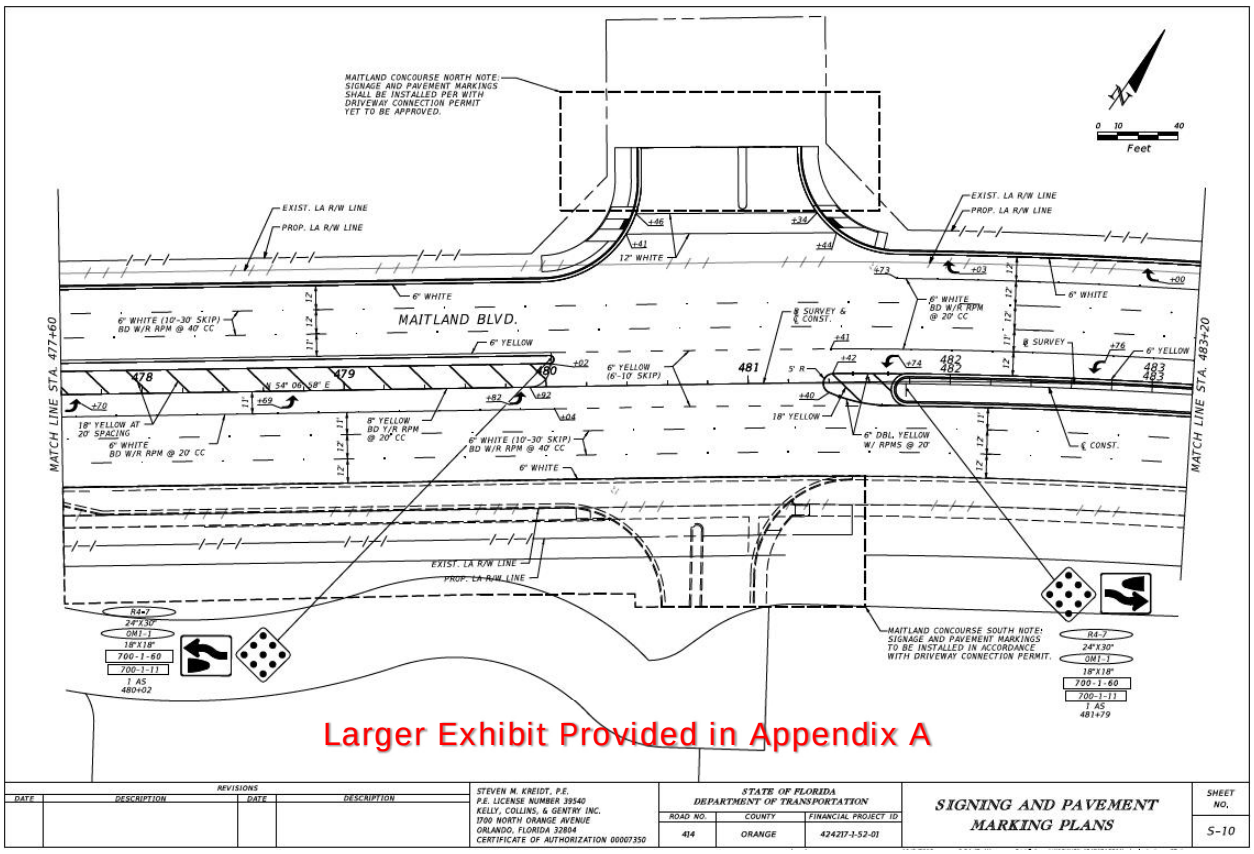


Figure 2: Concourse East Intersection (prior to signalization)

Modifications to Maitland Boulevard are included in the planned improvements associated with the connection to the I-4 Ultimate Project (Financial Project ID: 242484-6). Changes to the Maitland Boulevard network associated with the I-4 project have been assumed to be in place for this analysis. FDOT and The City of Maitland have selected a routing and intersection configuration at Maitland Boulevard and Hope Road which eliminates the eastbound right turn from Maitland Boulevard

to Hope Road (while keeping the I-4 eastbound off-ramp connection) and adds dual eastbound left turn lanes at Hope Road. The proposed configuration is shown in Figure 3. The changes also include signalization of the intersection.

Figure 3:
Proposed Maitland Boulevard and Hope Road Intersection Configuration

Existing Traffic Volumes

Existing traffic volumes for Maitland Boulevard were obtained from the *Final Technical Memorandum, Districtwide Design Traffic for PD&E and Design, Project Traffic Existing & Future Conditions Report For SR 414/Maitland Boulevard (Financial Project ID: 424217-1)*. The volumes are shown in an exhibit from the Design Traffic report, included in Appendix B.

An analysis of existing and future trips associated with the full development of Concourse South (on the south side of Maitland Boulevard) was conducted to

determine non-project traffic. This development of non-project traffic is documented in Appendix C.

Project Traffic

Future project traffic for Concourse North was estimated by calculating trips associated with the maximum trip generation potential. The Comprehensive Plan allows for up to 869,022 square feet of development with the following maximums by type of development:

- 350 residential units;
- 500,000 SF of office/professional office;
- 200,000 SF of commercial; and,
- 100,000 SF of hotel.

Recognizing there is flexibility on how the 869,022 SF is ultimately developed, as well as varying SF reflected in the 350 residential units, the intent of this analysis was to evaluate the highest likely trip generation for the site, which has been determined to be:

- 350 residential units;
- 319,022 SF of office/professional office; and,
- 200,000 SF of commercial.

While up to 100,000 SF of hotel can be developed by reducing the amount of office, this amount of hotel generates fewer AM and PM peak hour trips than 100,000 SF of Office; therefore, we will assume office is developed instead of hotel.

Project traffic was calculated using equations and rates from the *ITE Trip Generation Manual, 9th Edition* for the daily, AM and PM peak-hours. AM and PM peak-hour trip generation was adjusted to reflect internal capture and pass-by trips. The total trip generation estimate summary for the daily, AM, and PM peak-hour conditions is shown in Tables 1 through 3. It is noted that the site may develop, subject to maximum limits, with land use mixes that result in a lower number of trips.

Table 1: Daily Trip Generation

Land Use	ITE Code	Intensity		ITE Daily Trips
Office	710	319,022	SF	3,170
Retail	820	200,000	SF	10,656
Multi-Family (Apt.)	220	350	DU	2,245
Total				16,071

Table 2: AM Peak-Hour Trip Generation

Land Use	ITE Code	Intensity	Initial AM Trips			Int. Capture		Pass By %	External AM Trips		
			In	Out	Total	In	Out		In	Out	Total
Office	710	319.022 KSF	426	58	484	20	16	0%	406	42	448
Retail	820	200 KSF	148	90	238	17	18	32%	98	40	138
Multi-Family (Apt.)	220	350 DU	35	140	175	1	4	0%	34	136	170
Total			609	288	897	38	38		538	218	756

Table 3: PM Peak-Hour Trip Generation

Land Use	ITE Code	Intensity	Initial PM Trips			Int. Capture		Pass By %	External PM Trips		
			In	Out	Total	In	Out		In	Out	Total
Office	710	319.022 KSF	74	362	436	13	42	0%	61	320	381
Retail	820	200 KSF	457	496	953	68	73	32%	259	294	553
Multi-Family (Apt.)	220	350 DU	137	73	210	68	34	0%	69	39	108
Total			668	931	1,599	149	149		389	653	1,042

Future Traffic Volumes

Future traffic volumes were developed for year 2020. This is the anticipated buildout year for the proposed development.

The *Final Technical Memorandum*, *Districtwide Design Traffic for PD&E and Design, Project Traffic Existing & Future Conditions Report For SR 414/Maitland Boulevard (Financial Project ID: 424217-1)* calculated future year traffic volumes using a historical trend analysis to determine annual traffic growth rates. Calculated average annual growth rates of 1.2% and 0.5% were used in that study for through and turning movements, respectively. Therefore, the same annual growth rates were applied in this analysis to estimate non-project traffic volumes associated with year 2020. The resulting volumes were then redistributed based on the planned changes to the intersection at Hope Road. The distribution of vehicles originating between the I-4 off-ramp and eastbound Maitland Boulevard west of Hope Road was used to determine the amount of vehicles that are expected to turn left onto Hope Road.

Project trips were assigned to driveways based on the origin of the trip within the site and the external distribution of traffic. Worksheets detailing the development of project trips and total trips at intersections are provided in Appendix D.

Based on the location of developable area within the site, it is expected that the majority of the project trips will enter and exit via the proposed Concourse East

driveway. External trip distribution was determined using the Orlando Urban Area Transportation Study (OUATS) model. The resulting model plots are provided in Appendix E.

Retail pass-by trips were added to the proposed Concourse East driveway intersection based on the existing distribution of through volumes on Maitland Boulevard.

The project site plan can be found in Appendix F.

The total project turning movements for the study intersections during the AM and PM peak-hours are shown in Figure 4.

Figure 4: Year 2020 AM and PM Peak Hour Turning Movement Volumes

Analysis

A SYNCHRO network was developed which includes the adjacent intersections (Hope Road, Concourse Parkway and Maitland Avenue) in an effort to consider the overall traffic progression along Maitland Boulevard. Study area intersection operating conditions were analyzed using SYNCHRO software to calculate volume to capacity ratios, queue lengths, and coordination impacts. The cycle length at the proposed Concourse East intersection was selected to be the existing cycle length of the Maitland Boulevard and Maitland Avenue intersection, 190 seconds for the AM peak-hour and 200 seconds for the PM peak-hour.

Future analysis for the proposed Concourse East intersection assumes the lane geometry configuration previously identified in Figure 2 with both dual lefts in operation. However, it should be noted that the proposed site plan calls for installing a median on the north leg of the intersection and reducing the southbound approach to three lanes as illustrated in Figure 5. The Hope road intersection was modified as described previously. The remaining intersection approach laneage was modified based on the design plans for the SR 414 widening. Lane geometry for other approaches was not modified.

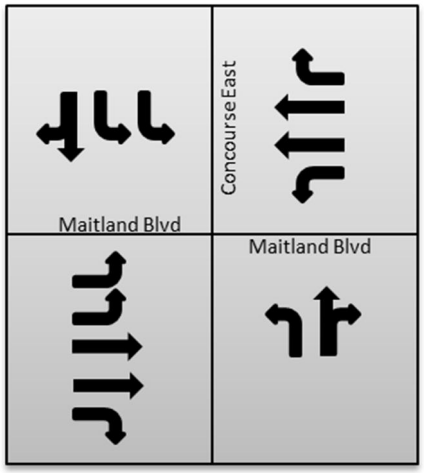


Figure 5: Intersection Geometry - Concourse East

Resulting volume to capacity (V/C) ratios, Level of Service (LOS), and 50th and 95th percentile queue lengths for intersections that access the site are shown in Tables 4 and 5 for the AM and PM peak-hours, respectively. Volume to capacity ratios and LOS are shown for the remaining study area intersections.

As shown in the tables, the Concourse East intersection is anticipated to operate acceptably, with no anticipated volume/capacity failures through year 2020. Levels of services are based on average delay, which is affected by the longer cycle lengths used for Maitland Boulevard to facilitate the flow of traffic along Maitland Boulevard.

The longer cycle lengths and preference to Maitland Boulevard through movements creates some LOS “F” conditions for side streets and left turns. This is acceptable and does not create operational issues when the V/C ratio is below 1.0.

The northbound approach of Maitland Avenue at Maitland Boulevard is anticipated to operate over capacity during the AM peak hour based on current demand estimates. It is likely that these conditions will facilitate re-routing of trips to Maitland Boulevard via US 17/92 instead of via Maitland Avenue, consistent with the City of Maitland’s objectives.

Intersection summary reports are provided in Appendix G.

It is noted that the City requested summary reports based on the HCM 2010. However, the HCM 2010 is not able to analyze them due to non NEMA phasing and an inability to consider turning movements that have dedicated and shared lanes.

Table 4: AM Peak-Hour Intersection Performance Measures

AM Peak		Eastbound			Westbound			Northbound			Southbound		
		Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Hope Rd	V/C Ratio (Max)	0.23	0.52	n/a	n/a	0.97	0.11	n/a	n/a	n/a	n/a	n/a	0.98
	LOS	D	A	n/a	n/a	B	A	n/a	n/a	n/a	n/a	n/a	F
Concourse Pkwy	V/C Ratio (Max)	0.72	0.75	0.39	0.49	0.99	0.13	0.99	0.96	0.29	0.34		0.15
	LOS	F	C	A	E	B	A	F	F	A	F		A
	Queue Length: 50th %	209	769	62	112	733	2	92	91	0	24		0
	Queue Length: 95th %	348	825	131	123	858	3	216	213	0	57		0
Concourse East	V/C Ratio (Max)	0.56	0.59	0.14	0.75	0.93	0.16	0.92	0.56		0.81	0.7	
	LOS	E	A	A	F	B	A	F	D		F	D	
	Queue Length: 50th %	116	10	0	129	558	9	93	3		80	1	
	Queue Length: 95th %	159	12	0	116	500	11	210	56		142	72	
Lake Faith Dr	V/C Ratio (Max)	0.326	n/a	n/a	0.063	n/a	n/a	n/a	n/a	0.007	n/a	n/a	0.552
	LOS	F	n/a	n/a	E	n/a	n/a	n/a	n/a	D	n/a	n/a	F
Maitland Avenue	V/C Ratio (Max)	0.98	0.68		0.55	0.98	0.09	1.88	1.79		0.41	1.16	1.44
	LOS	F	B		F	E	A	F	F		E	F	F

Table 5: PM Peak-Hour Intersection Performance Measures

PM Peak		Eastbound			Westbound			Northbound			Southbound		
		Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Hope Rd	V/C Ratio (Max)	0.36	0.56	n/a	n/a	0.84	0.11	n/a	n/a	n/a	n/a	n/a	0.73
	LOS	E	A	n/a	n/a	D	B	n/a	n/a	n/a	n/a	n/a	E
Concourse Pkwy	V/C Ratio (Max)	0.67	0.81	0.02	0.05	0.77	0.03	0.8	0.8	0.08	0.84		0.55
	LOS	F	B	A	F	B	A	F	F	A	F		B
	Queue Length: 50th %	100	858	0	2	1075	0	92	92	0	147		16
	Queue Length: 95th %	161	1169	0	3	1140	0	191	191	0	255		72
Concourse East	V/C Ratio (Max)	0.81	0.83	0.04	0.57	0.68	0.24	0.7	0.76		0.81	0.89	
	LOS	F	B	A	F	C	A	F	E		F	D	
	Queue Length: 50th %	165	573	0	46	908	35	116	53		196	110	
	Queue Length: 95th %	202	477	0	53	966	43	181	167		249	307	
Lake Faith Dr	V/C Ratio (Max)	0.515	n/a	n/a	0.043	n/a	n/a	n/a	n/a	0.408	n/a	n/a	0.116
	LOS	F	n/a	n/a	F	n/a	n/a	n/a	n/a	F	n/a	n/a	D
Maitland Avenue	V/C Ratio (Max)	0.93	0.98		0.61	0.61	0.17	1.59	1.56		0.61	1.24	0.92
	LOS	E	D		F	D	B	F	F		F	F	E

Preliminary Signal Warrant Analysis

Warrant 1 of the MUTCD, the Eight-Hour Vehicular Volume Warrant, includes recommended minimum volume thresholds that determine when a traffic signal can be considered for installation. There are two conditions for Warrant 1, one traffic volume threshold for the major street and another volume threshold for the minor street. For a high speed major street such as Maitland Boulevard, the total 8th highest hour major street volume threshold is 420. The total 8th highest hour volume threshold for the side street (or an opposing left turn) is 140.

Conflicting movements to consider in the preliminary signal warrant analysis for the Concourse East intersection include left turns and through movements out of the proposed development and the eastbound and westbound through movements on Maitland Boulevard. Another conflicting movement scenario is the eastbound left turns and the westbound through movements on Maitland Boulevard. Several assumptions were made to estimate the anticipated future year turning movement volumes during the 8th highest hour of the day. Previously developed peak-hour intersection volumes were used as a starting point, then adjusted to reflect the 8th highest hour of the day. Hourly traffic counts conducted for the adjacent Concourse South development were used to develop an hourly variation in inbound and outbound traffic for office uses. Similarly, traffic counts at a residential area were used to develop the anticipated hourly variation in residential trips. ITE data for shopping centers were used for the hourly variation in retail trips. Hourly roadway segment counts on Maitland Boulevard (from FTI) were used to adjust the eastbound and westbound through volumes from the peak-hour to the 8th highest hour.

The anticipated 8th highest hour volume for the combined through and left turn movement exiting the project at the Concourse East intersection is 270 vehicles, or 193% of the minimum. The anticipated 8th highest hour volume of the opposing traffic on Maitland Boulevard is 3,430, which is an order of magnitude higher than the major street volume threshold of 420 vehicles. As such, future volumes are anticipated to exceed Warrant 1 threshold volumes by significant margins upon completion of the proposed development.

Pre-Signal Operation

At the request of City staff, this section includes an analysis of conditions that are anticipated to occur prior to implementation of a traffic signal at the Concourse East intersection.

Prior to implementation of the traffic signal, the intersection will operate under 2-way stop control. Inbound traffic will access the unsignalized intersection from the westbound right turn lane or from the eastbound left turn lane. As the intersection will be unsignalized at this point in time, there will be a single eastbound left turn lane. This is a standard configuration since dual turn lanes require signalization.

The development level assumed for this analysis was the amount corresponding to conditions that require signalization. These conditions will occur when the anticipated 8th highest hour volume is at the minor street threshold of 140 vehicles. These volume levels will occur when approximately 52% of the development is complete. AM and PM peak hour analyses were therefore performed for unsignalized conditions assuming year 2020 background volumes and 52% of project traffic. Volume development worksheets are provided in Appendix H.

When the project is generating volumes that are high enough to consider installing a traffic signal, there will be poor operating conditions if the signal is not installed. Specifically, vehicles that intend to perform a southbound left turn will experience excessive delays (similar to what vehicles experience today for the left turn movement out of Lake Faith Villas). Prior to conditions with this excessive delay actually occurring, project traffic will likely choose alternative routes to reach their intended destination. In typical locations with excessive left turn delay, traffic that intends to turn left will instead turn right then U-turn at a downstream location. This option is somewhat limited at Concourse East since the right turn is also anticipated to experience excessive peak-hour delay if unsignalized. The remaining option for re-routing of left turn traffic is for them to travel to the signalized Concourse Parkway intersection. Signal timing changes could provide interim relief to project traffic by increasing the green time for the southbound movement at the Concourse Parkway intersection. However, the overall corridor will operate more efficiently if the traffic signal is installed at the Concourse East intersection.

Due to the difficulty with turning onto Maitland Boulevard from an unsignalized intersection (such as Lake Faith Villas), it is anticipated that most of the left turns from Concourse East will re-route to Concourse Parkway. Therefore, low volumes are expected at the Concourse East intersection until it is signalized.

The resulting operating conditions for the Concourse East intersection were analyzed using Synchro's SimTraffic simulation module since Synchro software (separate from SimTraffic) and HCS software are limited in their ability to analyze unsignalized intersections with three through lanes in each direction on the major street. SimTraffic output reports are included in Appendix H. The Concourse Parkway intersection was analyzed using Synchro software, with the reports also provided in Appendix H. Results of the intersection analysis are provided in Table 6 and Table 7 for the AM peak-hour and PM peak-hour, respectively.

Table 6: AM Peak-Hour, Pre-Signalization Performance

AM Peak			Eastbound			Westbound			Northbound			Southbound		
			Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Concourse Pkwy	V/C Ratio (Max)		0.64	0.78	0.41	0.45	0.96	0.08	0.82	0.8	0.28	0.85		0.17
	LOS		F	C	A	E	C	A	F	F	A	F		A
	Queue Length:	50th %	137	795	78	118	727	1	91	90	0	71		0
	Queue Length:	95th %	215	848	155	115	658	1	192	189	0	171		0
Concourse East	Delay Per Vehicle (sec)		170	12	14	38	3	2	2157	936		1392	--	39
	Queue Length:	50th %	145	66	1	63	--	1	249	781		68	28	
	Queue Length:	95th %	275	649	11	117	--	9	390	1589		154	83	

Table 7: PM Peak-Hour, Pre-Signalization Performance

PM Peak			Eastbound			Westbound			Northbound			Southbound		
			Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Concourse Pkwy	V/C Ratio (Max)		0.59	0.9	0.02	0.31	0.77	0.02	0.65	0.65	0.07	0.83		0.45
	LOS		F	D	A	F	D	A	F	F	A	F		B
	Queue Length:	50th %	71	1245	0	25	914	0	91	91	0	255		0
	Queue Length:	95th %	125	1619	0	33	968	0	153	153	0	340		73
Concourse East	Delay Per Vehicle (sec)		74	16	16	48	2	2	3041	--	1822	2689	2236	932
	Queue Length:	50th %	110	--	--	21	--	2	281	1019		233	471	
	Queue Length:	95th %	209	--	--	58	--	15	335	1684		363	985	

As shown previously, the Concourse East intersection is anticipated to operate acceptably when signalized, even with approximately twice as much project traffic.

The analysis contained herein is based on the Warrant 1 criteria for the 8th highest hour of the day, which is the typical and most prevalent warrant used. Several additional warrants can be considered in an engineering study that justifies installation of a traffic signal. Therefore, it is recommended that the official signal warrant analysis for this intersection include consideration of the peak-hour warrants. The excessive amount of delay that would be anticipated if traffic does not re-route during the peak-hours indicates that waiting for 8th hour volumes may not be appropriate for this intersection. The traffic signal should likely be installed prior to meeting the 8th hour warrant threshold volume.

In summary, when a traffic signal is warranted and justified, it should be installed.

Turn Lane Lengths

Using the 95th percentile queue lengths from the SYNCHRO analysis, the corresponding total turn lane lengths were calculated. Total turn lane lengths for SR 414 are based on design speeds and FDOT Design Index 301. The calculated turn lane lengths for the Concourse Parkway and Concourse East intersections are shown in Table 8.

Table 8: Turn Lane Lengths

Queue and Turn Lane Lengths		Eastbound		Westbound		Northbound		Southbound	
		Left	Right	Left	Right	Left	Right	Left	Right
Concourse Parkway	AM 95th % Queue:	348	131	123	3	216	0	57	0
	PM 95th % Queue:	161	0	3	0	191	0	255	72
	Approach Design Speed (mph)	45	45	45	45	N/A	N/A	N/A	N/A
	Decel Distance (ft)	185	185	185	185	0	0	0	0
	Total Turn Lane Length (ft)	533	316	309	188	216	0	255	72
Concourse East	AM 95th % Queue:	159	0	116	11	210	56	142	72
	PM 95th % Queue:	202	0	53	43	181	167	249	307
	Approach Design Speed (mph)	45	45	45	45	N/A	N/A	N/A	N/A
	Decel Distance (ft)	185	185	185	185	0	0	0	0
	Total Turn Lane Length (ft)	387	185	301	228	210	167	249	307

Conclusion

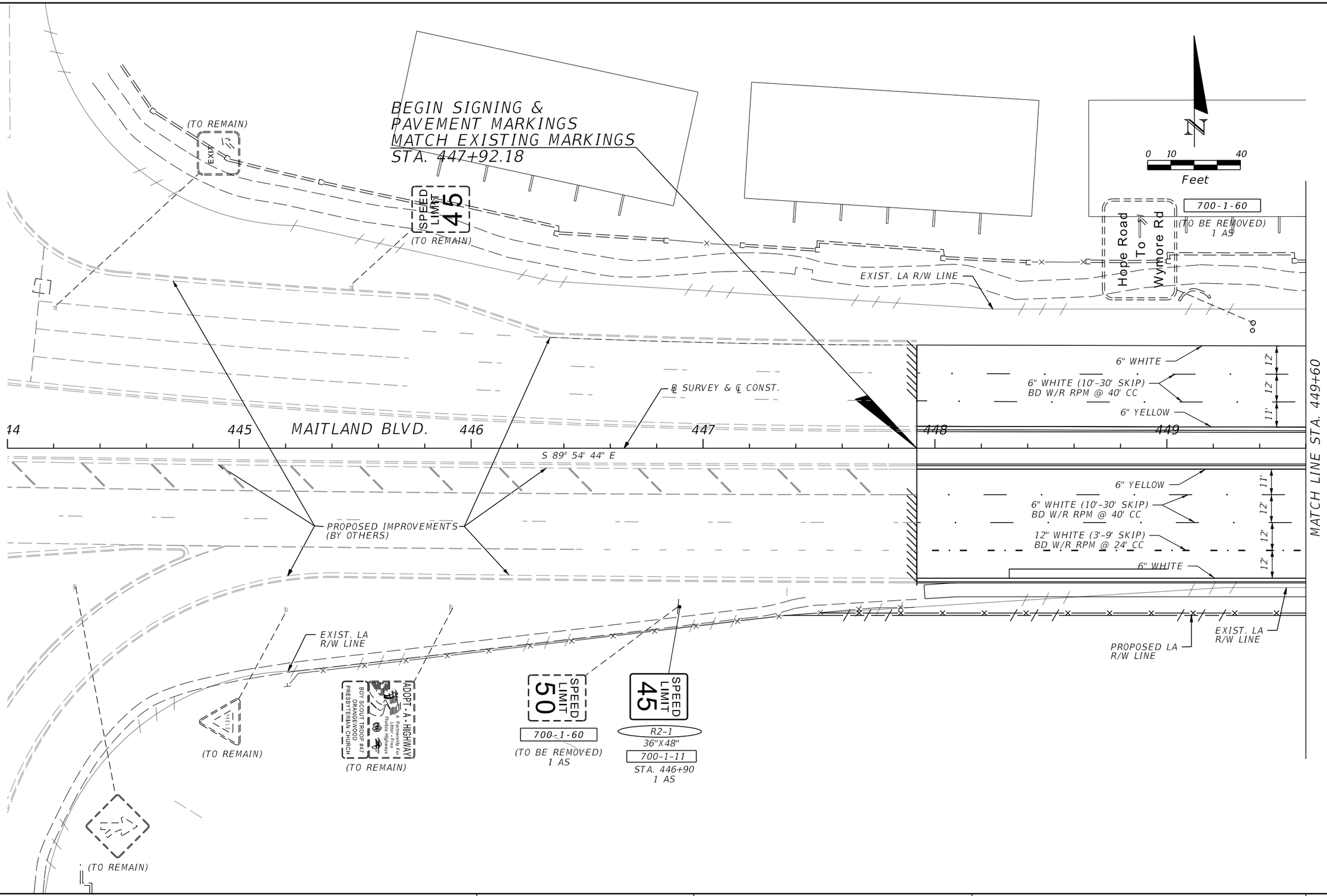
Maitland Boulevard is anticipated to operate acceptably upon completion of the Maitland Concourse North development.

Prior to the completion of the Maitland Concourse North development, it is anticipated that a traffic signal will be warranted to control the intersection of Maitland Boulevard and Concourse East. The developer will be responsible for performing a Signal Warrant Analysis and installing the traffic signal.

APPENDIX A

SIGNING AND PAVEMENT MARKING PLANS

MAITLAND BOULEVARD WIDENING



NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 61G15-23.003, F.A.C.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STEVEN M. KREIDT, P.E.
P.E. LICENSE NUMBER 39540
KELLY, COLLINS, & GENTRY INC.
1700 NORTH ORANGE AVENUE
ORLANDO, FLORIDA 32804
CERTIFICATE OF AUTHORIZATION 00007350

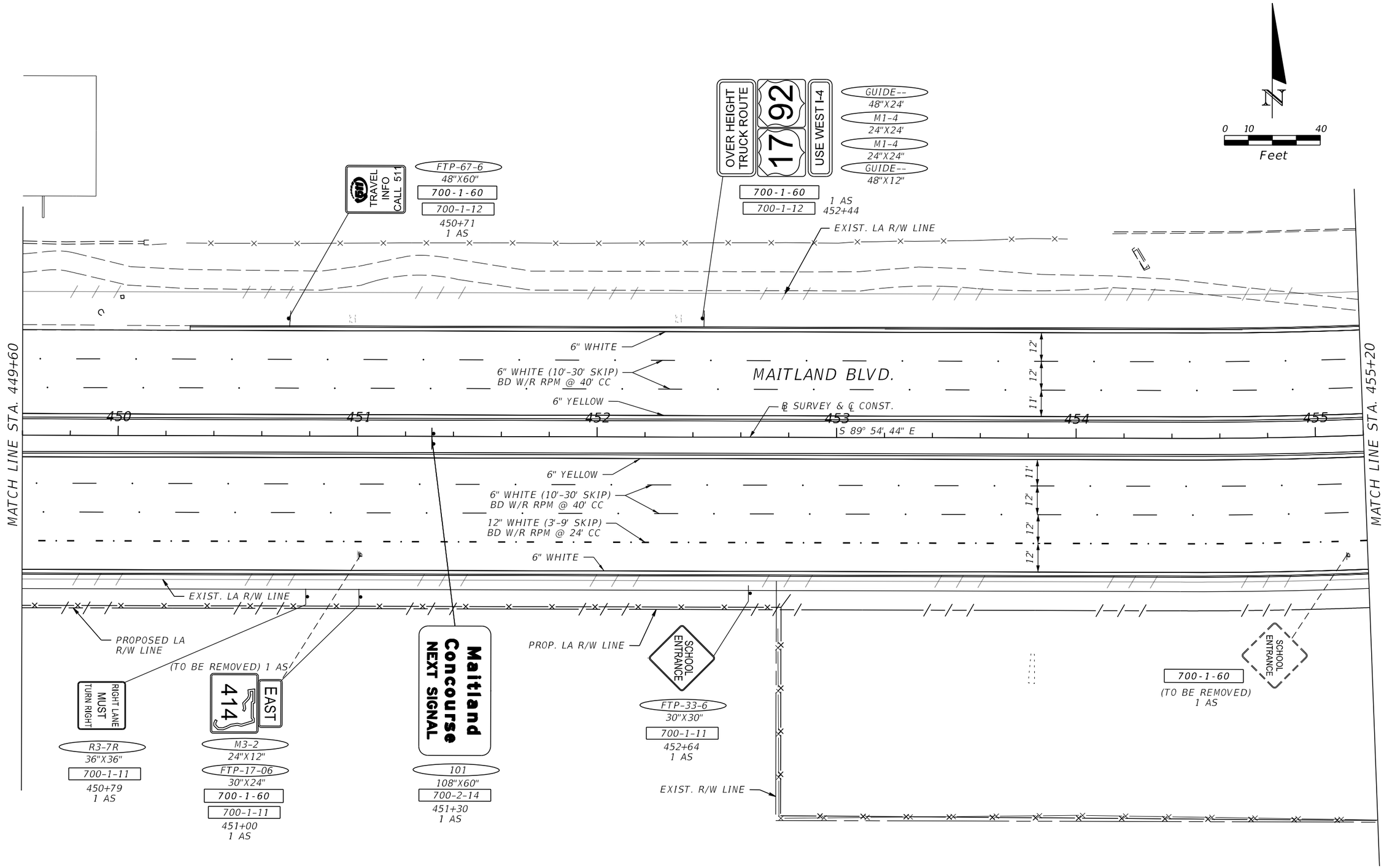
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
414	ORANGE	424217-1-52-01

SIGNING AND PAVEMENT MARKING PLANS

SHEET NO.
S-4

argiraud 10/8/2015 9:24:42 AM R:\Highway\W0RKV8i\42421715201\signing\plansp01.dgn



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STEVEN M. KREIDT, P.E.
P.E. LICENSE NUMBER 39540
KELLY, COLLINS, & GENTRY INC.
1700 NORTH ORANGE AVENUE
ORLANDO, FLORIDA 32804
CERTIFICATE OF AUTHORIZATION 00007350

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

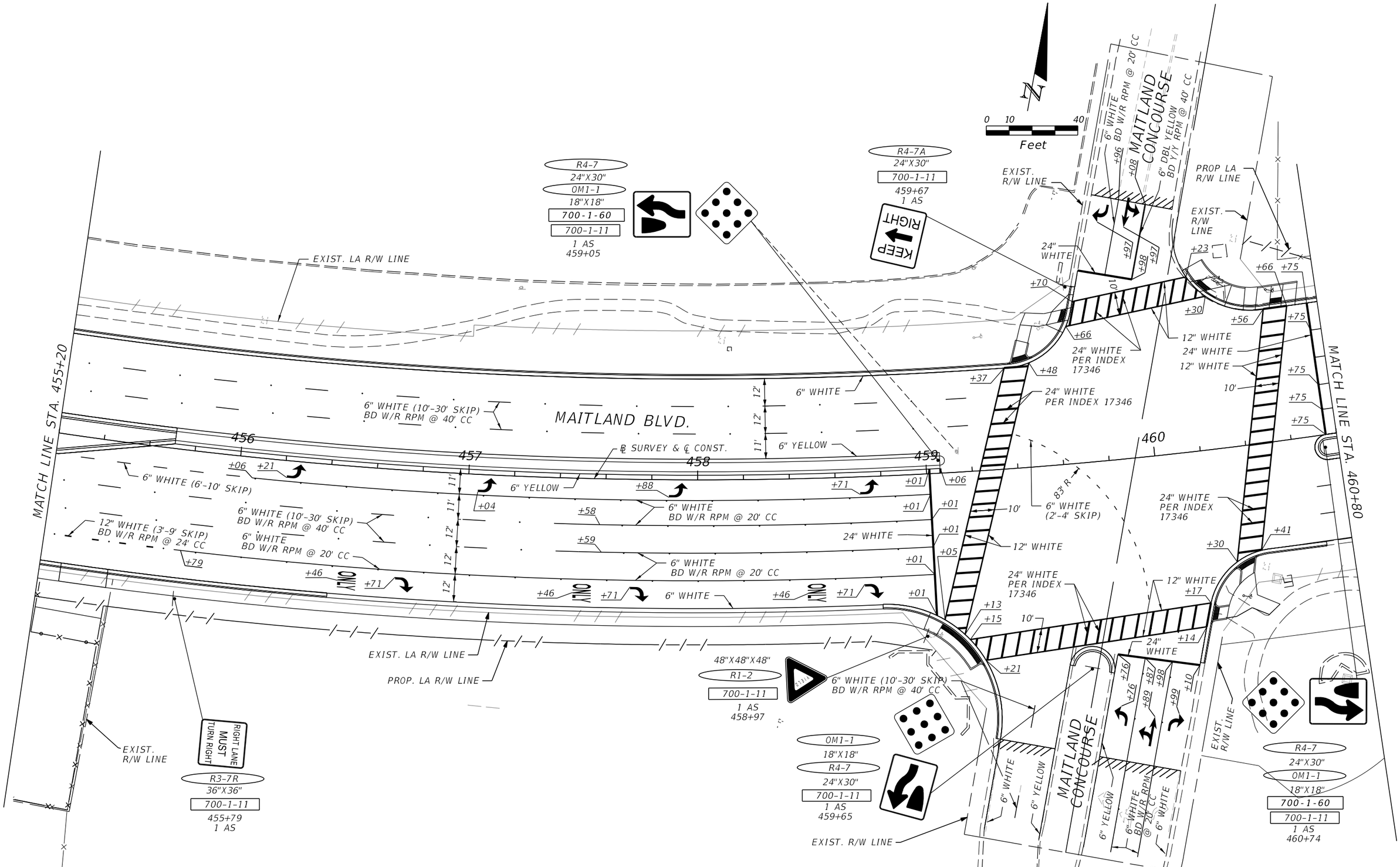
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
414	ORANGE	424217-1-52-01

SIGNING AND PAVEMENT MARKING PLANS

SHEET NO.
S-5

argiraud 10/8/2015 9:24:43 AM R:\Highway\WORKV8i\42421715201\signing\plansp02.dgn

NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 61G15-23.003, F.A.C.



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STEVEN M. KREIDT, P.E.
P.E. LICENSE NUMBER 39540
KELLY, COLLINS, & GENTRY INC.
1700 NORTH ORANGE AVENUE
ORLANDO, FLORIDA 32804
CERTIFICATE OF AUTHORIZATION 00007350

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

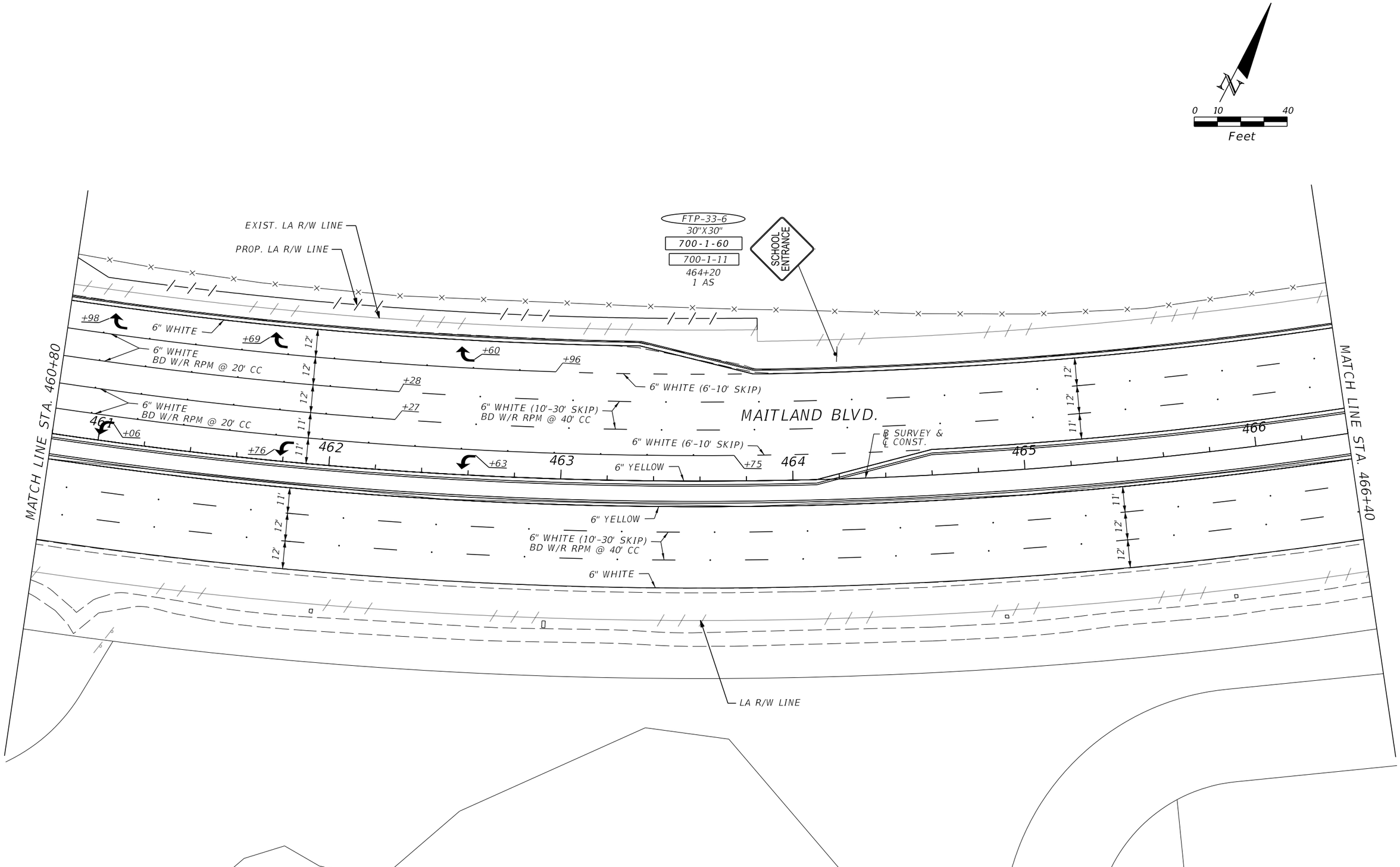
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
414	ORANGE	424217-1-52-01

SIGNING AND PAVEMENT MARKING PLANS

SHEET NO.
S-6

argiraud 10/8/2015 9:24:44 AM R:\Highway\WORKV8i\42421715201\signing\plansp03.dgn

NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 61G15-23.003, F.A.C.



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STEVEN M. KREIDT, P.E.
P.E. LICENSE NUMBER 39540
KELLY, COLLINS, & GENTRY INC.
1700 NORTH ORANGE AVENUE
ORLANDO, FLORIDA 32804
CERTIFICATE OF AUTHORIZATION 00007350

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

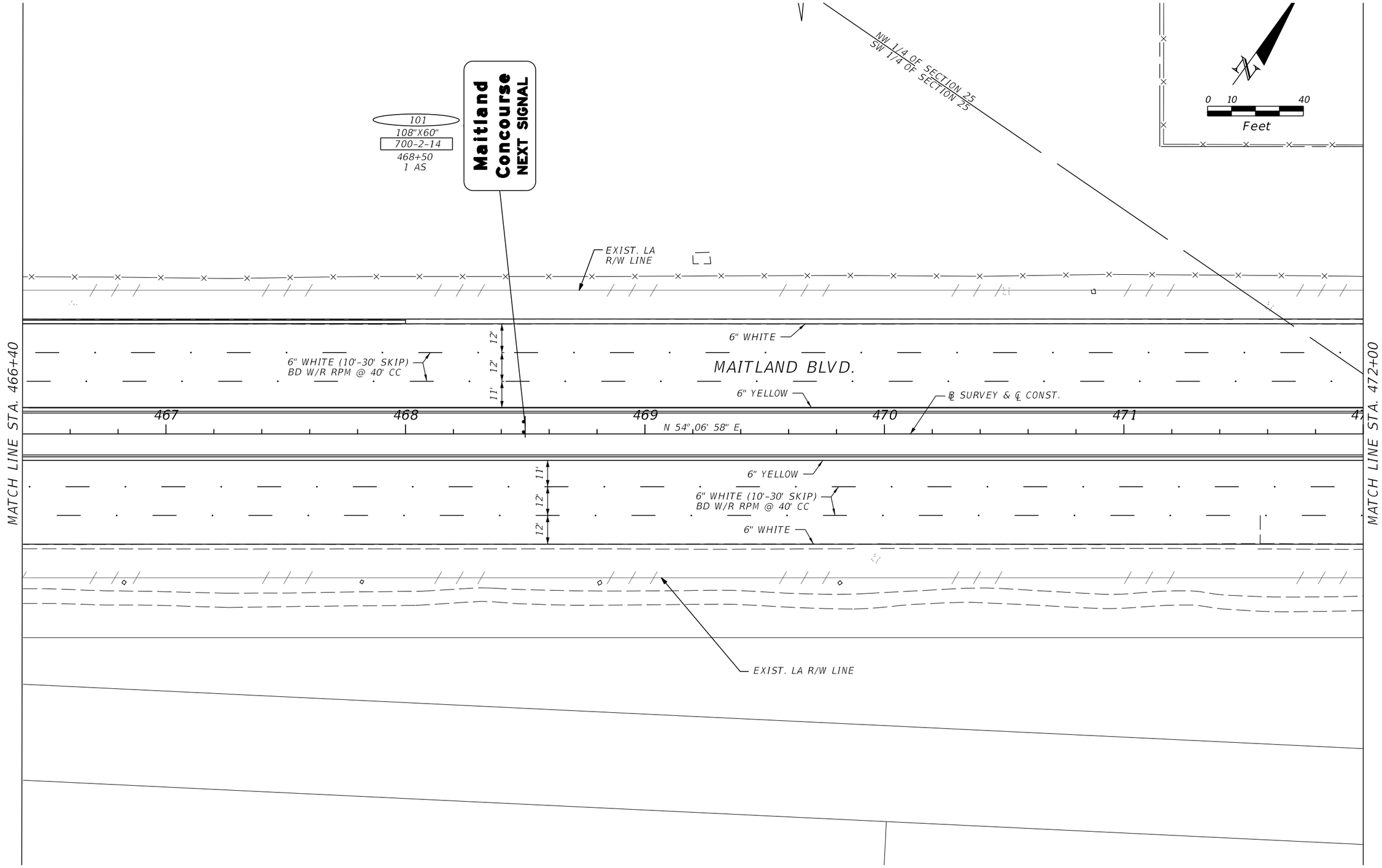
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
414	ORANGE	424217-1-52-01

SIGNING AND PAVEMENT MARKING PLANS

SHEET NO.
S-7

argiraud 10/8/2015 9:24:45 AM R:\Highway\W0RKV8i\42421715201\signing\planspo4.dgn

NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 61G15-23.003, F.A.C.



NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 61G15-23.003, F.A.C.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STEVEN M. KREIDT, P.E.
P.E. LICENSE NUMBER 39540
KELLY, COLLINS, & GENTRY INC.
1700 NORTH ORANGE AVENUE
ORLANDO, FLORIDA 32804
CERTIFICATE OF AUTHORIZATION 00007350

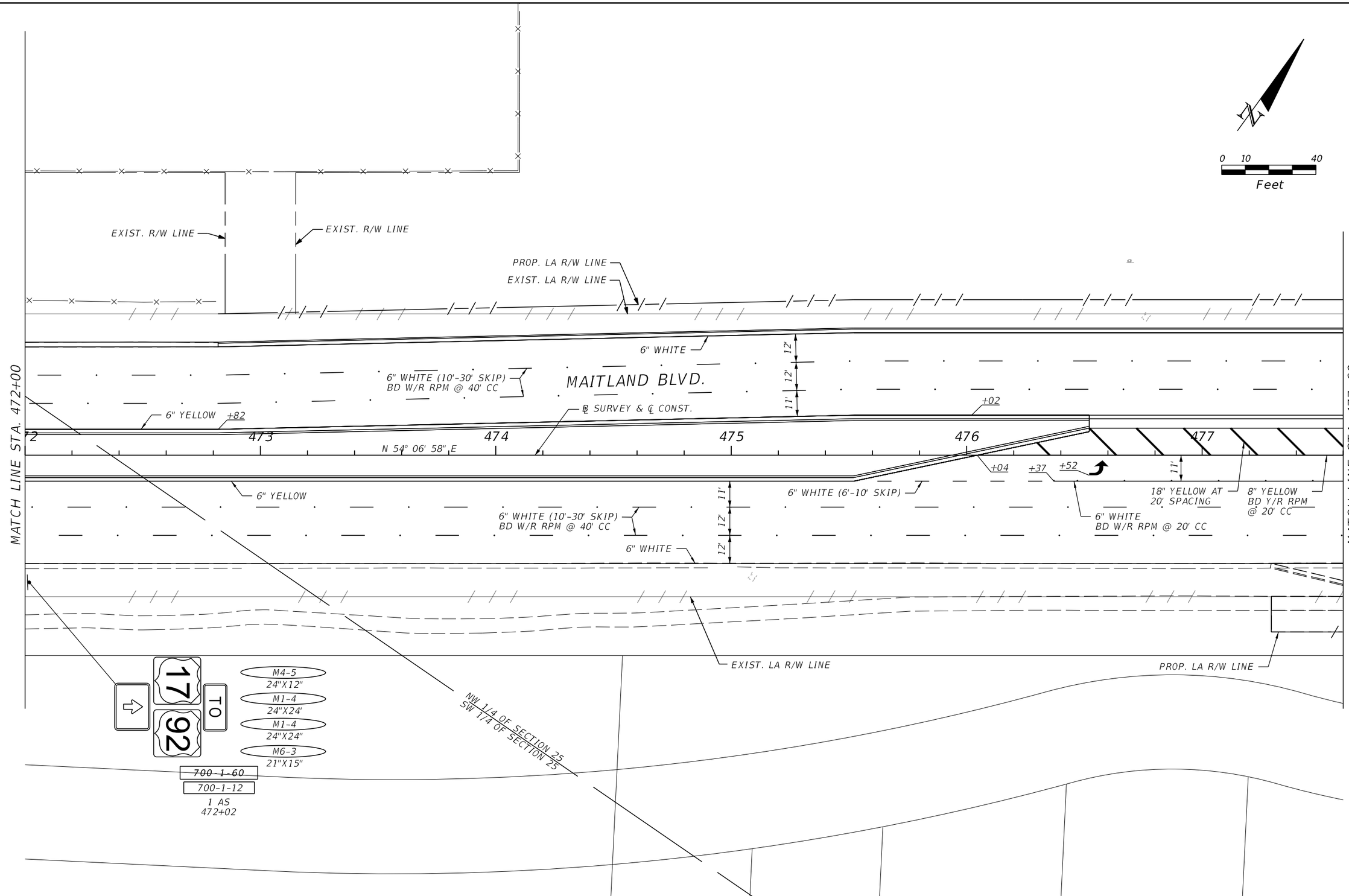
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
414	ORANGE	424217-1-52-01

SIGNING AND PAVEMENT MARKING PLANS

SHEET NO.
S-8

argiraud 10/8/2015 9:24:45 AM R:\Highway\W0RKV8i\42421715201\signing\plansp05.dgn



NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 61G15-23.003, F.A.C.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STEVEN M. KREIDT, P.E.
P.E. LICENSE NUMBER 39540
KELLY, COLLINS, & GENTRY INC.
1700 NORTH ORANGE AVENUE
ORLANDO, FLORIDA 32804
CERTIFICATE OF AUTHORIZATION 00007350

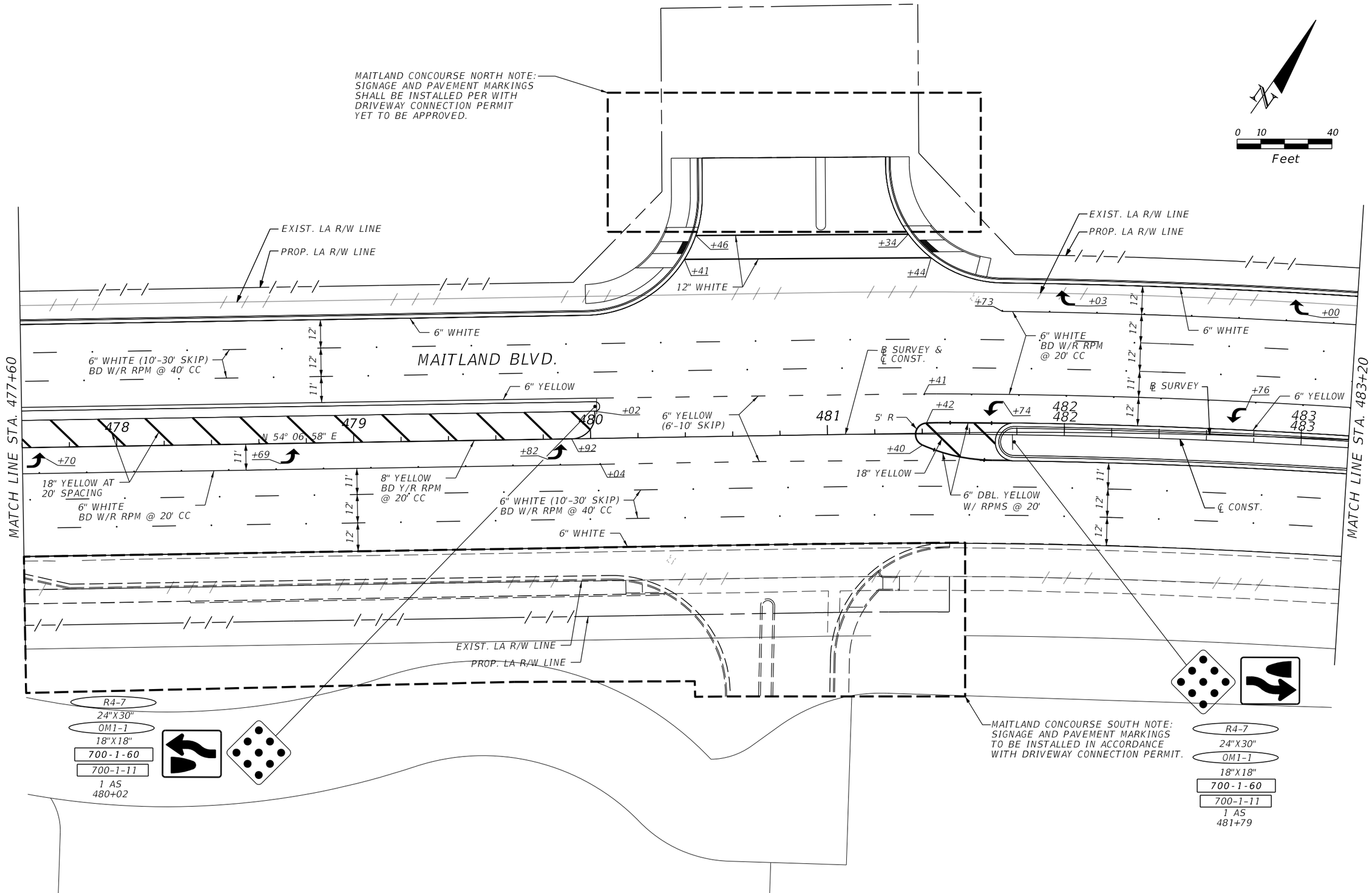
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
414	ORANGE	424217-1-52-01

SIGNING AND PAVEMENT MARKING PLANS

SHEET NO.
S-9

argiraud 10/8/2015 9:24:46 AM R:\Highway\W0RKV8i\42421715201\signing\plansp06.dgn



NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 61G15-23.003, F.A.C.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

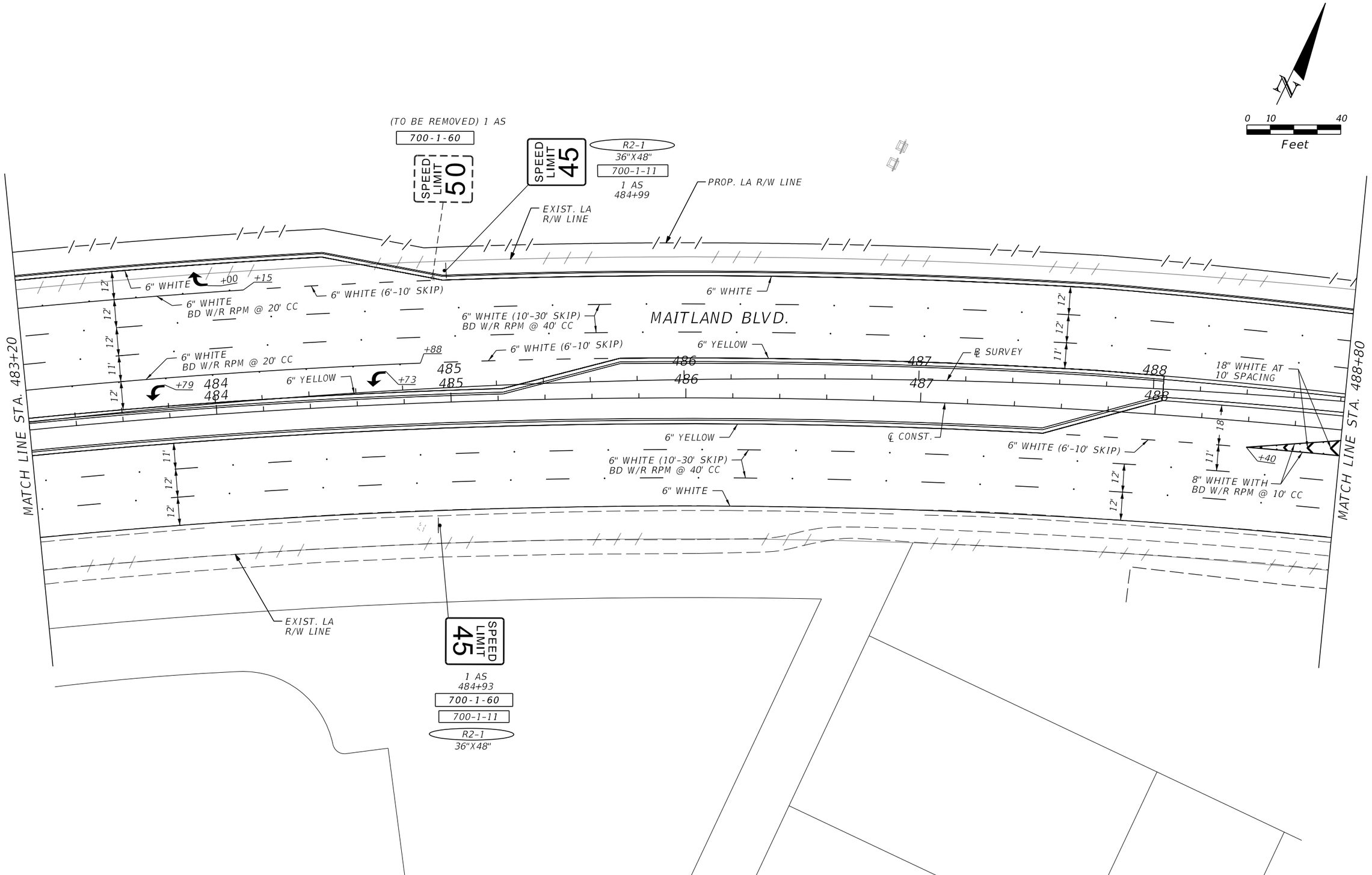
STEVEN M. KREIDT, P.E.
P.E. LICENSE NUMBER 39540
KELLY, COLLINS, & GENTRY INC.
1700 NORTH ORANGE AVENUE
ORLANDO, FLORIDA 32804
CERTIFICATE OF AUTHORIZATION 00007350

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
414	ORANGE	424217-1-52-01

SIGNING AND PAVEMENT MARKING PLANS

SHEET NO.
S-10



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STEVEN M. KREIDT, P.E.
P.E. LICENSE NUMBER 39540
KELLY, COLLINS, & GENTRY INC.
1700 NORTH ORANGE AVENUE
ORLANDO, FLORIDA 32804
CERTIFICATE OF AUTHORIZATION 00007350

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

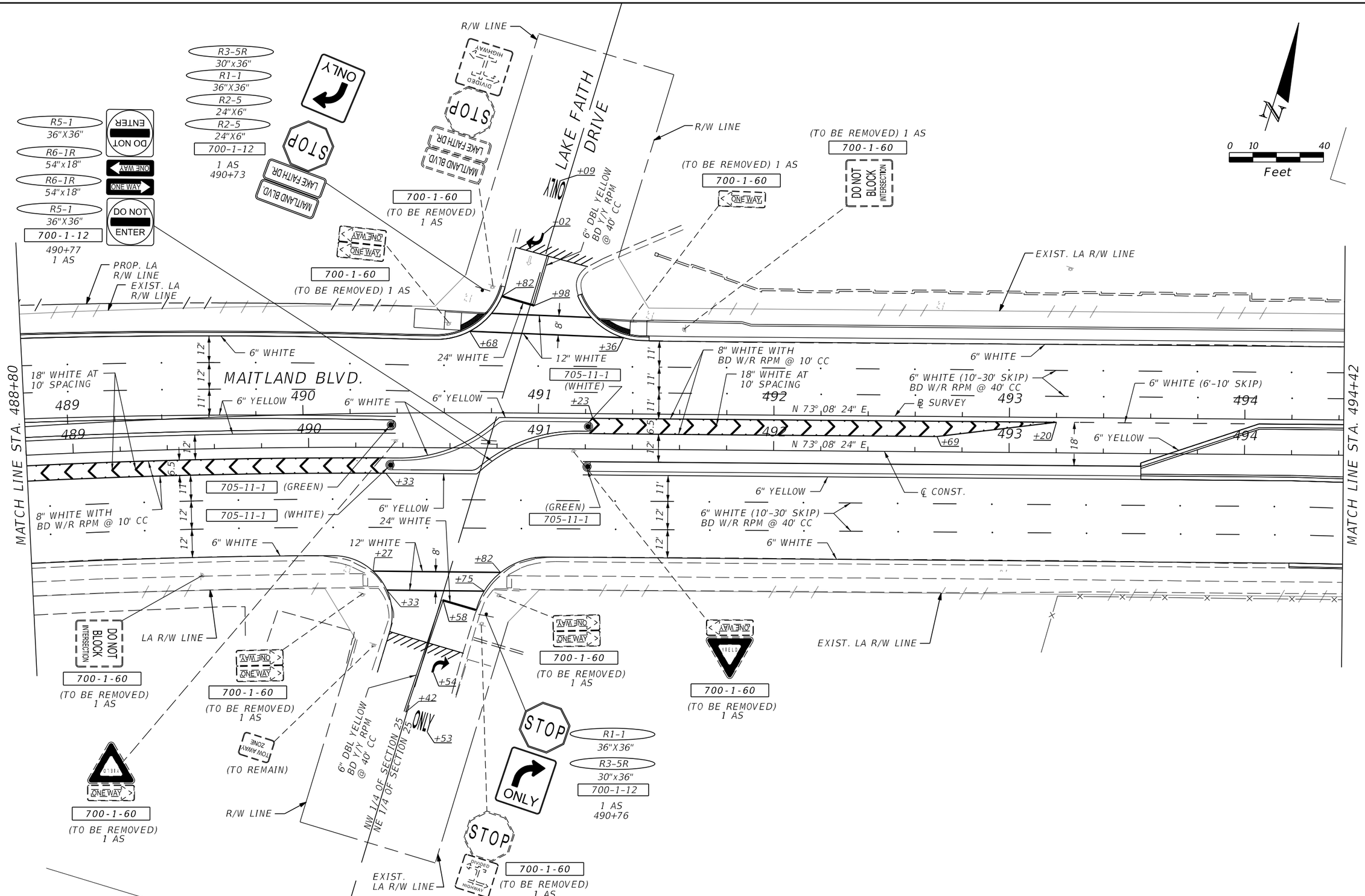
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
414	ORANGE	424217-1-52-01

SIGNING AND PAVEMENT MARKING PLANS

SHEET NO.
S-11

argiraud 10/8/2015 9:24:48 AM R:\Highway\W0RKV8i\42421715201\signing\plansp08.dgn

NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 61G15-23.003, F.A.C.



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STEVEN M. KREIDT, P.E.
P.E. LICENSE NUMBER 39540
KELLY, COLLINS, & GENTRY INC.
1700 NORTH ORANGE AVENUE
ORLANDO, FLORIDA 32804
CERTIFICATE OF AUTHORIZATION 00007350

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

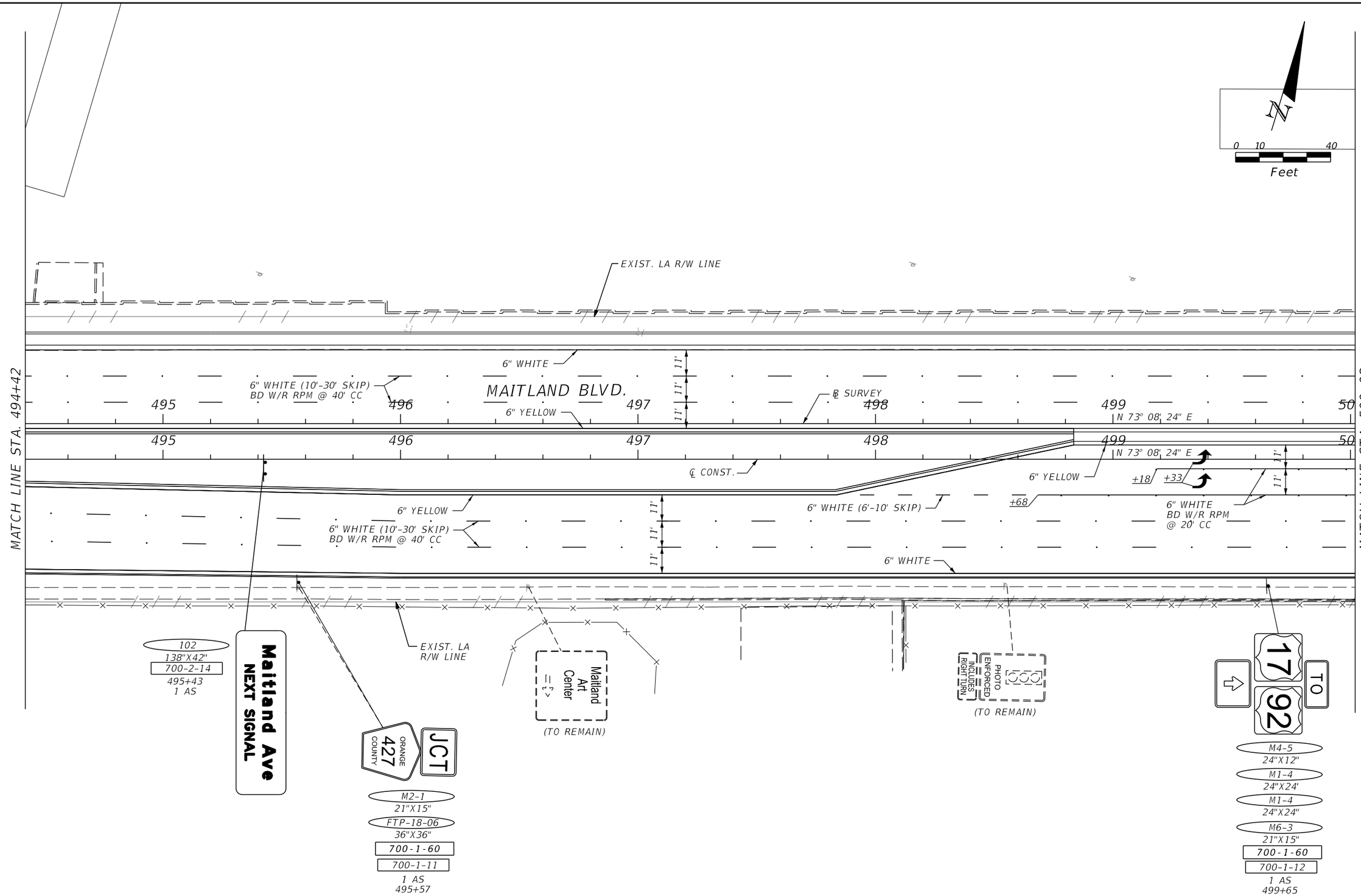
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
414	ORANGE	424217-1-52-01

SIGNING AND PAVEMENT MARKING PLANS

SHEET NO.
S-12

argiraud 10/8/2015 9:24:48 AM R:\Highway\W0RKV8i\42421715201\signing\plansp09.dgn

NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 61G15-23.003, F.A.C.



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STEVEN M. KREIDT, P.E.
P.E. LICENSE NUMBER 39540
KELLY, COLLINS, & GENTRY INC.
1700 NORTH ORANGE AVENUE
ORLANDO, FLORIDA 32804
CERTIFICATE OF AUTHORIZATION 00007350

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

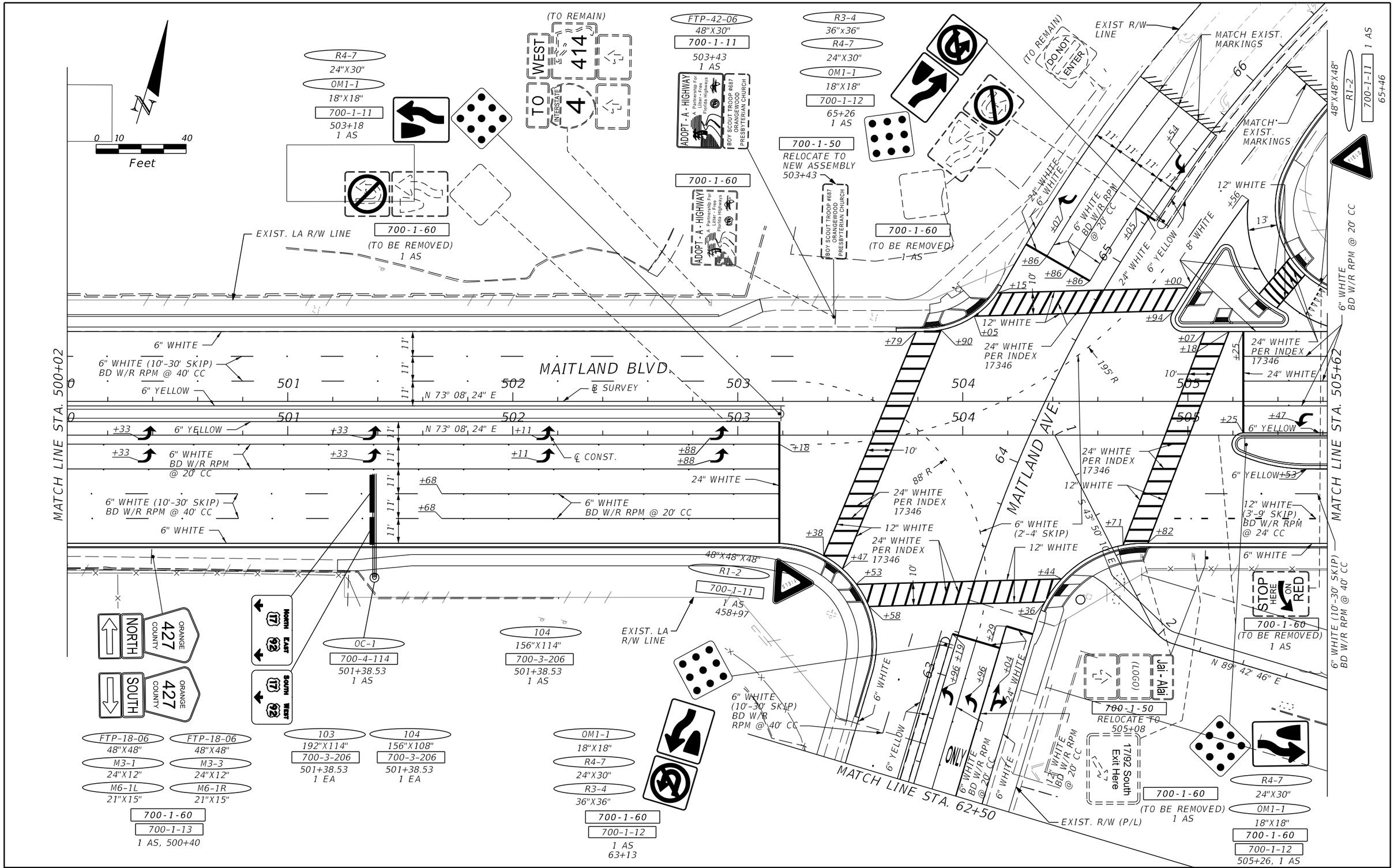
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
414	ORANGE	424217-1-52-01

SIGNING AND PAVEMENT MARKING PLANS

SHEET NO.
S-13

NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 61G15-23.003, F.A.C.

argiraud 10/8/2015 9:24:49 AM R:\Highway\W0RKV8i\42421715201\signing\plansp10.dgn



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STEVEN M. KREIDT, P.E.
P.E. LICENSE NUMBER 39540
KELLY, COLLINS, & GENTRY INC.
1700 NORTH ORANGE AVENUE
ORLANDO, FLORIDA 32804
CERTIFICATE OF AUTHORIZATION 00007350

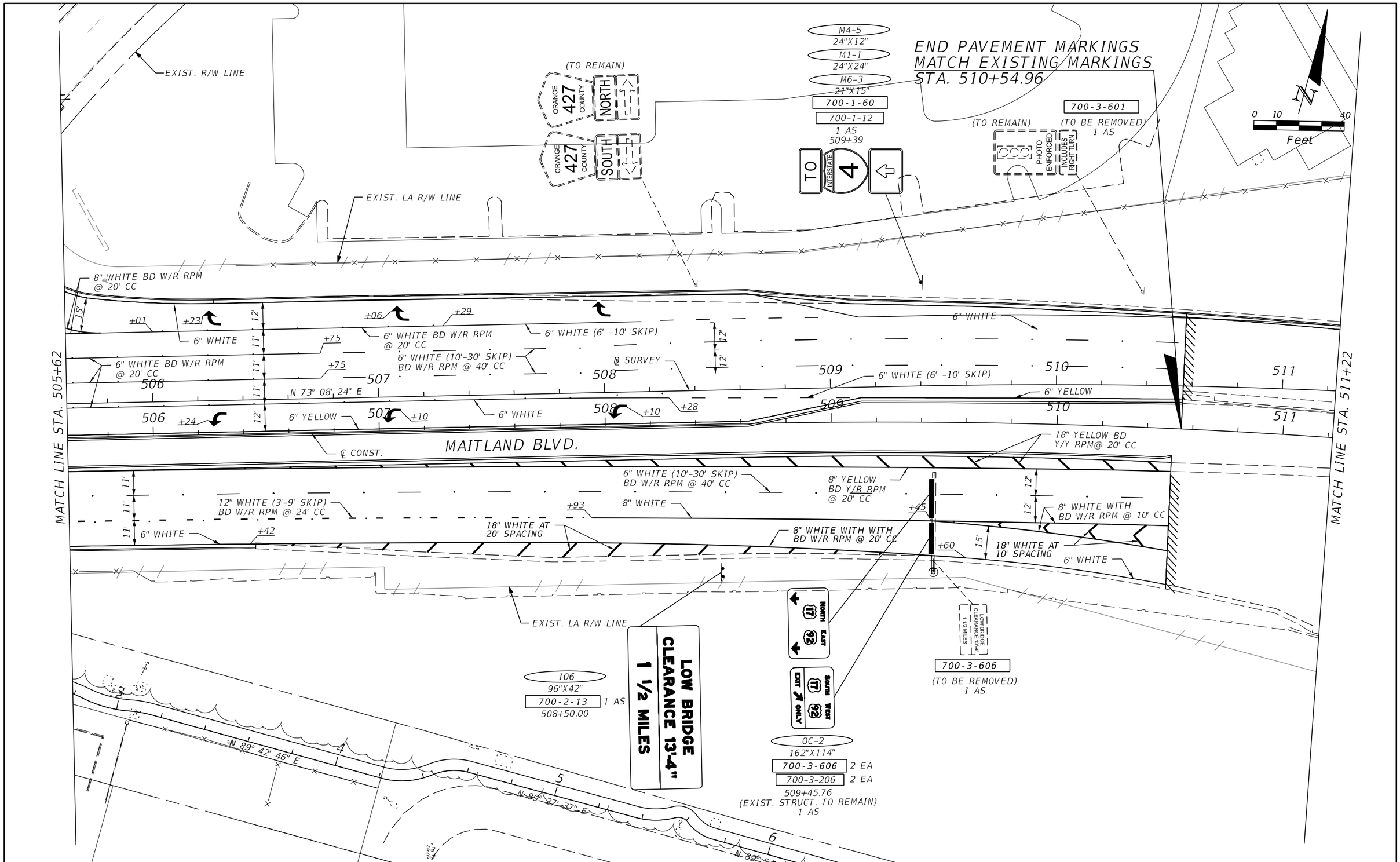
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
414	ORANGE	424217-1-52-01

SIGNING AND PAVEMENT MARKING PLANS

SHEET NO.
S-14

NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 61G15-23.003, F.A.C.



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STEVEN M. KREIDT, P.E.
P.E. LICENSE NUMBER 39540
KELLY, COLLINS, & GENTRY INC.
1700 NORTH ORANGE AVENUE
ORLANDO, FLORIDA 32804
CERTIFICATE OF AUTHORIZATION 00007350

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

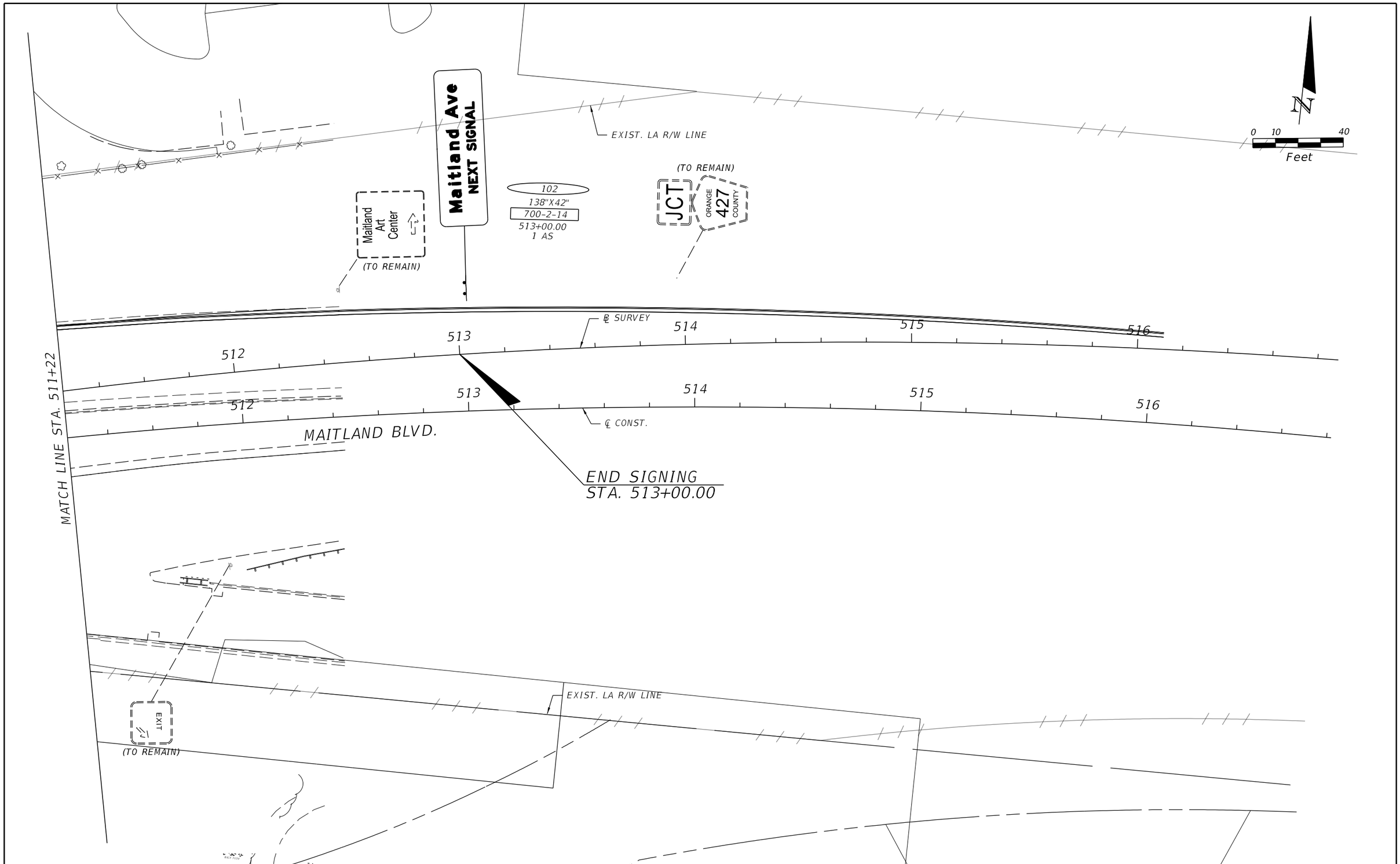
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
414	ORANGE	424217-1-52-01

SIGNING AND PAVEMENT MARKING PLANS

SHEET NO.
S-15

argiraud 10/8/2015 9:24:51 AM R:\Highway\WORKV8i\42421715201\signing\plansp12.dgn

NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 61G15-23.003, F.A.C.



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STEVEN M. KREIDT, P.E.
P.E. LICENSE NUMBER 39540
KELLY, COLLINS, & GENTRY INC.
1700 NORTH ORANGE AVENUE
ORLANDO, FLORIDA 32804
CERTIFICATE OF AUTHORIZATION 00007350

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

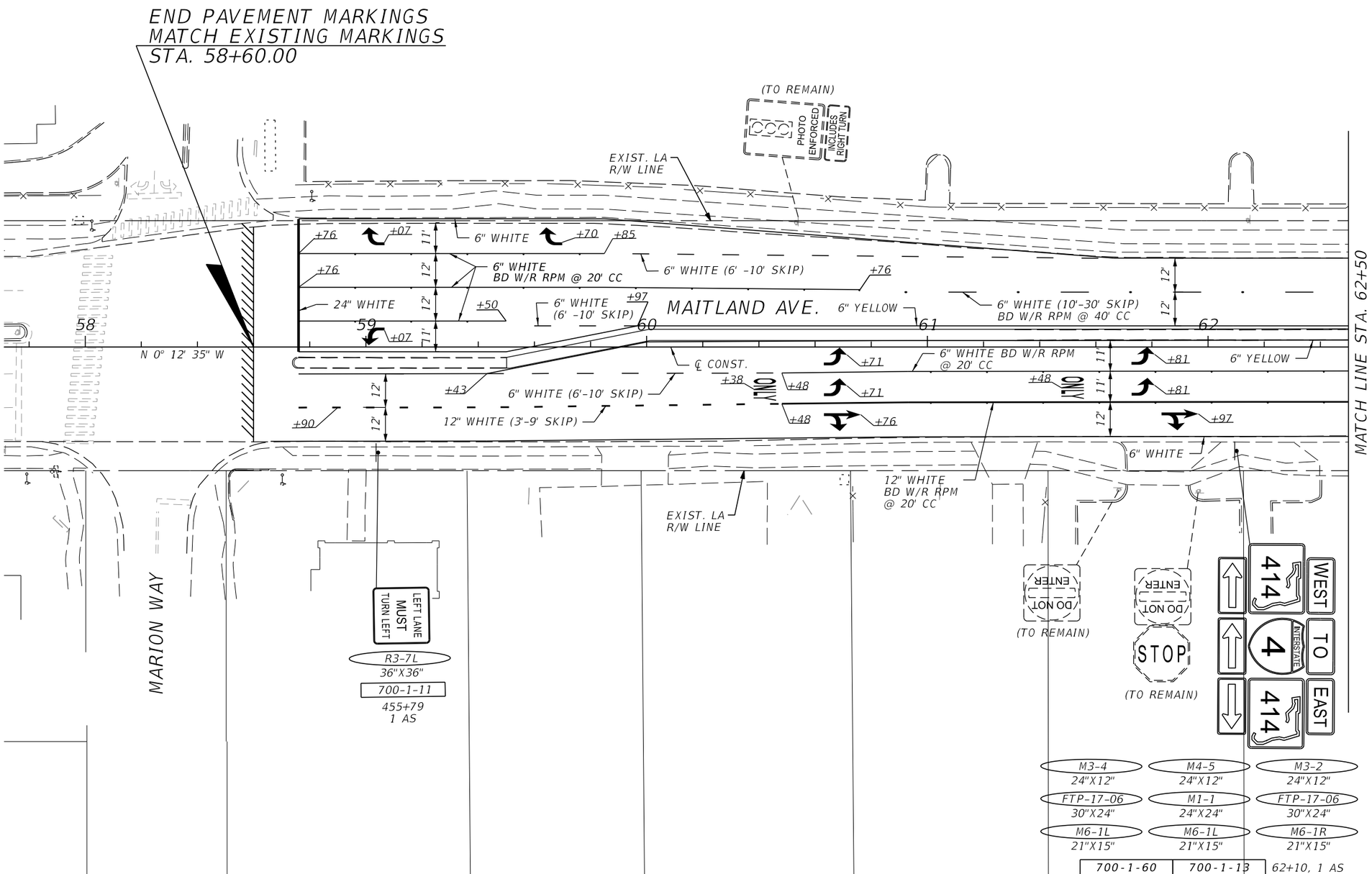
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
414	ORANGE	424217-1-52-01

SIGNING AND PAVEMENT MARKING PLANS

SHEET NO.
S-16

argiraud 10/8/2015 9:24:52 AM R:\Highway\WORKV8i\42421715201\signing\plansp13.dgn

NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 61G15-23.003, F.A.C.



0 10 40
Feet

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STEVEN M. KREIDT, P.E.
P.E. LICENSE NUMBER 39540
KELLY, COLLINS, & GENTRY INC.
1700 NORTH ORANGE AVENUE
ORLANDO, FLORIDA 32804
CERTIFICATE OF AUTHORIZATION 00007350

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
414	ORANGE	424217-1-52-01

SIGNING AND PAVEMENT MARKING PLANS

SHEET NO.
S-17

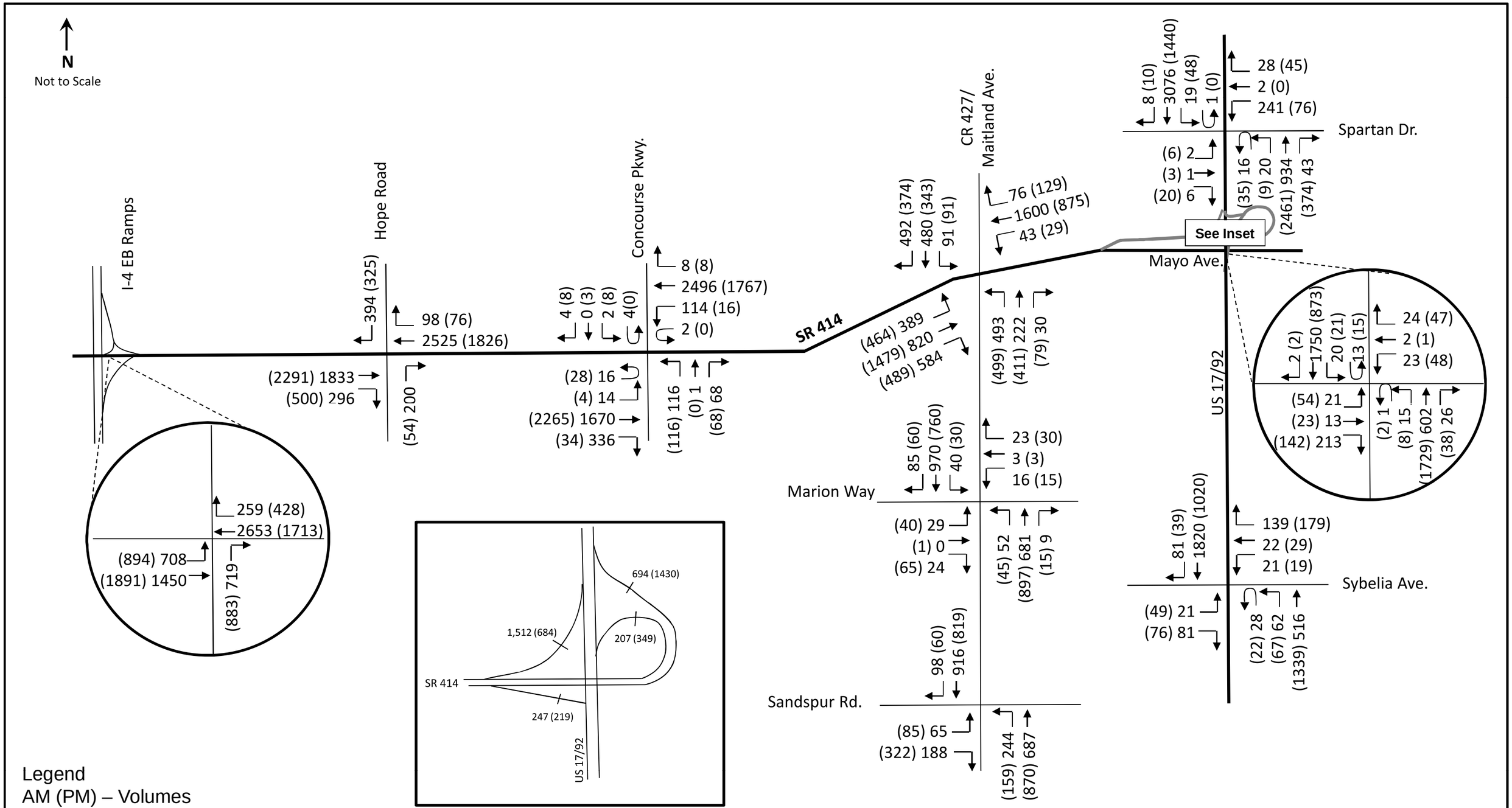
argiraud 10/8/2015 9:24:53 AM R:\Highway\WORKV8i\42421715201\signing\plansp14.dgn

NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 61G15-23.003, F.A.C.

APPENDIX B

MAITLAND BOULEVARD FUTURE VOLUMES

FROM SR 414 DTTM



State of Florida Department of Transportation	SR 414/Maitland Blvd. DTTM	Project ID: 424217-1	Existing Year (2011) AM & PM Peak Hour Volumes	Figure 4
				Page 16

APPENDIX C

MAITLAND CONCOURSE SOUTH TRAFFIC

Maitland Concourse South Traffic

Existing traffic volumes associated with the Maitland Concourse South development were obtained in year 2013 from vehicle counts conducted at the development access driveway. Counts were conducted for one week. Year 2013 count data was adjusted to be consistent with year 2015 by applying a 2% annual growth rate. The raw traffic data is provided in in this appendix. Peak-hour traffic volumes at the site are shown in Table C.1 for each day of the week.

Table C.1: Peak-Hour Traffic Volumes at Maitland Concourse South

Time Period	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
AM	241	216	244	238	235	212	54
PM	216	221	234	279	209	199	65

Sunday peak-hour volumes are similar to weekday peak-hour volumes for existing development. However, weekday volumes will increase with additional planned development in Concourse South and full occupancy of the office and medical office buildings. Therefore it is anticipated that future peak-hours will occur during a typical weekday.

Concourse South

Existing traffic for Concourse South was monitored for a week. The monitored rates were adjusted to reflect the occupancy. Trips associated with additional future development were then forecasted using ITE rates and equations then adjusted using the monitored rates for this site.

An initial ITE trip generation estimate was calculated for the existing Maitland Concourse South development. Compared to the existing vehicle counts, the ITE trip generation equations over-estimate the actual entering and exiting vehicles for the daily, AM and PM peak-hours. The ITE trip generation estimates for the future Maitland Concourse South office and medical office uses (excluding the synagogue and new private school land use) were therefore adjusted by the calculated comparison factor rates to more accurately estimate future trips associated with the future land use scenario. The comparison factor rates and total trip generation estimate summary for the daily, AM, and PM peak-hour for Maitland Concourse South are shown in Tables C.2 through C.11.

Table C.2: Concourse South Existing Daily Trip Generation

Land Use	ITE Code	Intensity		Total Daily
Medical Office	720	44	KSF	1,566
Synagogue	561	45	KSF	479
Office	710	93	KSF	1,246
Total				3,291

Table C.3: Monitored Daily Trips for Existing Concourse South

Existing Count Data	Daily
Weekday	Total
Monday	1964
Tuesday	2051
Wedndesday	2304
Thursday	2054
Friday	1848
Count Max	2304
ITE Estimate	3291
Count Max as % of Estimate	70%

Table C.4: Concourse South Existing AM Peak-Hour Trip Generation

Land Use	ITE Code	Intensity	Initial AM Trips			Int. Capture		ITE Estimated AM Trips			Adjusted External AM Trips		
			In	Out	Total	In	Out	In	Out	Total	In	Out	Total
Medical Office	720	44 KSF	82	22	104	0	0	82	22	104	72	15	87
Synagogue	561	45 KSF	5	1	6	0	0	5	1	6	4	1	5
Office	710	93 KSF	159	22	181	0	0	159	22	181	140	15	155
Total			246	45	291	0	0	246	45	291	216	31	247

Table C.5: Monitored AM Peak-Hour Trips for Existing Concourse South

Existing Count Data	AM	
Weekday	In	Out
Monday	204	21
Tuesday	217	30
Wedndesday	208	31
Thursday	209	28
Friday	201	19
Count Max	217	31
ITE Estimate	246	45
Count Max as % of Estimate	88%	69%

Table C.6: Concourse South Existing PM Peak-Hour Trip Generation

Land Use	ITE Code	Intensity	Initial PM Trips			Int. Capture		ITE Estimated PM Trips			Adjusted External PM Trips		
			In	Out	Total	In	Out	In	Out	Total	In	Out	Total
Medical Office	720	44 KSF	39	99	138	2	1	37	98	135	22	77	99
Synagogue	561	45 KSF	36	40	76	0	0	36	40	76	21	31	52
Office	710	93 KSF	31	152	183	1	2	30	150	180	17	117	134
Total			106	291	397	3	3	103	288	391	60	225	285

Table C.7: Monitored PM Peak-Hour Trips for Existing Concourse South

Count Data	PM	
Weekday	In	Out
Monday	18	207
Tuesday	27	210
Wedndesday	60	225
Thursday	19	196
Friday	22	178
Count MAX	60	225
ITE Estimate	103	288
Count Max as % of Estimate	58%	78%

Table C.8: Concourse South Future Daily Trip Generation

Land Use	ITE Code	Intensity	ITE Estimated	Adjusted Daily
Medical Office	720	87 KSF	3,347	2,343
Synagogue	561	45 KSF	479	335
Private School (K-8)	534	225 STDNT	584	409
Office	710	162 KSF	1,890	1,323
Total			5,716	4,002

*Note: Daily trip generation for land use code 534 (Private School K-8) is not available from the ITE manual, so daily trips are based on the peak-hour relationship of LUC 534 to LUC 520 - Elementary School.

Table C.9: Concourse South Future AM Peak-Hour Trip Generation

Land Use	ITE Code	Intensity		Initial AM Trips			Int. Capture		ITE Estimated AM Trips			Adjusted External AM Trips		
				In	Out	Total	In	Out	In	Out	Total	In	Out	Total
Medical Office	720	87	KSF	164	44	208	1	1	163	43	206	144	30	174
Synagogue	561	45	KSF	5	1	6	0	0	5	1	6	4	1	5
Private School (K-8)	534	225	STDNT	113	93	206	0	0	113	93	206	113	93	206
Office	710	162	KSF	247	34	281	1	1	246	33	279	217	23	240
Total				529	172	701	2	2	527	170	697	478	147	625

Table C.10: Concourse South Future PM Peak-Hour Trip Generation

Land Use	ITE Code	Intensity		Initial PM Trips			Int. Capture		ITE Estimated PM Trips			Adjusted External PM Trips		
				In	Out	Total	In	Out	In	Out	Total	In	Out	Total
Medical Office	720	87	KSF	72	185	257	2	2	70	183	253	41	143	184
Synagogue	561	45	KSF	36	40	76	0	0	36	40	76	21	31	52
Private School (K-8)	534	225	STDNT	19	21	40	0	0	19	21	40	19	21	40
Office	710	162	KSF	44	215	259	2	2	42	213	255	24	166	190
Total				171	461	632	4	4	167	457	624	105	361	466

Table C.11: Concourse South Existing and Future External Trip Generation Summary

	EXISTING MAITLAND CONCOURSE SOUTH					FUTURE MAITLAND CONCOURSE SOUTH				
	Daily	AM Peak		PM Peak		Daily	AM Peak		PM Peak	
		In	Out	In	Out		In	Out	In	Out
Medical Office	1,057	72	15	22	77	2,343	144	30	41	143
Synagogue	323	4	1	21	31	335	4	1	21	31
Private School		0	0	0	0	409	113	93	19	21
Office	841	140	15	17	117	1,323	217	23	24	166
Total Trips	2,221	216	31	60	225	4,002	478	147	105	361

*Note: Daily trip generation for land use code 534 (Private School K-8) is not available from the ITE manual.

Maitland Concourse South Traffic Counts

Data Collection Incorporated
Vehicle Counts

Datasets:

Site: **[58010001] Maitland Concourse Dr.**
Direction: 8 - East bound A>B, West bound B>A., **Lane:** 0
Survey Duration: 16:22 Monday, September 16, 2013 => 9:43 Tuesday, September 24, 2013
File: Z:\My Docs\dci\580-1\5801000124Sep2013.EC0 (Plus)
Data type: Axle sensors - Paired (Class, Speed, Count)

Profile:

Filter time: **0:00 Tuesday, September 17, 2013 => 0:00 Tuesday, September 24, 2013**
Speed range: 5 – 50 mph.
Direction: East (bound)

*** Tuesday, September 17, 2013 - Total=995, 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
0	**0**	**0**	**1**	**1**	**17**	**68**	**159**	**199**	**98**	**36**	**48**	**100**	**93**	**46**	**47**	**27**	**15**	**23**	**9**	**3**	**5**	**0**	**0**
0	0	0	0	0	0	5	22	**47**	42	9	9	19	**27**	14	13	7	7	4	5	0	2	0	0
0	0	0	0	1	3	16	39	**57**	22	11	8	28	**20**	12	15	9	4	3	1	0	3	0	0
0	0	0	0	0	6	20	37	**44**	16	11	10	21	**33**	10	10	7	1	7	2	0	0	0	0
0	0	0	1	0	8	27	**61**	51	18	5	21	**32**	13	10	9	4	3	9	1	3	0	0	0

AM Peak 0745 - 0845 (209), AM PHF=0.86 PM Peak 1245 - 1345 (112), PM PHF=0.85

*** Wednesday, September 18, 2013 - Total=1114, 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
0	**1**	**0**	**1**	**1**	**3**	**60**	**151**	**183**	**108**	**44**	**31**	**94**	**98**	**58**	**92**	**59**	**35**	**75**	**12**	**6**	**2**	**0**	**0**
0	1	0	0	0	0	5	25	**44**	40	14	11	17	**25**	17	15	29	7	23	2	0	1	0	0
0	0	0	0	0	0	12	30	**57**	32	7	5	18	**26**	16	18	11	6	33	7	1	0	0	0
0	0	0	1	0	0	20	43	**46**	20	11	5	25	**27**	10	23	12	10	14	2	2	1	0	0
0	0	0	0	1	3	23	**53**	36	16	12	10	**34**	20	15	36	7	12	5	1	3	0	0	0

AM Peak 0745 - 0845 (200), AM PHF=0.88 PM Peak 1245 - 1345 (112), PM PHF=0.82

*** Thursday, September 19, 2013 - Total=992, 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
1	**0**	**0**	**0**	**1**	**10**	**59**	**170**	**179**	**122**	**59**	**49**	**81**	**95**	**67**	**44**	**19**	**11**	**5**	**16**	**3**	**0**	**0**	**1**
0	0	0	0	0	0	9	30	**40**	37	13	8	17	**24**	22	14	3	2	1	3	0	0	0	0
0	0	0	0	1	0	16	36	**46**	30	20	16	20	**30**	17	19	9	4	3	9	0	0	0	1
1	0	0	0	0	4	16	35	**46**	33	14	11	13	**24**	15	5	4	3	1	3	0	0	0	0
0	0	0	0	0	6	18	**69**	47	22	12	14	**31**	17	13	6	3	2	0	1	3	0	0	0

AM Peak 0745 - 0845 (201), AM PHF=0.73 PM Peak 1245 - 1345 (109), PM PHF=0.88

*** Friday, September 20, 2013 - Total=896, 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
0	**0**	**0**	**0**	**2**	**2**	**37**	**141**	**179**	**134**	**63**	**29**	**65**	**108**	**42**	**19**	**21**	**10**	**7**	**25**	**4**	**5**	**2**	**1**
0	0	0	0	2	0	3	25	**44**	39	24	8	16	**17**	12	6	5	6	0	4	0	3	1	0
0	0	0	0	0	0	5	27	**55**	35	11	7	15	**32**	14	6	6	1	2	15	2	0	1	1
0	0	0	0	0	1	13	30	**35**	29	13	6	18	**37**	7	3	5	2	3	2	1	0	0	0
0	0	0	0	0	1	16	**59**	45	31	15	8	16	**22**	9	4	5	1	2	4	1	2	0	0

AM Peak 0745 - 0845 (193), AM PHF=0.82 PM Peak 1300 - 1400 (108), PM PHF=0.73

*** Saturday, September 21, 2013 - Total=159, 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
0	**1**	**0**	**0**	**0**	**4**	**4**	**5**	**20**	**45**	**35**	**8**	**8**	**4**	**5**	**7**	**3**	**3**	**1**	**3**	**0**	**3**	**0**	**0**
0	0	0	0	0	0	0	2	0	11	**14**	3	**3**	2	0	1	0	1	0	2	0	1	0	0
0	0	0	0	0	1	1	0	1	**9**	8	4	**1**	0	4	2	1	1	0	1	0	0	0	0
0	0	0	0	0	2	0	2	6	**13**	5	0	**1**	1	1	2	0	1	1	0	0	1	0	0
0	1	0	0	0	1	3	1	13	**12**	8	1	**3**	1	0	2	2	0	0	0	0	1	0	0

AM Peak 0915 - 1015 (48), AM PHF=0.86 PM Peak 1200 - 1300 (8), PM PHF=0.67

*** Sunday, September 22, 2013 - Total=500, 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
0	**1**	**0**	**1**	**2**	**0**	**1**	**3**	**94**	**59**	**28**	**14**	**91**	**14**	**161**	**20**	**1**	**2**	**4**	**2**	**0**	**1**	**0**	**1**
0	1	0	0	1	0	0	0	1	**41**	2	4	16	3	7	**15**	0	1	1	0	0	0	0	0
0	0	0	0	0	0	0	1	5	**9**	14	0	41	3	**41**	3	0	0	1	1	0	1	0	1
0	0	0	0	0	0	0	1	**15**	2	7	6	25	2	**56**	2	1	0	2	1	0	0	0	0
0	0	0	1	1	0	1	1	**73**	7	5	4	9	6	**57**	0	0	1	0	0	0	0	0	0

AM Peak 0830 - 0930 (138), AM PHF=0.47 PM Peak 1415 - 1515 (169), PM PHF=0.74

*** Monday, September 23, 2013 - Total=947, 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
0	**0**	**1**	**0**	**0**	**9**	**47**	**157**	**176**	**116**	**56**	**50**	**100**	**79**	**49**	**33**	**18**	**14**	**21**	**11**	**8**	**2**	**0**	**0**
0	0	0	0	0	1	6	13	**42**	42	23	16	18	**24**	19	7	5	1	5	3	2	0	0	0
0	0	1	0	0	0	12	40	**50**	27	8	14	19	**24**	11	5	4	3	2	2	0	1	0	0
0	0	0	0	0	1	11	**39**	37	23	17	9	**25**	20	10	9	5	4	7	4	1	0	0	0
0	0	0	0	0	7	18	**65**	47	24	8	11	**38**	11	9	12	4	6	7	2	5	1	0	0

AM Peak 0730 - 0830 (196), AM PHF=0.75 PM Peak 1230 - 1330 (111), PM PHF=0.73

Data Collection Incorporated
Vehicle Counts

Datasets:

Site: **[58010001] Maitland Concourse Dr.**
Direction: 8 - East bound A>B, West bound B>A., **Lane:** 0
Survey Duration: 16:22 Monday, September 16, 2013 => 9:43 Tuesday, September 24, 2013
File: Z:\My Docs\dci\580-1\5801000124Sep2013.EC0 (Plus)
Data type: Axle sensors - Paired (Class, Speed, Count)

Profile:

Filter time: **0:00 Tuesday, September 17, 2013 => 0:00 Tuesday, September 24, 2013**
Speed range: 5 - 50 mph.
Direction: West (bound)

* Tuesday, September 17, 2013 - Total=987, 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
2	**0**	**0**	**0**	**2**	**1**	**6**	**14**	**30**	**40**	**54**	**119**	**89**	**62**	**48**	**72**	**176**	**169**	**52**	**11**	**29**	**5**	**4**	**2**
2	0	0	0	0	0	0	2	10	7	9	21	**31**	21	9	19	38	**61**	23	3	3	1	0	0
0	0	0	0	2	1	2	2	7	13	20	**28**	28	16	13	14	40	**43**	12	2	11	1	0	0
0	0	0	0	0	0	1	5	5	10	15	**42**	22	16	12	25	**54**	35	11	0	9	2	4	0
0	0	0	0	0	0	3	5	8	10	10	**28**	8	9	14	14	**44**	30	6	6	6	1	0	2

AM Peak 1115 - 1215 (129), AM PHF=0.77 PM Peak 1630 - 1730 (202), PM PHF=0.83

* Wednesday, September 18, 2013 - Total=1107, 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
0	**1**	**0**	**0**	**1**	**1**	**8**	**12**	**31**	**46**	**42**	**93**	**85**	**63**	**50**	**93**	**210**	**156**	**116**	**59**	**24**	**8**	**3**	**5**
0	1	0	0	0	1	0	1	4	8	10	14	**31**	14	12	21	56	**62**	27	24	10	3	1	0
0	0	0	0	1	0	2	3	8	9	10	**27**	19	16	18	16	**47**	38	24	28	7	4	2	3
0	0	0	0	0	0	1	5	14	16	9	**25**	16	20	10	26	**68**	33	41	4	4	1	0	2
0	0	0	0	0	0	5	3	5	13	13	**27**	19	13	10	30	**39**	23	24	3	3	0	0	0

AM Peak 1115 - 1215 (110), AM PHF=0.89 PM Peak 1615 - 1715 (216), PM PHF=0.79

* Thursday, September 19, 2013 - Total=984, 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
0	**0**	**0**	**0**	**2**	**0**	**6**	**12**	**28**	**46**	**62**	**114**	**129**	**64**	**56**	**72**	**163**	**148**	**45**	**15**	**14**	**5**	**3**	**0**
0	0	0	0	0	0	1	2	5	14	17	21	**34**	20	14	15	48	**69**	17	6	7	2	0	0
0	0	0	0	0	0	1	4	4	8	13	28	**31**	15	14	17	27	**31**	12	1	2	3	1	0
0	0	0	0	0	0	4	2	12	8	12	27	**34**	17	14	23	**52**	31	9	6	3	0	0	0
0	0	0	0	2	0	0	4	7	16	20	**38**	30	12	14	17	**36**	17	7	2	2	0	2	0

AM Peak 1145 - 1245 (137), AM PHF=0.90 PM Peak 1630 - 1730 (188), PM PHF=0.68

* Friday, September 20, 2013 - Total=890, 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
1	**0**	**0**	**0**	**1**	**2**	**5**	**8**	**19**	**47**	**49**	**88**	**125**	**73**	**54**	**72**	**146**	**118**	**29**	**11**	**20**	**14**	**7**	**1**
0	0	0	0	0	1	0	2	0	11	12	11	**33**	22	15	21	35	**60**	13	3	0	4	0	0
0	0	0	0	1	0	1	4	1	11	9	17	**38**	25	17	21	**31**	12	6	4	5	8	3	1
1	0	0	0	0	0	0	1	10	14	13	**31**	31	13	12	10	**45**	30	9	2	11	0	4	0
0	0	0	0	0	1	4	1	8	11	15	**29**	23	13	10	20	**35**	16	1	2	4	2	0	0

AM Peak 1130 - 1230 (131), AM PHF=0.86 PM Peak 1615 - 1715 (171), PM PHF=0.71

* Saturday, September 21, 2013 - Total=156, 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
0	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**2**	**3**	**7**	**18**	**53**	**38**	**9**	**8**	**6**	**4**	**0**	**2**	**1**	**3**	**0**	**0**
0	0	0	1	0	0	0	0	0	1	1	10	**12**	**15**	1	4	2	0	0	1	1	0	0	0
0	0	0	0	0	0	0	1	0	0	2	2	**8**	**5**	4	1	1	4	0	1	0	1	0	0
0	0	0	0	0	0	0	0	1	0	2	2	**11**	**15**	1	2	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	1	2	2	**4**	**22**	3	3	1	3	0	0	0	0	2	0	0

AM Peak 1145 - 1245 (35), AM PHF=0.73 PM Peak 1245 - 1345 (57), PM PHF=0.65

* Sunday, September 22, 2013 - Total=495, 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
0	**1**	**0**	**0**	**1**	**2**	**0**	**0**	**27**	**72**	**16**	**15**	**123**	**17**	**41**	**69**	**81**	**21**	**3**	**2**	**1**	**3**	**0**	**0**
0	1	0	0	0	0	0	0	0	61	1	3	**4**	5	3	1	**17**	8	1	0	0	0	0	0
0	0	0	0	0	0	0	0	0	6	4	1	**30**	4	4	1	**26**	1	0	0	0	3	0	0
0	0	0	0	1	1	0	0	1	4	2	2	**64**	4	28	5	**23**	5	2	2	0	0	0	0
0	0	0	0	0	1	0	0	26	1	9	**9**	25	4	6	**62**	15	7	0	0	1	0	0	0

AM Peak 1145 - 1245 (107), AM PHF=0.42 PM Peak 1545 - 1645 (128), PM PHF=0.52

* Monday, September 23, 2013 - Total=947, 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
0	**1**	**1**	**0**	**0**	**1**	**6**	**5**	**21**	**44**	**58**	**98**	**106**	**54**	**66**	**75**	**154**	**158**	**53**	**15**	**4**	**20**	**5**	**2**
0	0	0	0	0	1	0	0	1	10	12	27	**32**	18	12	20	25	**70**	20	6	1	12	1	2
0	1	0	0	0	0	4	1	6	9	11	27	**31**	8	22	23	**34**	32	10	4	0	7	0	0
0	0	0	0	0	0	2	3	6	17	18	14	**22**	15	15	19	**49**	41	14	4	0	1	4	0
0	0	1	0	0	0	0	1	8	8	17	**30**	21	13	17	13	**46**	15	9	1	3	0	0	0

AM Peak 1145 - 1245 (115), AM PHF=0.90 PM Peak 1615 - 1715 (199), PM PHF=0.71

APPENDIX D

AM & PM TURNING MOVEMENT WORKSHEETS

D-1: AM Turning Movement Worksheet

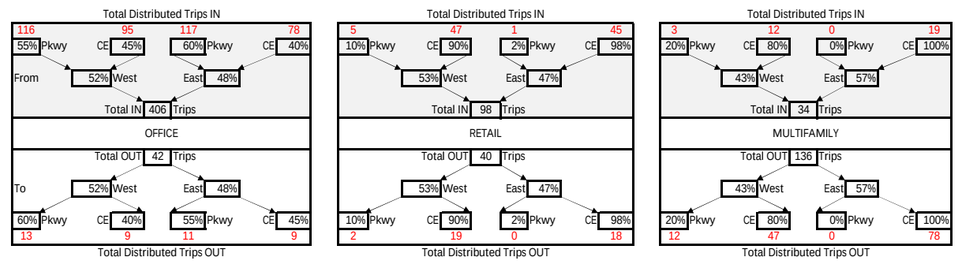
D-2: PM Turning Movement Worksheet

APPENDIX D-1

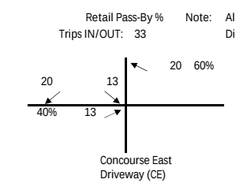
AM Turning Movement Worksheet

Notes on driveway distribution calculations:

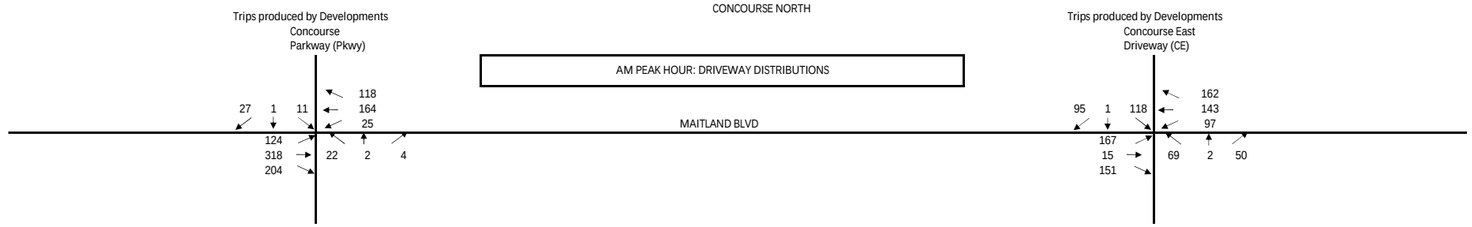
- Each box represents a separate land use/building within each development, as indicated by its description in the center
- The total trip volumes in and out of each land use were derived from the ITE trip generation estimates previously calculated
- The boxes South of Maitland Blvd represent the future land uses associated with Concourse South, and are arranged with respect to their location within the site
- The distribution of the trips' origin/destination for Concourse South was derived from existing intersection distributions
- Driveway assignments to each driveway from Concourse South are estimated based on proximity
- The boxes North of Maitland Blvd represent the future land uses associated with Concourse North
- The distribution of the trips' respective origin/destination for Concourse North was derived from the model plots



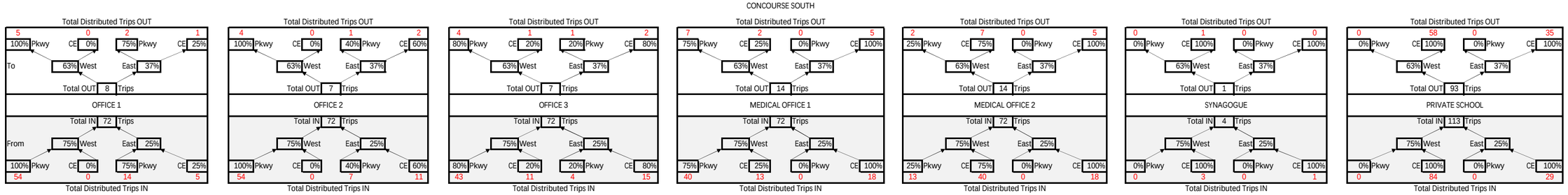
CONCOURSE NORTH



Note: All pass by trips assigned to Concourse East, and are added to total Distributions derived from existing through volumes

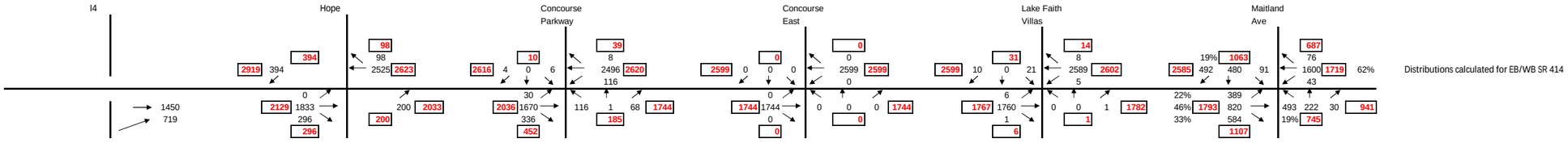


CONCOURSE SOUTH



EXISTING AM TURNS

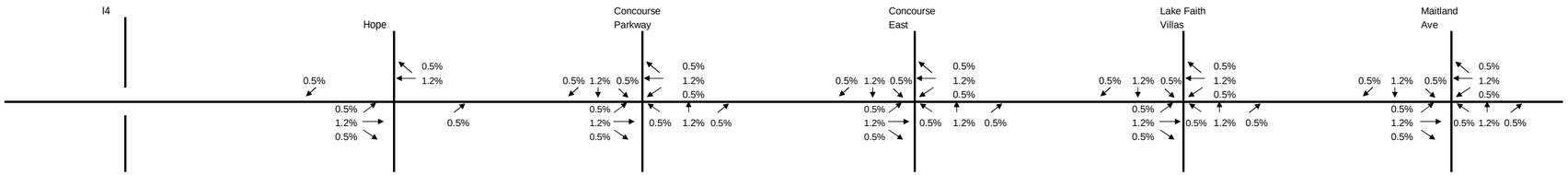
Derived from final DTTM for PD&E
Figure 4, Existing year 2011
AM & PM Peak hour volumes
Financial project ID: 424217-1



Distributions calculated for EB/WB SR 414

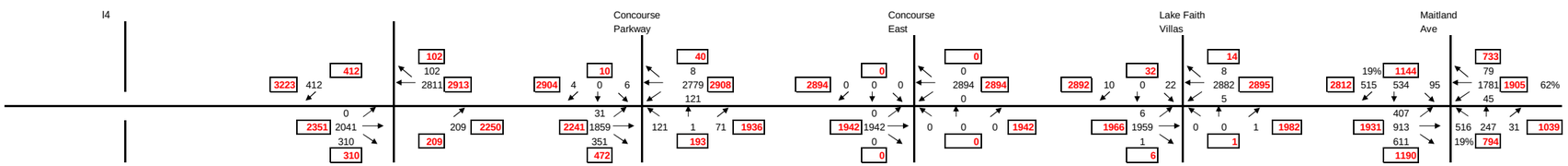
APPLY ANNUAL GROWTH RATES

Growth rate derived from final DTTM for PD&E
Project traffic forecasts for design hour:
1.2% for through; 0.5% for turning movements



FUTURE YEAR AM BACKGROUND VOLUMES

Existing Year: 2011
Future Year: 2020
Years Elapsed: 9

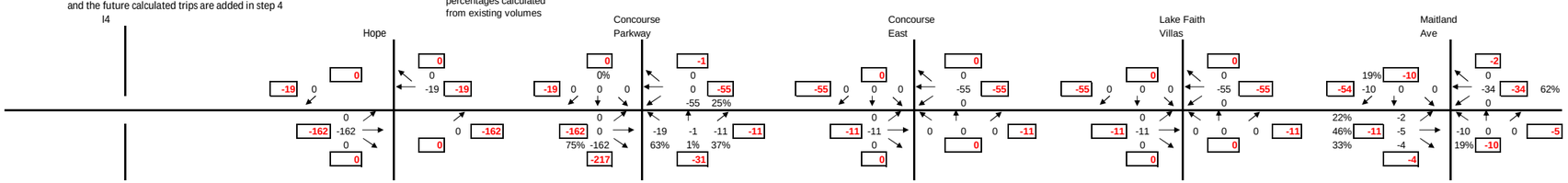


REMOVE EXISTING AM CONCOURSE SOUTH VOLUMES

In order to estimate future driveway volumes associated with Maitland Concourse South, the *existing* Maitland Concourse South trips are subtracted and the future calculated trips are added in step 4

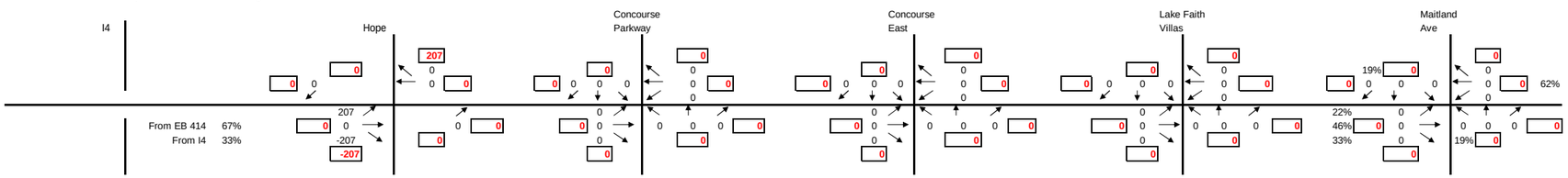
Volumes derived from count data, distribution percentages calculated from existing volumes

In 217
Out 31



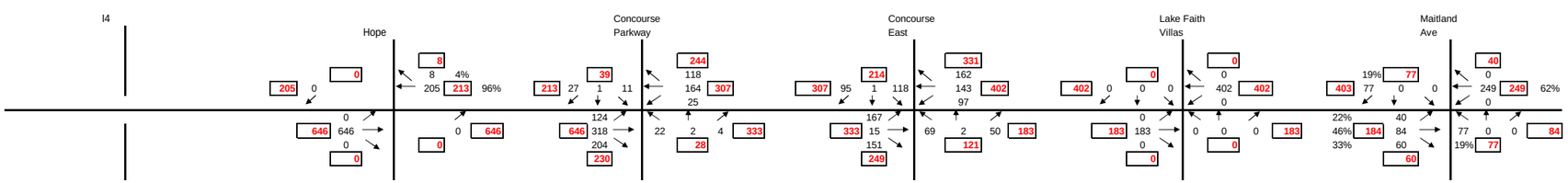
The removal of the EB right from SR 414 will re-route the traffic as an EB left onto Hope Road. The reduction/addition of trips is based on the distribution of total traffic entering EB SR 414. Trips from I4 can use the EB right turn.

REMOVE AM EB RIGHT TO HOPE FROM SR 414

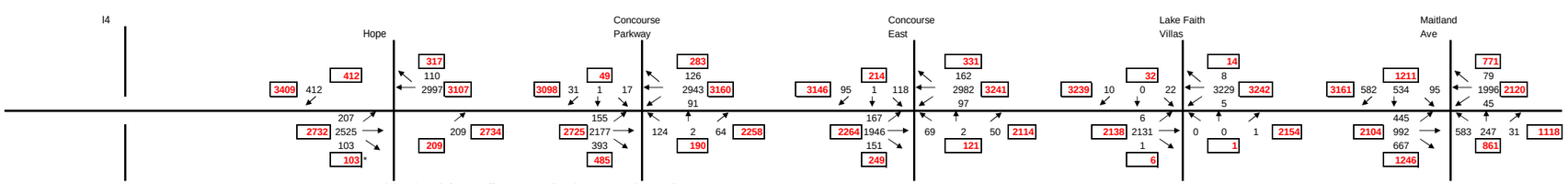


The future trips associated with both Maitland Concourse North and South are added and distributed through the network using existing distributions at the intersections

ADD AM MAITLAND CONCOUSRE NORTH+SOUTH VOLUMES



FUTURE TOTAL AM VOLUMES



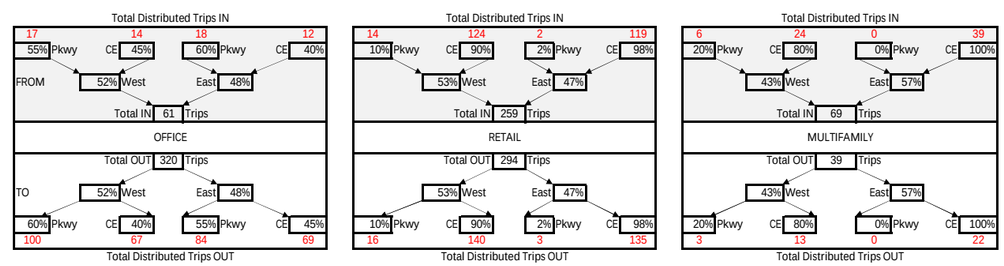
* EB Right volume is from I4 offramp connection; does not enter intersection

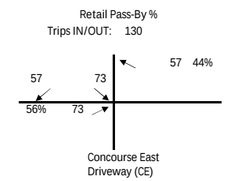
APPENDIX D-2

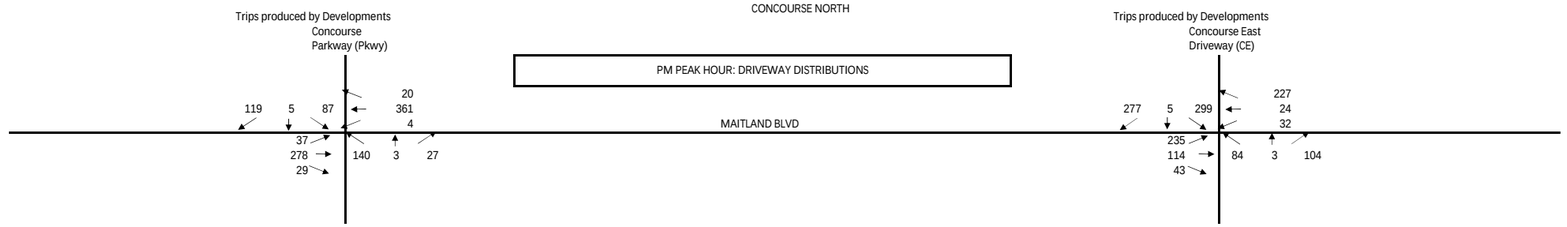
PM Turning Movement Worksheet

Notes on driveway distribution calculations:

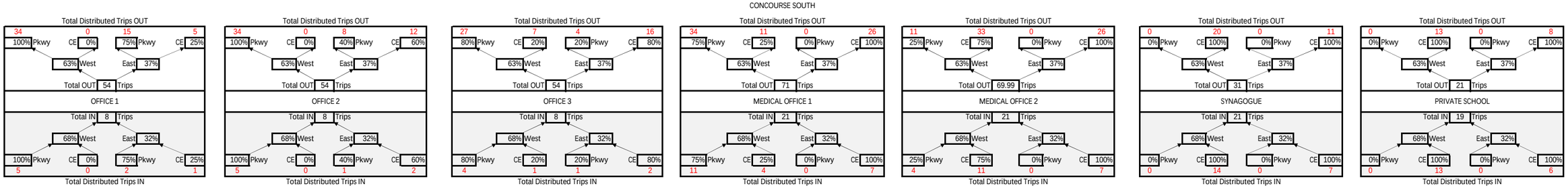
- Each box represents a separate land use/building within each development, as indicated by its description in the center
- The total trip volumes in and out of each land use were derived from the ITE trip generation estimates previously calculated
- The boxes South of Maitland Blvd represent the future land uses associated with Concourse South, and are arranged with respect to their location within the site
- The distribution of the trips' origin/destination for Concourse South was derived from existing intersection distributions
- Driveway assignments to each driveway from Concourse South are estimated based on proximity
- The boxes North of Maitland Blvd represent the future land uses associated with Concourse North
- The distribution of the trips' respective origin/destination for Concourse North was derived from the model plots
- For Concourse North, 70% of the total trips are assumed to use the proposed Concourse East driveway





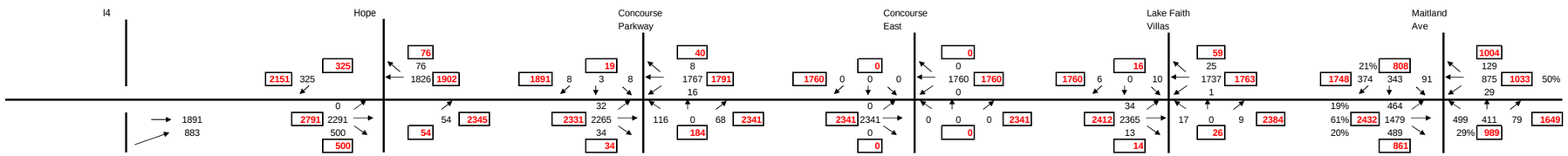


CONCOURSE SOUTH



EXISTING PM TURNS

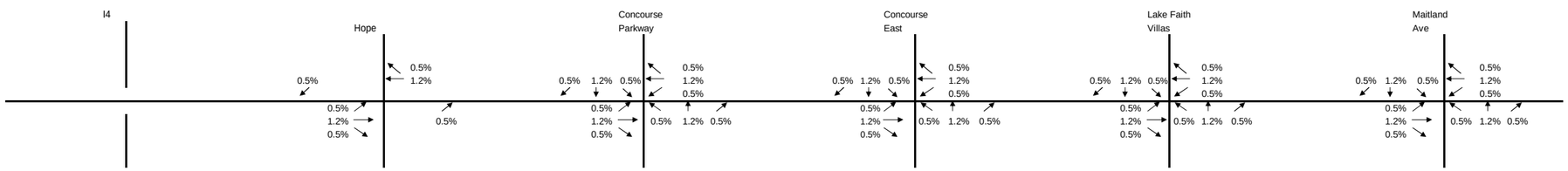
Derived from final DTTM for PD&E
Figure 4, Existing year 2011
AM & PM Peak hour volumes
Financial project ID: 424217-1



Distributions calculated for EB/WB SR 414

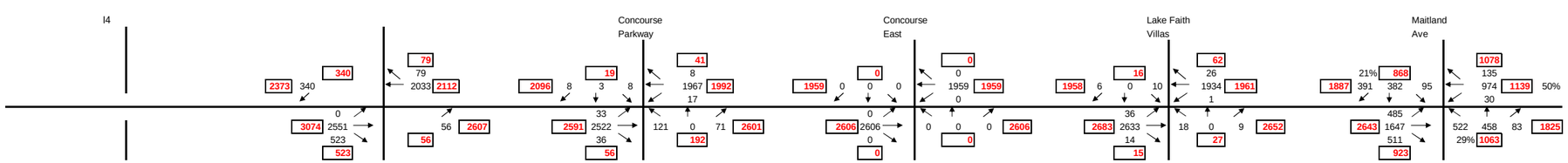
APPLY ANNUAL GROWTH RATE

Growth rate derived from final DTTM for PD&E
Project traffic forecasts for design hour:
1.2% for through; 0.5% for turning movements

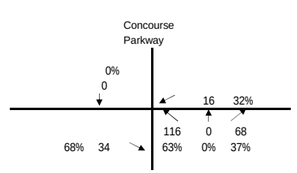


FUTURE YEAR PM BACKGROUND VOLUMES

Existing Year: 2011
Future Year: 2020
Years Elapsed: 9



Determination of turning movement distribution derived from existing volumes entering and exiting Concourse Parkway

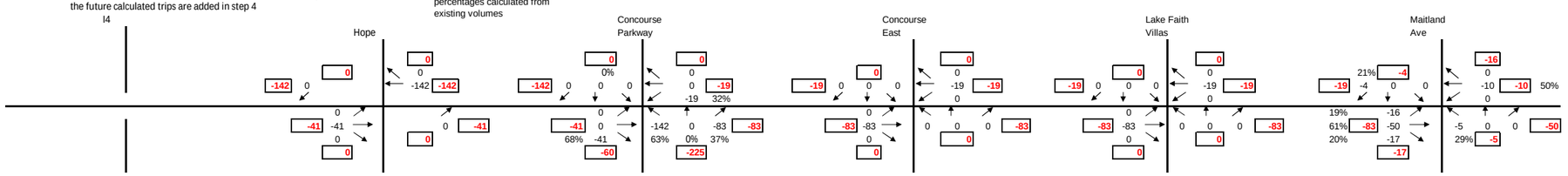


REMOVE EXISTING PM CONCOURSE SOUTH VOLUMES

In order to estimate future driveway volumes associated with Maitland Concourse South, the *existing* Maitland Concourse South trips are subtracted and the future calculated trips are added in step 4

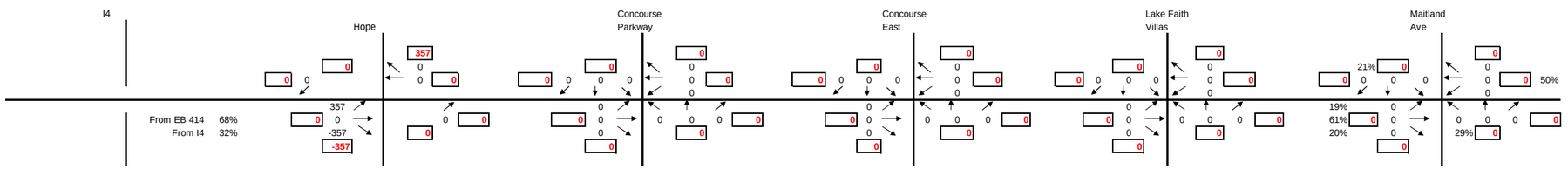
Volumes derived from count data, distribution percentages calculated from existing volumes

In	60
Out	225



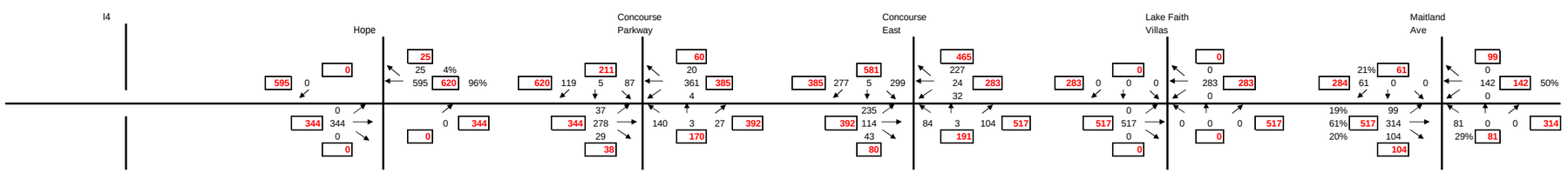
REMOVE PM EB RIGHT TO HOPE FROM SR 414

The removal of the EB right from SR 414 will re-route the traffic as an EB left onto Hope Road. The reduction/addition of trips is based on the distribution of total traffic entering EB SR 414. Trips from I4 can use the EB right turn.

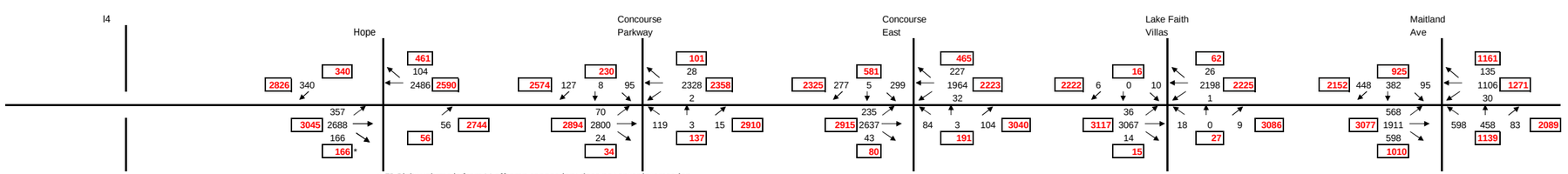


ADD PM MAITLAND CONCOUSRE NORTH+SOUTH VOLUMES

The future trips associated with both Maitland Concourse North and South are added and distributed through the network using existing distributions at the intersections



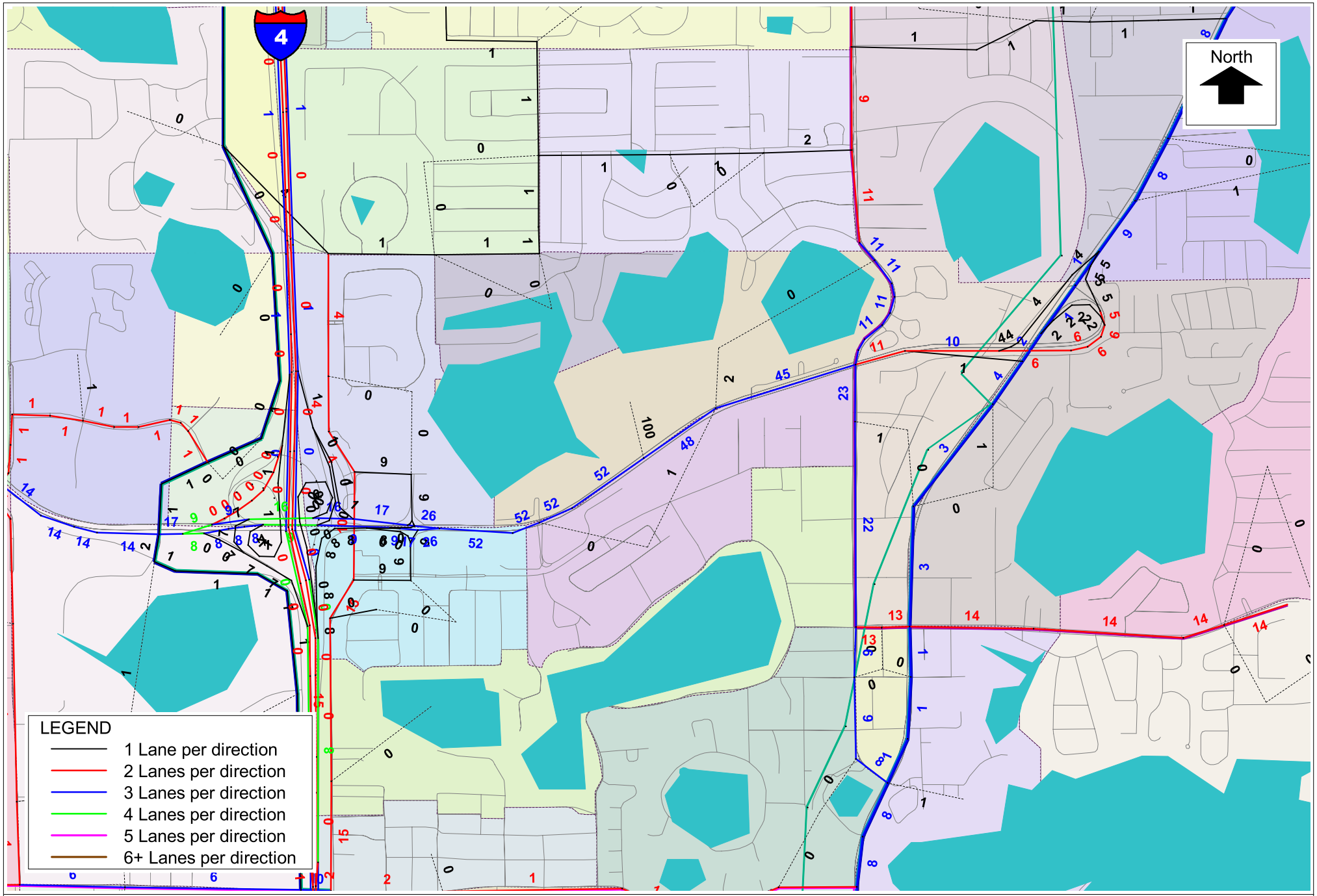
FUTURE TOTAL PM VOLUMES



* EB Right volume is from I4 offramp connection; does not enter intersection

APPENDIX E

TRAVEL DEMAND MODEL PLOTS

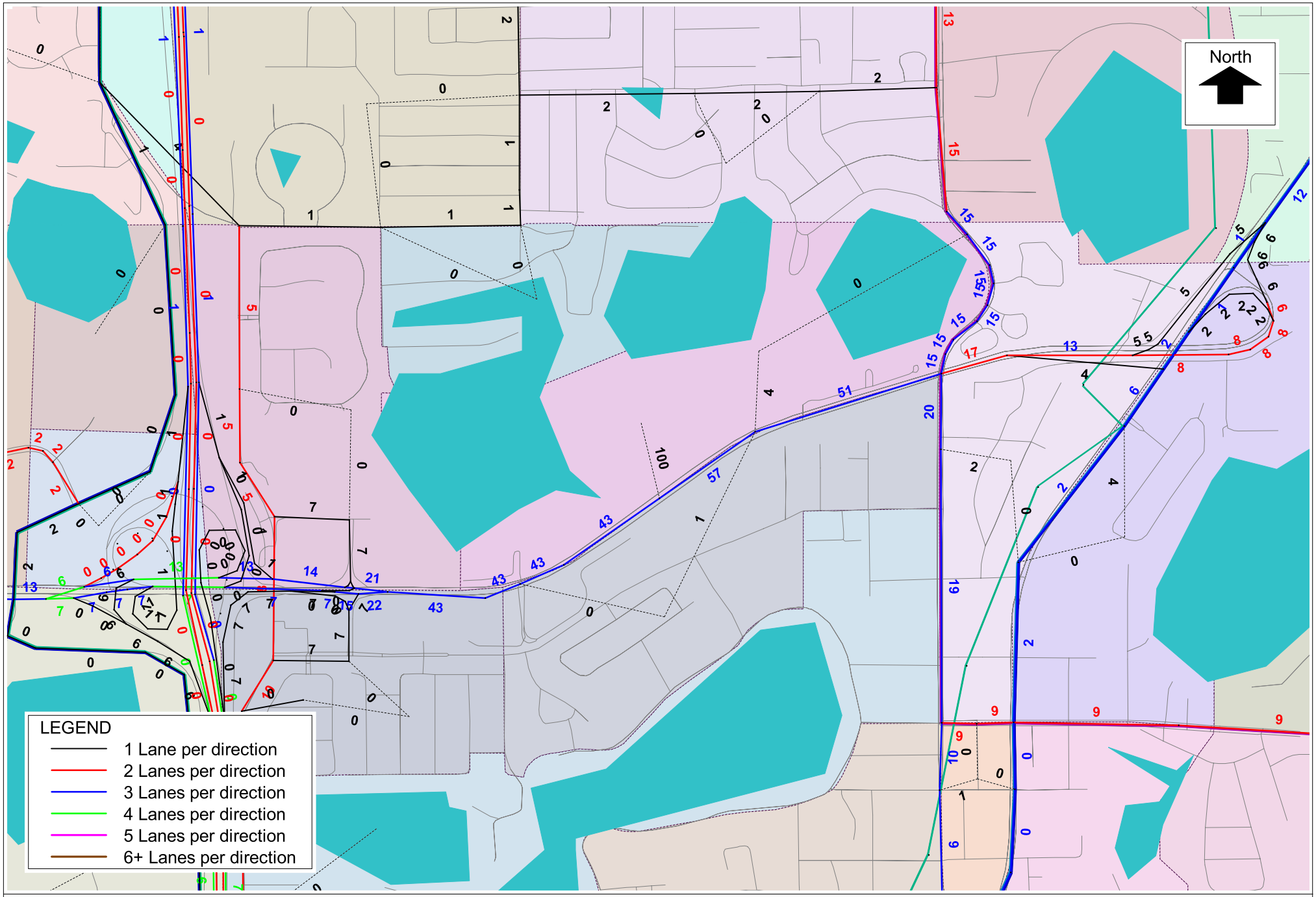


Maitland Concourse Office Distribution

C:\FSUTMS\d5\OUATS.30\Base\Mait_OFF\Output\HRLDXY_G30.NET (Thu 16 May 2013)

cube

Licensed to Kimley-Horn and Associates, Inc.

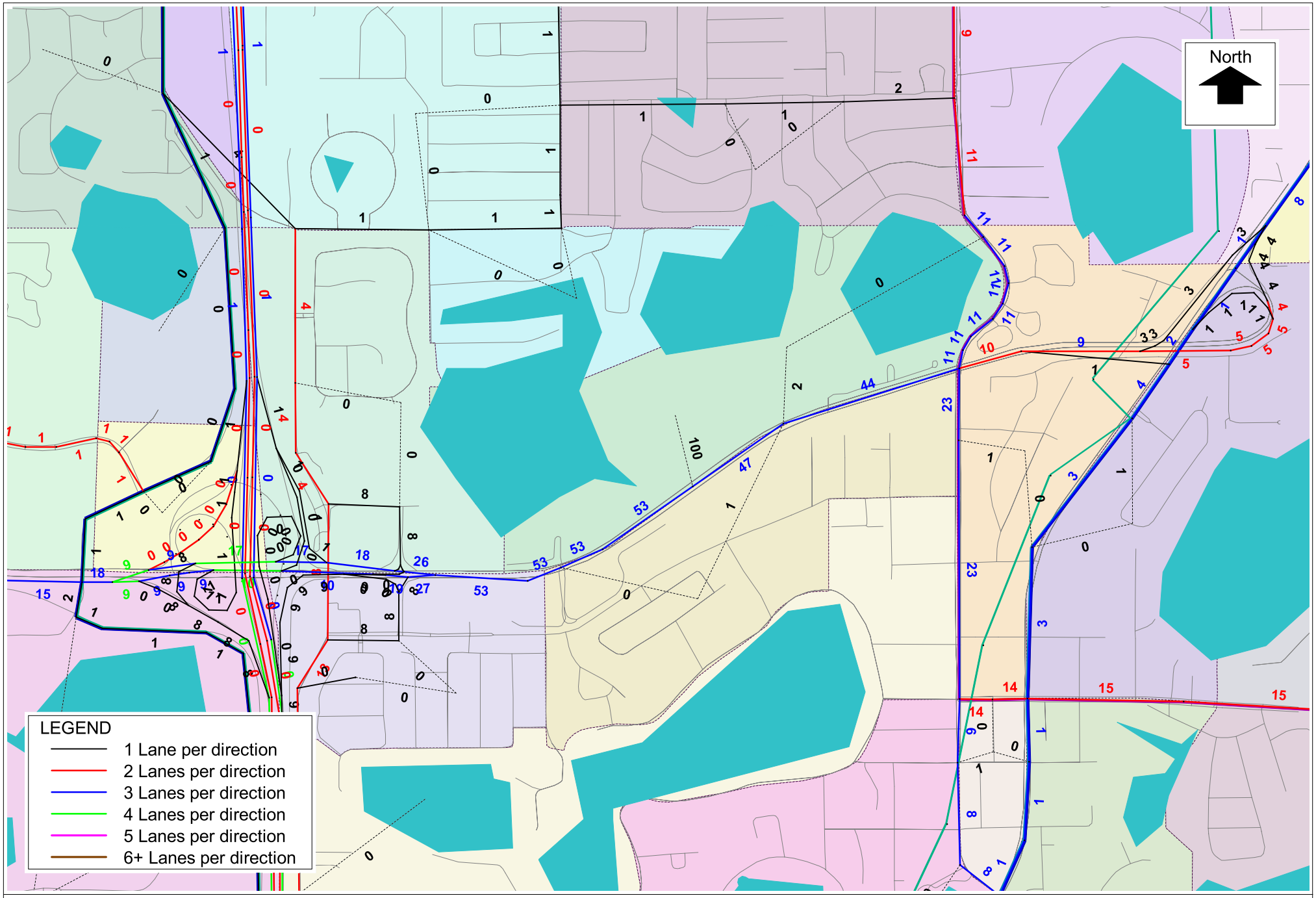


Maitland Concourse Residential Distribution

C:\FSUTMS\d5\OUATS.30\Base\Mait_RES\Output\HRLDXY_G30.NET (Thu 16 May 2013)

cube

Licensed to Kimley-Horn and Associates, Inc.



Maitland Concourse Retail Distribution

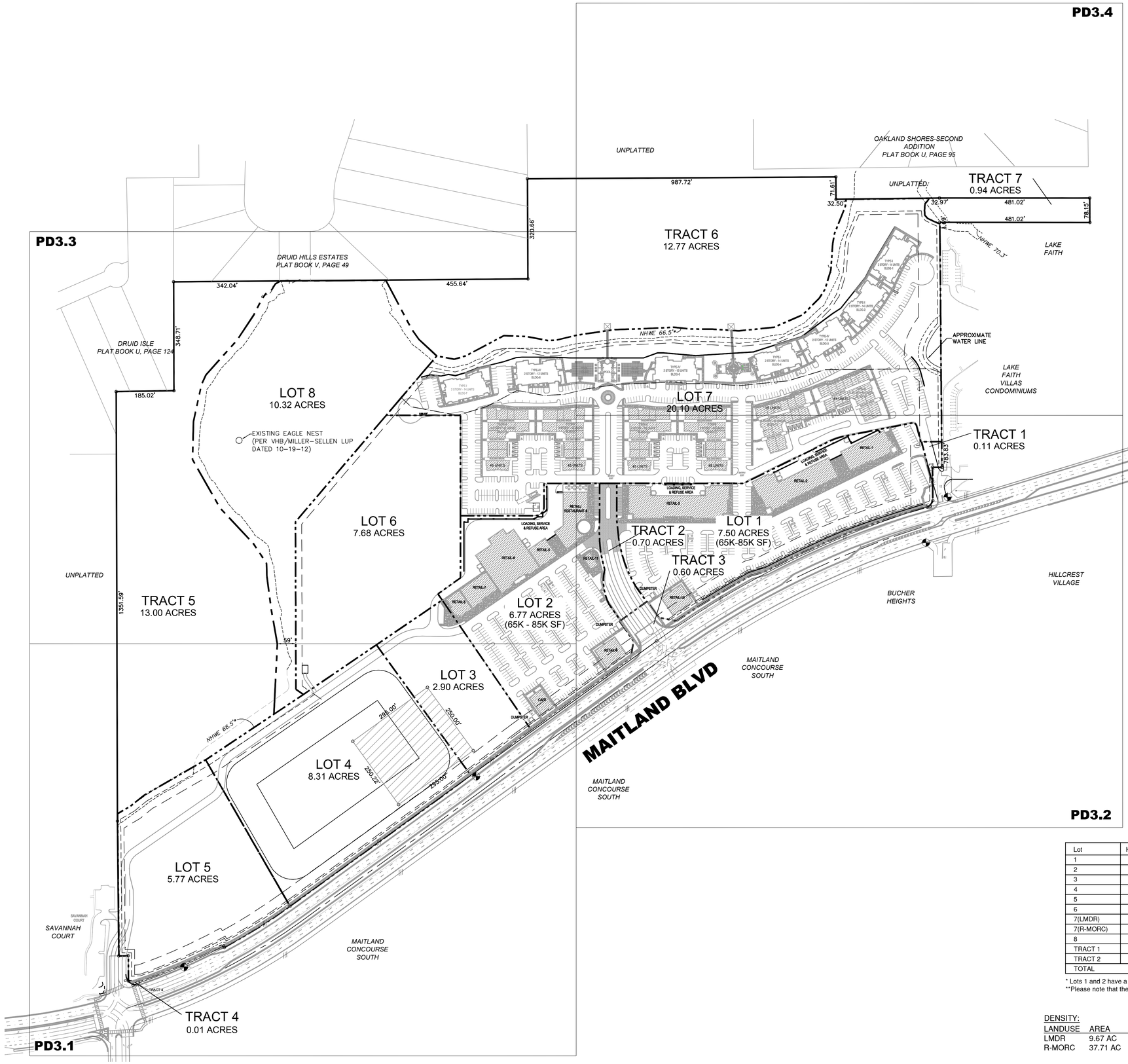
C:\FSUTMS\d5\OUATS.30\Base\Mait_RTL\Output\HRLDXY_G30.NET (Thu 16 May 2013)

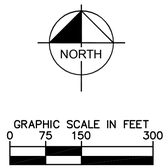
cube

Licensed to Kimley-Horn and Associates, Inc.

APPENDIX F

PROJECT SITE PLAN





SITE DATA:

NAME	AREA	PROPOSED USE
LOT 1	7.50 AC	R-MORC
LOT 2	6.77 AC	R-MORC
LOT 3	2.90 AC	R-MORC
LOT 4	8.31 AC	PO/R-MORC
LOT 5	5.77 AC	PO
LOT 6	7.68 AC	R-MORC
LOT 7	20.10 AC	LMDR/R-MORC
LOT 8	10.32 AC	PR
TRACT 1	0.11 AC (COMMON AREA)	R-MORC
TRACT 2	0.70 AC (COMMON AREA)	R-MORC
TRACT 3	0.60 AC (FDOT DEDICATION)	
TRACT 4	0.01 AC (FDOT DEDICATION)	
TRACT 5	13.00 AC (LAKE CHARITY)	
TRACT 6	12.77 AC (LAKE HOPE)	
TRACT 7	0.94 AC (LAKE FAITH)	
TOTAL	97.48 AC	

NOTE:

THE ROADWAY SHOWN REPRESENTS PROPOSED FDOT IMPROVEMENTS FOR MAITLAND BOULEVARD.

* PER APPROVED COMP PLAN

LEGEND:

- EXISTING FDOT POND (1.69 AC)
- BUILDING SETBACK LINE
- LANDSCAPE BUFFER LINE
- SJRWMD BUFFER (25' AVERAGE FROM NHWE)
- LMDR LINE
- SIDEWALK EASEMENT

Lot	Height	Stories	Open Space	Impervious	Area	BLDG SF	FAR
1	45'	2	20%	up to 90%	7.50 AC	75,000*	0.23
2	45'	2	20%	up to 90%	6.77 AC	75,000*	0.25
3	TBD	4	20%	TBD	2.90 AC	75,000	0.59
4	N/A	N/A	80%	up to 20%	8.31 AC	0	0.00
5	35'	TBD	30%	TBD	5.77 AC	75,000	0.30
6	TBD	4	30%	TBD	7.68 AC	205,647	0.61
7(LMDR)	36'	2	30%	up to 70%	9.68 AC	114,319	0.27
7(R-MORC)	50'	3	30%	up to 70%	10.42 AC	249,056	0.55
8	N/A	N/A	100%	up to 5%	10.32 AC	0	0.00
TRACT 1	N/A	N/A	5%	up to 95%	0.11 AC	0	0.00
TRACT 2	N/A	N/A	5%	up to 95%	0.70 AC	0	0.00
TOTAL						869,022	0.30**

* Lots 1 and 2 have a shared building square footage of 150,000
**Please note that the allowed FAR was based on 66.5 acres

DENSITY:

LANDUSE	AREA	ALLOWED DENSITY	ALLOWED UNITS	PROPOSED DENSITY	PROPOSED UNITS
LMDR	9.67 AC	4.5-10 DU/AC	96	9.9 DU/AC	96
R-MORC	37.71 AC	10-20 DU/AC	350	6.7 DU/AC	254

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2015 KIMLEY-HORN AND ASSOCIATES, INC.
3660 MAGUIRE BOULEVARD, SUITE 200, ORLANDO, FL 32803
PHONE: 407-898-1511
WWW.KIMLEY-HORN.COM CA 00000696

LICENSED PROFESSIONAL
JONATHAN A. MARTIN, P.E.
FLORIDA LICENSE NUMBER 54055
DATE: ____

KHA PROJECT 049183005
DATE JULY 2015
SCALE AS SHOWN
DESIGNED BY BAL
DRAWN BY KAS
CHECKED BY JAM

SITE PLAN SW

MAITLAND CONCOURSE NORTH
CITY OF MAITLAND FLORIDA

SHEET NUMBER
PD3.0

Plotted By:Storkey, Kelly Sheet Set:049183005-MCN-PD Layout:PD3.0-OVERALL July 15, 2015 02:47:56pm K:\ORL_Civil\049183005-MCN-Master Development Svcs\CADD\PD\PlanSheets\PD3.0-OVERALL-SITE.dwg
This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

APPENDIX G

SYNCHRO INTERSECTION REPORTS

AM Peak-Hour

PM Peak-Hour

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	207	2525	2997	110	0	412
Future Volume (vph)	207	2525	2997	110	0	412
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	600			100	0	0
Storage Lanes	2			1	0	1
Taper Length (ft)	100				100	
Lane Util. Factor	0.97	0.91	0.91	1.00	1.00	1.00
Frt				0.850		0.865
Flt Protected	0.950					
Satd. Flow (prot)	3433	5085	5085	1583	0	1611
Flt Permitted	0.950					
Satd. Flow (perm)	3433	5085	5085	1583	0	1611
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				26		1
Link Speed (mph)		45	45		30	
Link Distance (ft)		913	281		485	
Travel Time (s)		13.8	4.3		11.0	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	218	2658	3155	116	0	434
Shared Lane Traffic (%)						
Lane Group Flow (vph)	218	2658	3155	116	0	434
Turn Type	Prot	NA	NA	Perm		Over
Protected Phases	5	2	6			5
Permitted Phases				6		
Detector Phase	5	2	6	6		5
Switch Phase						
Minimum Initial (s)	5.0	16.0	16.0	16.0		5.0
Minimum Split (s)	16.0	64.0	41.0	41.0		16.0
Total Split (s)	61.0	190.0	129.0	129.0		61.0
Total Split (%)	32.1%	100.0%	67.9%	67.9%		32.1%
Maximum Green (s)	53.5	182.5	121.5	121.5		53.5
Yellow Time (s)	5.0	5.0	5.0	5.0		5.0
All-Red Time (s)	2.5	2.5	2.5	2.5		2.5
Lost Time Adjust (s)	1.0	1.0	1.0	1.0		1.0
Total Lost Time (s)	8.5	8.5	8.5	8.5		8.5
Lead/Lag	Lead		Lag	Lag		Lead
Lead-Lag Optimize?	Yes		Yes	Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Recall Mode	None	C-Max	C-Max	C-Max		None
Act Effct Green (s)	52.0	190.0	121.0	121.0		52.0
Actuated g/C Ratio	0.27	1.00	0.64	0.64		0.27
v/c Ratio	0.23	0.52	0.97	0.11		0.98
Control Delay	54.2	0.4	12.2	0.8		105.9
Queue Delay	0.0	0.0	0.0	0.0		0.0
Total Delay	54.2	0.4	12.2	0.8		105.9
LOS	D	A	B	A		F
Approach Delay		4.5	11.8			
Approach LOS		A	B			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Queue Length 50th (ft)	109	0	491	1		541
Queue Length 95th (ft)	150	0	m508	m1		#782
Internal Link Dist (ft)		833	201		405	
Turn Bay Length (ft)	600			100		
Base Capacity (vph)	948	5085	3238	1017		445
Starvation Cap Reductn	0	0	0	0		0
Spillback Cap Reductn	0	0	0	0		0
Storage Cap Reductn	0	0	0	0		0
Reduced v/c Ratio	0.23	0.52	0.97	0.11		0.98

Intersection Summary

Area Type: Other
Cycle Length: 190
Actuated Cycle Length: 190
Offset: 94 (49%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 140
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.98
Intersection Signal Delay: 14.8 Intersection LOS: B
Intersection Capacity Utilization 97.6% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Maitland Blvd & Hope Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	2177	393	91	2943	126	124	2	64	17	1	31
Future Volume (vph)	155	2177	393	91	2943	126	124	2	64	17	1	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	325		300	250		250	0		100	0		0
Storage Lanes	1		1	1		1	1		1	0		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.95	0.95	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950	0.954			0.955	
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	1681	1688	1583	0	1779	1583
Flt Permitted	0.950			0.950			0.950	0.954			0.955	
Satd. Flow (perm)	1770	5085	1583	1770	5085	1583	1681	1688	1583	0	1779	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			307			106			181			181
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1355			2118			477			757	
Travel Time (s)		20.5			32.1			10.8			17.2	
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
Adj. Flow (vph)	168	2366	427	99	3199	137	135	2	70	18	1	34
Shared Lane Traffic (%)							49%					
Lane Group Flow (vph)	168	2366	427	99	3199	137	69	68	70	0	19	34
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		8	8	
Permitted Phases			6			2			4			8
Detector Phase	1	6	6	5	2	2	4	4	4	8	8	8
Switch Phase												
Minimum Initial (s)	5.0	16.0	16.0	5.0	16.0	16.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	16.0	64.0	64.0	16.0	41.0	41.0	15.0	15.0	15.0	15.0	15.0	15.0
Total Split (s)	30.0	126.0	126.0	33.0	129.0	129.0	16.0	16.0	16.0	15.0	15.0	15.0
Total Split (%)	15.8%	66.3%	66.3%	17.4%	67.9%	67.9%	8.4%	8.4%	8.4%	7.9%	7.9%	7.9%
Maximum Green (s)	22.5	116.0	116.0	23.0	121.5	121.5	9.0	9.0	9.0	8.0	8.0	8.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.5	5.0	5.0	5.0	2.5	2.5	3.5	3.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0
Total Lost Time (s)	8.5	11.0	11.0	11.0	8.5	8.5	8.0	8.0	8.0		8.0	8.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	24.9	118.4	118.4	22.0	120.5	120.5	8.0	8.0	8.0		6.1	6.1
Actuated g/C Ratio	0.13	0.62	0.62	0.12	0.63	0.63	0.04	0.04	0.04		0.03	0.03
v/c Ratio	0.72	0.75	0.39	0.49	0.99	0.13	0.99	0.96	0.29		0.34	0.15
Control Delay	95.9	27.5	5.7	60.0	19.6	0.5	188.6	180.7	3.1		105.5	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	95.9	27.5	5.7	60.0	19.6	0.5	188.6	180.7	3.1		105.5	1.4
LOS	F	C	A	E	B	A	F	F	A		F	A
Approach Delay		28.3			20.0			123.2			38.7	
Approach LOS		C			B			F			D	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	209	769	62	112	733	2	92	91	0		24	0
Queue Length 95th (ft)	#348	825	131	m123	#858	m3	#216	#213	0		57	0
Internal Link Dist (ft)		1275			2038			397			677	
Turn Bay Length (ft)	325		300	250		250			100			
Base Capacity (vph)	232	3169	1102	204	3224	1042	70	71	240		65	232
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0		0	0
Reduced v/c Ratio	0.72	0.75	0.39	0.49	0.99	0.13	0.99	0.96	0.29		0.29	0.15

Intersection Summary

Area Type: Other
Cycle Length: 190
Actuated Cycle Length: 190
Offset: 188.5 (99%), Referenced to phase 2:WBT, Start of Yellow
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.99
Intersection Signal Delay: 27.0 Intersection LOS: C
Intersection Capacity Utilization 101.3% ICU Level of Service G
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: Concourse Pkwy & Maitland Blvd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	167	1946	151	97	2982	162	69	2	50	118	1	95
Future Volume (vph)	167	1946	151	97	2982	162	69	2	50	118	1	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		250	250		250	200		0	200		0
Storage Lanes	2		1	1		1	1		0	2		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	0.97	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt			0.850			0.850		0.855			0.851	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	5085	1583	1770	5085	1583	1770	1593	0	3433	1585	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	5085	1583	1770	5085	1583	1770	1593	0	3433	1585	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			126			100		53			100	
Link Speed (mph)		50			50			30			30	
Link Distance (ft)		2118			964			1352			851	
Travel Time (s)		28.9			13.1			30.7			19.3	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	176	2048	159	102	3139	171	73	2	53	124	1	100
Shared Lane Traffic (%)												
Lane Group Flow (vph)	176	2048	159	102	3139	171	73	55	0	124	101	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			2						
Detector Phase	1	6	6	5	2	2	7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	16.0	16.0	5.0	16.0	16.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	16.0	64.0	64.0	16.0	41.0	41.0	15.0	15.0		15.0	15.0	
Total Split (s)	26.0	132.0	132.0	27.0	133.0	133.0	16.0	15.0		16.0	15.0	
Total Split (%)	13.7%	69.5%	69.5%	14.2%	70.0%	70.0%	8.4%	7.9%		8.4%	7.9%	
Maximum Green (s)	18.5	124.5	124.5	19.5	125.5	125.5	9.5	8.5		9.5	8.5	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	3.5	3.5		3.5	3.5	
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Total Lost Time (s)	8.5	8.5	8.5	8.5	8.5	8.5	7.5	7.5		7.5	7.5	
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)	17.5	129.1	129.1	14.7	126.3	126.3	8.5	5.8		8.5	5.7	
Actuated g/C Ratio	0.09	0.68	0.68	0.08	0.66	0.66	0.04	0.03		0.04	0.03	
v/c Ratio	0.56	0.59	0.14	0.75	0.93	0.16	0.92	0.56		0.81	0.70	
Control Delay	70.9	1.1	0.2	84.7	15.4	2.3	167.3	41.4		124.3	39.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	70.9	1.1	0.2	84.7	15.4	2.3	167.3	41.4		124.3	39.2	
LOS	E	A	A	F	B	A	F	D		F	D	
Approach Delay		6.2			16.8			113.2			86.1	
Approach LOS		A			B			F			F	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	116	10	0	129	558	9	93	3		80	1	
Queue Length 95th (ft)	m159	12	m0	m116	m500	m11	#210	56		#142	72	
Internal Link Dist (ft)		2038			884			1272			771	
Turn Bay Length (ft)	250		250	250		250	200			200		
Base Capacity (vph)	316	3454	1115	172	3379	1085	79	113		153	158	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.56	0.59	0.14	0.59	0.93	0.16	0.92	0.49		0.81	0.64	

Intersection Summary

Area Type: Other
Cycle Length: 190
Actuated Cycle Length: 190
Offset: 67 (35%), Referenced to phase 2:WBT and 6:EBT, Start of Green
Natural Cycle: 140
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.93
Intersection Signal Delay: 17.2 Intersection LOS: B
Intersection Capacity Utilization 93.3% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 21: Concourse East & Maitland Blvd

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	6	2131	1	5	3229	8	0	0	1	0	0	32
Future Vol, veh/h	6	2131	1	5	3229	8	0	0	1	0	0	32
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	2316	1	5	3510	9	0	0	1	0	0	35

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	3518	0	0	2317	0	0	3745	5859	1159	4465	5855	1759
Stage 1	-	-	-	-	-	-	2330	2330	-	3525	3525	-
Stage 2	-	-	-	-	-	-	1415	3529	-	940	2330	-
Critical Hdwy	5.34	-	-	5.34	-	-	6.44	6.54	7.14	6.44	6.54	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-	7.34	5.54	-	7.34	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.74	5.54	-	6.74	5.54	-
Follow-up Hdwy	3.12	-	-	3.12	-	-	3.82	4.02	3.92	3.82	4.02	3.92
Pot Cap-1 Maneuver	20	-	-	86	-	-	5	0	162	2	0	63
Stage 1	-	-	-	-	-	-	22	70	-	3	16	-
Stage 2	-	-	-	-	-	-	129	16	-	256	70	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	20	-	-	86	-	-	2	0	162	1	0	63
Mov Cap-2 Maneuver	-	-	-	-	-	-	2	0	-	1	0	-
Stage 1	-	-	-	-	-	-	14	46	-	2	15	-
Stage 2	-	-	-	-	-	-	54	15	-	165	46	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0.1	27.4	117.4
HCM LOS			D	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	162	20	-	-	86	-	-	63
HCM Lane V/C Ratio	0.007	0.326	-	-	0.063	-	-	0.552
HCM Control Delay (s)	27.4	255.6	-	-	49.7	-	-	117.4
HCM Lane LOS	D	F	-	-	E	-	-	F
HCM 95th %tile Q(veh)	0	0.9	-	-	0.2	-	-	2.3

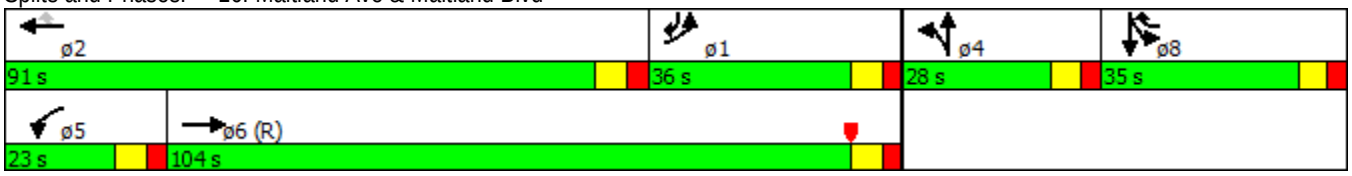
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	445	992	667	45	1995	79	583	247	31	95	534	582
Future Volume (vph)	445	992	667	45	1995	79	583	247	31	95	534	582
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	350		0	350		200	250		0	250		175
Storage Lanes	2		0	1		1	1		0	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	0.97	0.91	0.91	1.00	0.91	1.00	0.91	0.91	0.95	1.00	0.95	1.00
Frt		0.940				0.850		0.992				0.850
Flt Protected	0.950			0.950			0.950	0.975		0.950		
Satd. Flow (prot)	3433	4780	0	1770	5085	1583	1610	3279	0	1770	3539	1583
Flt Permitted	0.950			0.950			0.950	0.975		0.950		
Satd. Flow (perm)	3433	4780	0	1770	5085	1583	1610	3279	0	1770	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		128				66		2				245
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1337			2895			970			971	
Travel Time (s)		20.3			43.9			18.9			18.9	
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
Adj. Flow (vph)	484	1078	725	49	2168	86	634	268	34	103	580	633
Shared Lane Traffic (%)							50%					
Lane Group Flow (vph)	484	1803	0	49	2168	86	317	619	0	103	580	633
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	Over
Protected Phases	1	6		5	2	8	4	4		8	8	1
Permitted Phases						2						
Detector Phase	1	6		5	2	8	4	4		8	8	1
Switch Phase												
Minimum Initial (s)	4.0	35.0		4.0	35.0	5.0	5.0	5.0		5.0	5.0	4.0
Minimum Split (s)	15.0	52.0		15.0	68.0	15.0	15.0	15.0		15.0	15.0	15.0
Total Split (s)	36.0	104.0		23.0	91.0	35.0	28.0	28.0		35.0	35.0	36.0
Total Split (%)	18.9%	54.7%		12.1%	47.9%	18.4%	14.7%	14.7%		18.4%	18.4%	18.9%
Maximum Green (s)	28.5	96.5		15.5	83.5	28.0	21.0	21.0		28.0	28.0	28.5
Yellow Time (s)	4.5	4.5		4.5	4.5	4.0	4.0	4.0		4.0	4.0	4.5
All-Red Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lost Time Adjust (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Total Lost Time (s)	8.5	8.5		8.5	8.5	8.0	8.0	8.0		8.0	8.0	8.5
Lead/Lag	Lag	Lag		Lead	Lead							Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	2.5	2.5	2.5		2.5	2.5	3.0
Recall Mode	None	C-Max		None	Max	None	None	None		None	None	None
Act Effct Green (s)	27.5	103.2		9.6	82.5	118.0	20.0	20.0		27.0	27.0	27.5
Actuated g/C Ratio	0.14	0.54		0.05	0.43	0.62	0.11	0.11		0.14	0.14	0.14
v/c Ratio	0.98	0.68		0.55	0.98	0.09	1.88	1.79		0.41	1.16	1.45
Control Delay	91.8	18.4		109.4	67.8	4.5	454.8	407.7		79.8	158.0	242.8
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	91.8	18.4		109.4	67.8	4.5	454.8	407.7		79.8	158.0	242.8
LOS	F	B		F	E	A	F	F		E	F	F
Approach Delay		33.9			66.3			423.6			192.7	
Approach LOS		C			E			F			F	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	317	219		61	975	9	~659	~635		119	~446	~798
Queue Length 95th (ft)	#434	265		111	#1085	34	#895	#775		189	#578	#1056
Internal Link Dist (ft)		1257			2815			890			891	
Turn Bay Length (ft)	350			350		200	250			250		175
Base Capacity (vph)	496	2654		135	2207	1008	169	346		251	502	438
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.98	0.68		0.36	0.98	0.09	1.88	1.79		0.41	1.16	1.45

Intersection Summary

Area Type: Other
Cycle Length: 190
Actuated Cycle Length: 190
Offset: 175 (92%), Referenced to phase 6:EBT, Start of Yellow
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.88
Intersection Signal Delay: 128.7 Intersection LOS: F
Intersection Capacity Utilization 111.9% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 16: Maitland Ave & Maitland Blvd



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	357	2689	2485	104	0	340
Future Volume (vph)	357	2689	2485	104	0	340
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	600			100	0	0
Storage Lanes	2			1	0	1
Taper Length (ft)	100				100	
Lane Util. Factor	0.97	0.91	0.91	1.00	1.00	1.00
Frt				0.850		0.865
Flt Protected	0.950					
Satd. Flow (prot)	3433	5085	5085	1583	0	1611
Flt Permitted	0.950					
Satd. Flow (perm)	3433	5085	5085	1583	0	1611
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				26		3
Link Speed (mph)		45	45		30	
Link Distance (ft)		913	281		485	
Travel Time (s)		13.8	4.3		11.0	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	376	2831	2616	109	0	358
Shared Lane Traffic (%)						
Lane Group Flow (vph)	376	2831	2616	109	0	358
Turn Type	Prot	NA	NA	Perm		Over
Protected Phases	5	2	6			5
Permitted Phases				6		
Detector Phase	5	2	6	6		5
Switch Phase						
Minimum Initial (s)	5.0	16.0	16.0	16.0		5.0
Minimum Split (s)	16.0	64.0	41.0	41.0		16.0
Total Split (s)	69.0	200.0	131.0	131.0		69.0
Total Split (%)	34.5%	100.0%	65.5%	65.5%		34.5%
Yellow Time (s)	5.0	5.0	5.0	5.0		5.0
All-Red Time (s)	2.5	2.5	2.5	2.5		2.5
Lost Time Adjust (s)	1.0	1.0	1.0	1.0		1.0
Total Lost Time (s)	8.5	8.5	8.5	8.5		8.5
Lead/Lag	Lag		Lead	Lead		Lag
Lead-Lag Optimize?	Yes		Yes	Yes		Yes
Recall Mode	None	C-Max	C-Max	C-Max		None
Act Effct Green (s)	60.5	200.0	122.5	122.5		60.5
Actuated g/C Ratio	0.30	1.00	0.61	0.61		0.30
v/c Ratio	0.36	0.56	0.84	0.11		0.73
Control Delay	55.9	0.4	51.6	13.9		72.1
Queue Delay	0.0	0.0	0.0	0.0		0.0
Total Delay	55.9	0.4	51.6	13.9		72.1
LOS	E	A	D	B		E
Approach Delay		6.9	50.1			
Approach LOS		A	D			
Queue Length 50th (ft)	202	0	1321	68		423
Queue Length 95th (ft)	253	0	1334	m75		559

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Internal Link Dist (ft)		833	201		405	
Turn Bay Length (ft)	600			100		
Base Capacity (vph)	1038	5085	3114	979		489
Starvation Cap Reductn	0	0	0	0		0
Spillback Cap Reductn	0	0	0	0		0
Storage Cap Reductn	0	0	0	0		0
Reduced v/c Ratio	0.36	0.56	0.84	0.11		0.73

Intersection Summary	
Area Type: Other	
Cycle Length: 200	
Actuated Cycle Length: 200	
Offset: 197 (99%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.84	
Intersection Signal Delay: 29.4	Intersection LOS: C
Intersection Capacity Utilization 83.2%	ICU Level of Service E
Analysis Period (min) 15	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 2: Maitland Blvd & Hope Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	2800	24	2	2328	28	119	3	15	95	8	127
Future Volume (vph)	70	2800	24	2	2328	28	119	3	15	95	8	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	325		300	250		250	0		100	0		0
Storage Lanes	1		1	1		1	1		1	0		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.95	0.95	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950	0.954			0.956	
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	1681	1688	1583	0	1781	1583
Flt Permitted	0.950			0.950			0.950	0.954			0.956	
Satd. Flow (perm)	1770	5085	1583	1770	5085	1583	1681	1688	1583	0	1781	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			95			136			142			142
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1355			2118			477			757	
Travel Time (s)		20.5			32.1			10.8			17.2	
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
Adj. Flow (vph)	76	3043	26	2	2530	30	129	3	16	103	9	138
Shared Lane Traffic (%)							49%					
Lane Group Flow (vph)	76	3043	26	2	2530	30	66	66	16	0	112	138
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		8	8	
Permitted Phases			6			2			4			8
Detector Phase	1	6	6	5	2	2	4	4	4	8	8	8
Switch Phase												
Minimum Initial (s)	5.0	16.0	16.0	5.0	16.0	16.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	16.0	64.0	64.0	16.0	41.0	41.0	15.0	15.0	15.0	15.0	15.0	15.0
Total Split (s)	31.0	142.0	142.0	16.0	127.0	127.0	18.0	18.0	18.0	24.0	24.0	24.0
Total Split (%)	15.5%	71.0%	71.0%	8.0%	63.5%	63.5%	9.0%	9.0%	9.0%	12.0%	12.0%	12.0%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0
Total Lost Time (s)	8.5	8.5	8.5	8.5	8.5	8.5	7.5	7.5	7.5		7.5	7.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	Max	Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	12.9	148.6	148.6	4.9	130.0	130.0	9.9	9.9	9.9		15.1	15.1
Actuated g/C Ratio	0.06	0.74	0.74	0.02	0.65	0.65	0.05	0.05	0.05		0.08	0.08
v/c Ratio	0.67	0.81	0.02	0.05	0.77	0.03	0.80	0.80	0.08		0.84	0.55
Control Delay	114.6	19.5	0.0	140.0	13.3	0.0	144.6	144.6	0.7		133.3	18.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	114.6	19.5	0.0	140.0	13.3	0.0	144.6	144.6	0.7		133.3	18.9
LOS	F	B	A	F	B	A	F	F	A		F	B
Approach Delay		21.7			13.2			129.0			70.1	
Approach LOS		C			B			F			E	
Queue Length 50th (ft)	100	858	0	2	1075	0	92	92	0		147	0
Queue Length 95th (ft)	161	1169	m0	m3	1140	m0	#191	#191	0		#255	72

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1275			2038			397			677	
Turn Bay Length (ft)	325		300	250		250			100			
Base Capacity (vph)	199	3779	1201	66	3305	1076	88	88	217		146	260
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0		0	0
Reduced v/c Ratio	0.38	0.81	0.02	0.03	0.77	0.03	0.75	0.75	0.07		0.77	0.53

Intersection Summary

Area Type: Other
Cycle Length: 200
Actuated Cycle Length: 200
Offset: 46 (23%), Referenced to phase 2:WBT, Start of Yellow
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.84
Intersection Signal Delay: 22.7 Intersection LOS: C
Intersection Capacity Utilization 87.8% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: Concourse Pkwy & Maitland Blvd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	235	2637	43	32	1964	227	84	3	104	299	5	277
Future Volume (vph)	235	2637	43	32	1964	227	84	3	104	299	5	277
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		250	250		250	200		0	200		0
Storage Lanes	2		1	1		1	1		0	2		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	0.97	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt			0.850			0.850		0.854			0.853	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	5085	1583	1770	5085	1583	1770	1591	0	3433	1589	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	5085	1583	1770	5085	1583	1770	1591	0	3433	1589	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			131			148		70			163	
Link Speed (mph)		50			50			30			30	
Link Distance (ft)		2118			964			1352			851	
Travel Time (s)		28.9			13.1			30.7			19.3	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	247	2776	45	34	2067	239	88	3	109	315	5	292
Shared Lane Traffic (%)												
Lane Group Flow (vph)	247	2776	45	34	2067	239	88	112	0	315	297	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			2						
Detector Phase	1	6	6	5	2	2	7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	16.0	16.0	5.0	16.0	16.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	16.0	64.0	64.0	16.0	41.0	41.0	15.0	15.0		15.0	15.0	
Total Split (s)	26.0	134.0	134.0	16.0	124.0	124.0	19.0	17.0		33.0	31.0	
Total Split (%)	13.0%	67.0%	67.0%	8.0%	62.0%	62.0%	9.5%	8.5%		16.5%	15.5%	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	3.5	3.5		3.5	3.5	
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Total Lost Time (s)	8.5	8.5	8.5	8.5	8.5	8.5	7.5	7.5		7.5	7.5	
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)	17.5	131.7	131.7	6.8	118.3	118.3	11.3	10.1		22.0	20.9	
Actuated g/C Ratio	0.09	0.66	0.66	0.03	0.59	0.59	0.06	0.05		0.11	0.10	
v/c Ratio	0.82	0.83	0.04	0.57	0.69	0.24	0.89	0.76		0.83	0.95	
Control Delay	90.1	17.3	0.0	118.2	34.6	8.1	153.4	66.8		106.0	78.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	90.1	17.3	0.0	118.2	34.6	8.1	153.4	66.8		106.0	78.7	
LOS	F	B	A	F	C	A	F	E		F	E	
Approach Delay		22.9			33.1			104.9			92.8	
Approach LOS		C			C			F			F	
Queue Length 50th (ft)	168	471	0	41	843	33	117	54		212	187	
Queue Length 95th (ft)	m#219	467	m0	m57	m776	m38	#237	#169		269	#372	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		2038			884			1272			771	
Turn Bay Length (ft)	250		250	250		250	200			200		
Base Capacity (vph)	300	3347	1087	66	3008	997	101	151		437	330	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.82	0.83	0.04	0.52	0.69	0.24	0.87	0.74		0.72	0.90	

Intersection Summary

Area Type: Other
Cycle Length: 200
Actuated Cycle Length: 200
Offset: 105 (53%), Referenced to phase 2:WBT and 6:EBT, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.95
Intersection Signal Delay: 36.2 Intersection LOS: D
Intersection Capacity Utilization 103.8% ICU Level of Service G
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 21: Concourse East & Maitland Blvd

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	36	3067	14	1	2198	26	0	0	27	0	0	16
Future Vol, veh/h	36	3067	14	1	2198	26	0	0	27	0	0	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	39	3334	15	1	2389	28	0	0	29	0	0	17

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	2417	0	0	3349	0	0	4378	5840	1674	3817	5832	1209
Stage 1	-	-	-	-	-	-	3420	3420	-	2405	2405	-
Stage 2	-	-	-	-	-	-	958	2420	-	1412	3427	-
Critical Hdwy	5.34	-	-	5.34	-	-	6.44	6.54	7.14	6.44	6.54	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-	7.34	5.54	-	7.34	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.74	5.54	-	6.74	5.54	-
Follow-up Hdwy	3.12	-	-	3.12	-	-	3.82	4.02	3.92	3.82	4.02	3.92
Pot Cap-1 Maneuver	76	-	-	25	-	-	2	0	72	4	0	150
Stage 1	-	-	-	-	-	-	3	18	-	19	64	-
Stage 2	-	-	-	-	-	-	250	63	-	129	18	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	76	-	-	25	-	-	1	0	72	1	0	150
Mov Cap-2 Maneuver	-	-	-	-	-	-	1	0	-	1	0	-
Stage 1	-	-	-	-	-	-	1	9	-	9	61	-
Stage 2	-	-	-	-	-	-	212	60	-	37	9	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	0.1	85.8	32.1
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	72	76	-	-	25	-	-	150
HCM Lane V/C Ratio	0.408	0.515	-	-	0.043	-	-	0.116
HCM Control Delay (s)	85.8	94.5	-	-	155.4	-	-	32.1
HCM Lane LOS	F	F	-	-	F	-	-	D
HCM 95th %tile Q(veh)	1.6	2.2	-	-	0.1	-	-	0.4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	568	1911	598	30	1106	135	598	458	83	95	382	448
Future Volume (vph)	568	1911	598	30	1106	135	598	458	83	95	382	448
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	350		0	350		200	250		0	250		175
Storage Lanes	2		0	1		1	1		0	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	0.97	0.91	0.91	1.00	0.91	1.00	0.91	0.91	0.95	1.00	0.95	1.00
Frt		0.964				0.850		0.984				0.850
Flt Protected	0.950			0.950			0.950	0.986		0.950		
Satd. Flow (prot)	3433	4902	0	1770	5085	1583	1610	3289	0	1770	3539	1583
Flt Permitted	0.950			0.950			0.950	0.986		0.950		
Satd. Flow (perm)	3433	4902	0	1770	5085	1583	1610	3289	0	1770	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		62				63		5				104
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1337			2895			970			971	
Travel Time (s)		20.3			43.9			18.9			18.9	
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
Adj. Flow (vph)	617	2077	650	33	1202	147	650	498	90	103	415	487
Shared Lane Traffic (%)							37%					
Lane Group Flow (vph)	617	2727	0	33	1202	147	409	829	0	103	415	487
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	pm+ov
Protected Phases	1	6		5	2	8	4	4		8	8	1
Permitted Phases						2						8
Detector Phase	1	6		5	2	8	4	4		8	8	1
Switch Phase												
Minimum Initial (s)	4.0	35.0		4.0	35.0	5.0	5.0	5.0		5.0	5.0	4.0
Minimum Split (s)	15.0	52.0		15.0	68.0	15.0	15.0	15.0		15.0	15.0	15.0
Total Split (s)	49.0	118.0		15.0	84.0	27.0	40.0	40.0		27.0	27.0	49.0
Total Split (%)	24.5%	59.0%		7.5%	42.0%	13.5%	20.0%	20.0%		13.5%	13.5%	24.5%
Yellow Time (s)	4.5	4.5		4.5	4.5	4.0	4.0	4.0		4.0	4.0	4.5
All-Red Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lost Time Adjust (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Total Lost Time (s)	8.5	8.5		8.5	8.5	8.0	8.0	8.0		8.0	8.0	8.5
Lead/Lag	Lead	Lead		Lag	Lag							Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							Yes
Recall Mode	None	C-Max		None	Max	None	None	None		None	None	None
Act Effct Green (s)	38.8	112.5		6.2	77.2	104.7	32.0	32.0		19.0	19.0	57.3
Actuated g/C Ratio	0.19	0.56		0.03	0.39	0.52	0.16	0.16		0.10	0.10	0.29
v/c Ratio	0.93	0.98		0.61	0.61	0.17	1.59	1.56		0.61	1.24	0.92
Control Delay	77.5	55.0		136.2	51.3	14.8	331.0	310.8		103.3	197.0	64.1
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	77.5	55.0		136.2	51.3	14.8	331.0	310.8		103.3	197.0	64.1
LOS	E	D		F	D	B	F	F		F	F	E
Approach Delay		59.1			49.4			317.5			123.0	
Approach LOS		E			D			F			F	
Queue Length 50th (ft)	406	~1367		44	474	56	~838	~845		133	~353	326
Queue Length 95th (ft)	#508	#1431		#101	526	103	#1095	#992		209	#477	#531

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1257			2815			890			891	
Turn Bay Length (ft)	350			350		200	250			250		175
Base Capacity (vph)	695	2784		57	1963	858	257	530		168	336	540
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.89	0.98		0.58	0.61	0.17	1.59	1.56		0.61	1.24	0.90

Intersection Summary

Area Type: Other
Cycle Length: 200
Actuated Cycle Length: 200
Offset: 110 (55%), Referenced to phase 6:EBT, Start of Yellow
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.59
Intersection Signal Delay: 112.3 Intersection LOS: F
Intersection Capacity Utilization 113.5% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 16: Maitland Ave & Maitland Blvd

APPENDIX H

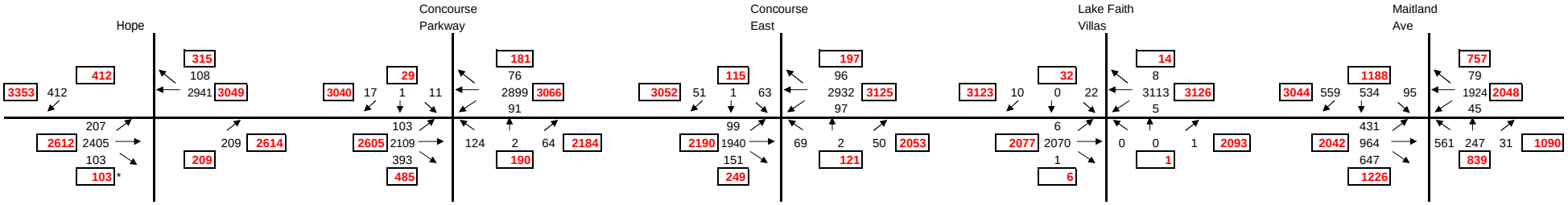
PRE-SIGNALIZATION REPORTS

SIM TRAFFIC AND SYNCHRO

AM Peak-Hour

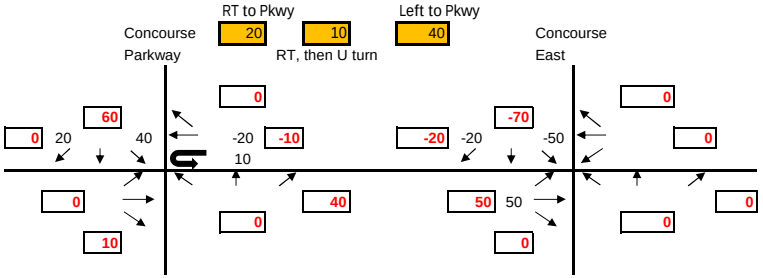
PM Peak-Hour

FUTURE TOTAL AM VOLUMES

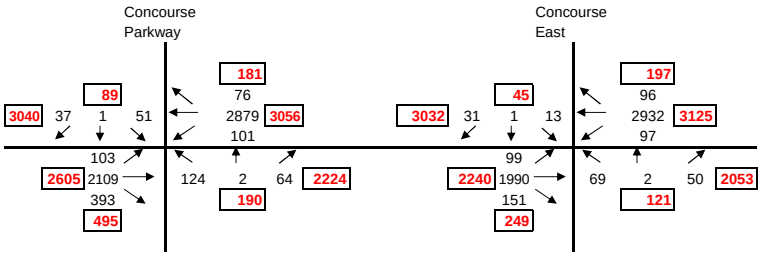


* EB Right volume is from I4 offramp connection; does not enter intersection

Re-routing of trips due to delay



Revised driveway volumes



Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	103	2109	393	10	91	2879	76	124	2	64	51	1
Future Volume (vph)	103	2109	393	10	91	2879	76	124	2	64	51	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	325		300		250		250	0		100	0	
Storage Lanes	1		1		1		1	1		1	0	
Taper Length (ft)	100				100			100			100	
Lane Util. Factor	1.00	0.91	1.00	0.91	1.00	0.91	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850				0.850			0.850		
Flt Protected	0.950				0.950			0.950	0.954			0.953
Satd. Flow (prot)	1770	5085	1583	0	1770	5085	1583	1681	1688	1583	0	1775
Flt Permitted	0.950				0.950			0.950	0.954			0.953
Satd. Flow (perm)	1770	5085	1583	0	1770	5085	1583	1681	1688	1583	0	1775
Right Turn on Red			Yes				Yes			Yes		
Satd. Flow (RTOR)			294				106			181		
Link Speed (mph)		45				45			30			30
Link Distance (ft)		1355				2118			477			757
Travel Time (s)		20.5				32.1			10.8			17.2
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
Adj. Flow (vph)	112	2292	427	11	99	3129	83	135	2	70	55	1
Shared Lane Traffic (%)								49%				
Lane Group Flow (vph)	112	2292	427	0	110	3129	83	69	68	70	0	56
Turn Type	Prot	NA	Perm	Prot	Prot	NA	Perm	Split	NA	Perm	Split	NA
Protected Phases	1	6		5	5	2		4	4		8	8
Permitted Phases			6				2			4		
Detector Phase	1	6	6	5	5	2	2	4	4	4	8	8
Switch Phase												
Minimum Initial (s)	5.0	16.0	16.0	5.0	5.0	16.0	16.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	16.0	64.0	64.0	16.0	16.0	41.0	41.0	15.0	15.0	15.0	15.0	15.0
Total Split (s)	27.0	120.0	120.0	37.0	37.0	130.0	130.0	18.0	18.0	18.0	15.0	15.0
Total Split (%)	14.2%	63.2%	63.2%	19.5%	19.5%	68.4%	68.4%	9.5%	9.5%	9.5%	7.9%	7.9%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.5	5.0	5.0	5.0	5.0	2.5	2.5	3.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0		1.0
Total Lost Time (s)	8.5	11.0	11.0		11.0	8.5	8.5	8.0	8.0	8.0		8.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes					
Recall Mode	Max	Max	Max	None	None	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)	18.8	109.3	109.3		26.0	121.5	121.5	9.6	9.6	9.6		7.1
Actuated g/C Ratio	0.10	0.58	0.58		0.14	0.64	0.64	0.05	0.05	0.05		0.04
v/c Ratio	0.64	0.78	0.41		0.45	0.96	0.08	0.82	0.80	0.28		0.85
Control Delay	98.6	33.5	7.4		67.1	23.3	1.1	143.6	141.0	2.8		159.2
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0
Total Delay	98.6	33.5	7.4		67.1	23.3	1.1	143.6	141.0	2.8		159.2
LOS	F	C	A		E	C	A	F	F	A		F
Approach Delay		32.2				24.1			95.1			93.5
Approach LOS		C				C			F			F
Queue Length 50th (ft)	137	795	78		118	727	2	91	90	0		71
Queue Length 95th (ft)	215	848	155		m115	m658	m2	#192	#189	0		#171

Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	37
Future Volume (vph)	37
Ideal Flow (vphpl)	1900
Storage Length (ft)	0
Storage Lanes	1
Taper Length (ft)	
Lane Util. Factor	1.00
Frt	0.850
Flt Protected	
Satd. Flow (prot)	1583
Flt Permitted	
Satd. Flow (perm)	1583
Right Turn on Red	Yes
Satd. Flow (RTOR)	181
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.92
Adj. Flow (vph)	40
Shared Lane Traffic (%)	
Lane Group Flow (vph)	40
Turn Type	Perm
Protected Phases	
Permitted Phases	8
Detector Phase	8
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	15.0
Total Split (s)	15.0
Total Split (%)	7.9%
Yellow Time (s)	3.5
All-Red Time (s)	3.5
Lost Time Adjust (s)	1.0
Total Lost Time (s)	8.0
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	7.1
Actuated g/C Ratio	0.04
v/c Ratio	0.17
Control Delay	1.6
Queue Delay	0.0
Total Delay	1.6
LOS	A
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	0
Queue Length 95th (ft)	0

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Internal Link Dist (ft)		1275				2038			397			677
Turn Bay Length (ft)	325		300		250		250			100		
Base Capacity (vph)	175	2924	1035		242	3251	1050	88	88	254		66
Starvation Cap Reductn	0	0	0		0	0	0	0	0	0		0
Spillback Cap Reductn	0	0	0		0	0	0	0	0	0		0
Storage Cap Reductn	0	0	0		0	0	0	0	0	0		0
Reduced v/c Ratio	0.64	0.78	0.41		0.45	0.96	0.08	0.78	0.77	0.28		0.85

Intersection Summary

Area Type: Other
Cycle Length: 190
Actuated Cycle Length: 190
Offset: 188.5 (99%), Referenced to phase 2:WBT, Start of Yellow
Natural Cycle: 140
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.96
Intersection Signal Delay: 31.0 Intersection LOS: C
Intersection Capacity Utilization 97.2% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: Concourse Pkwy & Maitland Blvd

Lane Group	SBR
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	233
Starvation Cap Reductn	0
Spillback Cap Reductn	0
Storage Cap Reductn	0
Reduced v/c Ratio	0.17

Intersection Summary

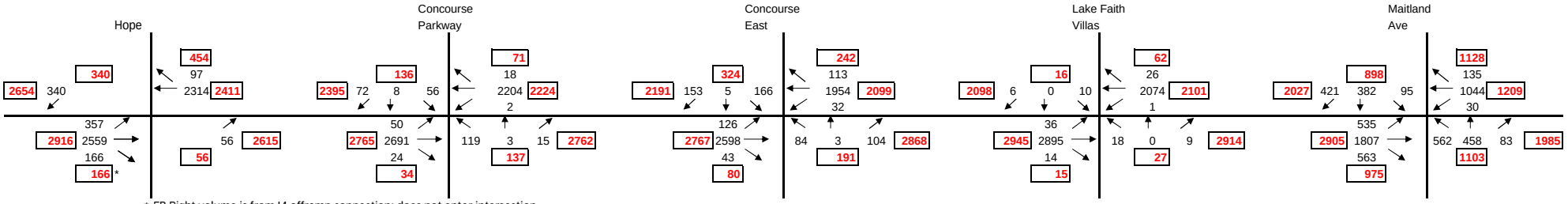
21: Concourse East & Maitland Blvd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.0	0.0	0.0	212.2	192.7	4.2	0.1	4.9
Total Del/Veh (s)	170.4	11.7	14.0	38.2	2.5	2.4	2156.8	936.2	1391.8	39.3	38.4

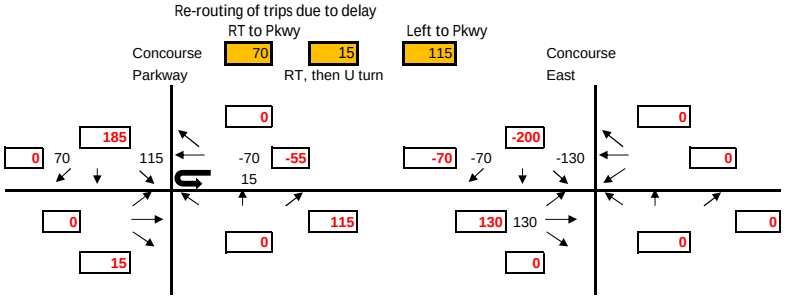
Intersection: 21: Concourse East & Maitland Blvd

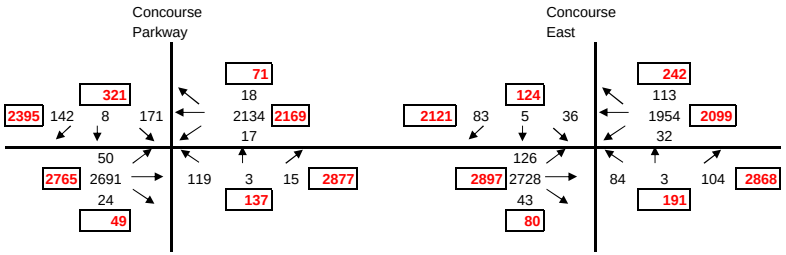
Movement	EB	EB	EB	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	T	R	L	R	L	TR	L	TR
Maximum Queue (ft)	292	310	1952	1969	23	134	20	298	1274	157	184
Average Queue (ft)	145	39	65	66	1	63	1	249	781	68	28
95th Queue (ft)	275	204	643	649	11	117	9	390	1589	154	83
Link Distance (ft)		2044	2044	2044					1266		763
Upstream Blk Time (%)									35		
Queuing Penalty (veh)									0		
Storage Bay Dist (ft)	250				250	250	250	200		200	
Storage Blk Time (%)	11	0						83			0
Queuing Penalty (veh)	70	0						43			0

FUTURE TOTAL PM VOLUMES



* EB Right volume is from I4 offramp connection; does not enter intersection





Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	50	2691	24	15	2	2134	18	119	3	15	171	8
Future Volume (vph)	50	2691	24	15	2	2134	18	119	3	15	171	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	325		300		250		250	0		100	0	
Storage Lanes	1		1		1		1	1		1	0	
Taper Length (ft)	100				100			100			100	
Lane Util. Factor	1.00	0.91	1.00	0.91	1.00	0.91	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850				0.850			0.850		
Flt Protected	0.950				0.950			0.950	0.954			0.954
Satd. Flow (prot)	1770	5085	1583	0	1770	5085	1583	1681	1688	1583	0	1777
Flt Permitted	0.950				0.950			0.950	0.954			0.954
Satd. Flow (perm)	1770	5085	1583	0	1770	5085	1583	1681	1688	1583	0	1777
Right Turn on Red			Yes				Yes			Yes		
Satd. Flow (RTOR)			95				136			142		
Link Speed (mph)		45				45			30			30
Link Distance (ft)		1355				2118			477			757
Travel Time (s)		20.5				32.1			10.8			17.2
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
Adj. Flow (vph)	54	2925	26	16	2	2320	20	129	3	16	186	9
Shared Lane Traffic (%)								49%				
Lane Group Flow (vph)	54	2925	26	0	18	2320	20	66	66	16	0	195
Turn Type	Prot	NA	Perm	Prot	Prot	NA	Perm	Split	NA	Perm	Split	NA
Protected Phases	1	6		5	5	2		4	4		8	8
Permitted Phases			6				2			4		
Detector Phase	1	6	6	5	5	2	2	4	4	4	8	8
Switch Phase												
Minimum Initial (s)	5.0	16.0	16.0	5.0	5.0	16.0	16.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	16.0	64.0	64.0	16.0	16.0	41.0	41.0	15.0	15.0	15.0	15.0	15.0
Total Split (s)	31.0	106.0	106.0	16.0	16.0	91.0	91.0	26.0	26.0	26.0	52.0	52.0
Total Split (%)	15.5%	53.0%	53.0%	8.0%	8.0%	45.5%	45.5%	13.0%	13.0%	13.0%	26.0%	26.0%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0		1.0
Total Lost Time (s)	8.5	8.5	8.5		8.5	8.5	8.5	7.5	7.5	7.5		7.5
Lead/Lag	Lead	Lag	Lag	Lead	Lead	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes					
Recall Mode	None	Max	Max	None	None	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)	10.5	128.1	128.1		6.6	118.8	118.8	12.2	12.2	12.2		26.5
Actuated g/C Ratio	0.05	0.64	0.64		0.03	0.59	0.59	0.06	0.06	0.06		0.13
v/c Ratio	0.59	0.90	0.02		0.31	0.77	0.02	0.65	0.65	0.07		0.83
Control Delay	114.0	36.2	0.0		120.5	35.5	0.0	118.7	118.2	0.6		111.2
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0
Total Delay	114.0	36.2	0.0		120.5	35.5	0.0	118.7	118.2	0.6		111.2
LOS	F	D	A		F	D	A	F	F	A		F
Approach Delay		37.3				35.8			105.7			67.9
Approach LOS		D				D			F			E
Queue Length 50th (ft)	71	1245	0		25	914	0	91	91	0		255
Queue Length 95th (ft)	125	#1619	m0		m33	m968	m0	153	153	0		340

Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	142
Future Volume (vph)	142
Ideal Flow (vphpl)	1900
Storage Length (ft)	0
Storage Lanes	1
Taper Length (ft)	
Lane Util. Factor	1.00
Frt	0.850
Flt Protected	
Satd. Flow (prot)	1583
Flt Permitted	
Satd. Flow (perm)	1583
Right Turn on Red	Yes
Satd. Flow (RTOR)	154
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.92
Adj. Flow (vph)	154
Shared Lane Traffic (%)	
Lane Group Flow (vph)	154
Turn Type	Perm
Protected Phases	
Permitted Phases	8
Detector Phase	8
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	15.0
Total Split (s)	52.0
Total Split (%)	26.0%
Yellow Time (s)	3.5
All-Red Time (s)	3.0
Lost Time Adjust (s)	1.0
Total Lost Time (s)	7.5
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	26.5
Actuated g/C Ratio	0.13
v/c Ratio	0.45
Control Delay	13.1
Queue Delay	0.0
Total Delay	13.1
LOS	B
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	0
Queue Length 95th (ft)	73

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Internal Link Dist (ft)		1275				2038			397			677
Turn Bay Length (ft)	325		300		250		250			100		
Base Capacity (vph)	199	3257	1048		69	3021	995	155	156	275		395
Starvation Cap Reductn	0	0	0		0	0	0	0	0	0		0
Spillback Cap Reductn	0	0	0		0	0	0	0	0	0		0
Storage Cap Reductn	0	0	0		0	0	0	0	0	0		0
Reduced v/c Ratio	0.27	0.90	0.02		0.26	0.77	0.02	0.43	0.42	0.06		0.49

Intersection Summary

Area Type: Other
Cycle Length: 200
Actuated Cycle Length: 200
Offset: 46 (23%), Referenced to phase 2:WBT, Start of Yellow
Natural Cycle: 140
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 40.2 Intersection LOS: D
Intersection Capacity Utilization 85.6% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: Concourse Pkwy & Maitland Blvd

Lane Group	SBR
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	471
Starvation Cap Reductn	0
Spillback Cap Reductn	0
Storage Cap Reductn	0
Reduced v/c Ratio	0.33

Intersection Summary

21: Concourse East & Maitland Blvd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.1	865.5	2085.1	653.0	244.8	0.7	266.9
Total Del/Veh (s)	74.0	15.7	15.5	47.9	1.8	1.7	3040.8		1821.8	2688.5	2236.3	932.2

21: Concourse East & Maitland Blvd Performance by movement

Movement	All
Denied Del/Veh (s)	35.3
Total Del/Veh (s)	67.3

Intersection: 21: Concourse East & Maitland Blvd

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	L	R	L	TR	L	TR
Maximum Queue (ft)	241	70	31	293	1281	281	772
Average Queue (ft)	110	21	2	281	1019	233	471
95th Queue (ft)	209	58	15	335	1684	363	985
Link Distance (ft)					1266		763
Upstream Blk Time (%)					64		46
Queuing Penalty (veh)					0		0
Storage Bay Dist (ft)	250	250	250	200		200	
Storage Blk Time (%)	0			94		78	64
Queuing Penalty (veh)	0			101		69	23