Terry O. Brown P.E.

Target Commercial Development
(Indian School Rd. / Louisiana Blvd.)

Supplement to Traffic Impact Study
(w/Winrock Center Re-populated)

April 3, 2012

FINAL

FINAL

04-06-12

Signature Date

TERRY O. BROWN
NEW MEXICO
6407
LICENSED PROFESSIONAL ENGINEER

Presented to:

City of Albuquerque
Transportation Development Section

Prepared for:

Jim Dobbie
Hunt Development Corporation
201 Third St. NW # 1150
Albuquerque, NM 87102

Terry O. Brown P.E.
P.O. Box 92051
Albuquerque, NM 87199
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Terry O. Brown P.E.
Civil / Transportation Engineering

Tuesday, April 3, 2012

Kristal Metro, P.E.
Transportation Development Section, Planning Department
City of Albuquerque
P. O. Box 1293
Albuquerque, NM 87103

Re: Target Store Development (Indian School Rd. / Louisiana Blvd.)
Supplemental Analysis w/Winrock Re-populated

Dear Kristal:

As requested at the Development Review Board last week, I have performed additional analysis of the following signalized intersections with calculated trips from the vacant portions of Winrock added back to that adjacent transportation system:

1) Indian School Rd. / Louisiana Blvd.
2) Indian School Rd. / Uptown Loop Rd. (East)
3) Indian School Rd. / Pennsylvania St.
4) Uptown Loop Rd. (South) / Louisiana Blvd.

To perform the additional analysis, the trip generation rate for the vacant portions of Winrock Center were obtained from Harwick Transportation Group (See Appendix Page A-3) and added into the 2012 BUILD volumes for the signalized intersections that were analyzed in the Target Traffic Impact Study. Table 5 on Appendix Page A-3 summarizes the trip generation rate utilized for the Winrock Mall re-population analysis.

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Re: Target Store Development (Indian School Rd. / Louisiana Blvd.)

The net new trips from the Winrock re-population were distributed onto the adjacent transportation system in proportion to a population distribution for a regional facility. The trip distribution for this analysis utilizes that of the Winrock study performed by the Harwick Transportation Group.

The trip assignments from the Winrock Mall re-population were added into the 2012 AM and PM Peak Hour BUILD volumes calculated for the Target Traffic Impact Study to account for Winrock floor space that is currently vacant and, therefore, is not generating traffic. The summary of analysis for each of the four signalized intersections considered in this supplemental analysis are summarized in the following tables:

Intersection: **#1 - Indian School Rd. / Louisiana Blvd.**

	2012 AM Peak Hour			w/Winrock		**2012 PM Peak Hour**			w/Winrock	
	BASE GEOMETRY			*Base Geom.*		**BASE GEOMETRY**			*Base Geom.*	
	NO BUILD		**BUILD**	*BUILD*		**NO BUILD**		**BUILD**	*BUILD*	
	Lanes	LOS-Delay	LOS-Delay	*Lanes*	*LOS-Delay*	Lanes	LOS-Delay	LOS-Delay	*Lanes*	*LOS-Delay*
Eastbound - Indian School Rd.										
L	1	D - 47.0	D - 47.0	*1*	*D - 47.0*	1	D - 47.4	D - 47.4	*1*	*E - 65.2*
T	2	D - 41.1	D - 41.7	*2*	*D - 41.9*	2	D - 48.0	E - 66.5	*2*	*F - 81.9*
R	>	D - 41.1	D - 41.7	*>*	*D - 41.9*	>	D - 48.0	E - 66.5	*>*	*F - 81.9*
Westbound - Indian School Rd.										
L	2	C - 30.3	D - 35.7	*2*	*D - 35.9*	2	D - 49.5	E - 55.3	*2*	*E - 66.8*
T	2	C - 26.4	C - 24.3	*2*	*C - 29.7*	2	C - 34.8	C - 33.0	*2*	*D - 47.3*
R	>	C - 26.4	C - 24.3	*>*	*C - 29.7*	>	C - 34.8	C - 33.0	*>*	*D - 47.3*
Northbound - Louisiana Blvd.										
L	2	D - 45.6	D - 46.1	*2*	*D - 51.8*	2	E - 65.3	E - 65.5	*2*	*F - 90.7*
T	4	A - 5.9	A - 6.3	*4*	*A - 5.1*	4	B - 16.1	C - 21.4	*4*	*C - 29.8*
R	1	B - 11.0	A - 6.3	*1*	*A - 7.6*	1	A - 1.6	A - 2.0	*1*	*A - 2.2*
Southbound - Louisiana Blvd.										
L	2	D - 45.8	D - 45.6	*2*	*D - 45.7*	2	E - 56.2	E - 70.0	*2*	*F - 88.8*
T	4	B - 18.3	B - 18.5	*4*	*B - 18.9*	4	C - 27.1	C - 29.4	*4*	*D - 41.6*
R	1	B - 12.8	B - 12.9	*1*	*B - 13.3*	1	B - 13.3	B - 14.8	*1*	*C - 21.7*
Intersection:	**B - 19.7**	**C - 20.3**			**C - 21.2**		**C - 29.7**	**D - 36.4**		**D - 49.2**

NOTE: > denotes a shared thru/right and / or thru/left turn lane.

The analysis of the intersection of Indian School Rd. / Louisiana Blvd. with the additional Winrock Mall re-population traffic indicates that the levels-of-service of the intersection will be "D" or better. Some movements will experience moderately long delays during the PM Peak Hour such as the northbound left turn movement. Overall, the intersection is near capacity (maximum delay for LOS "D" is 54.9 seconds), but no major problems appear to require mitigation.

Kristal Metro, P.E.
Tuesday, April 3, 2012

Re: Target Store Development (Indian School Rd. / Louisiana Blvd.)

Intersection: **#2 - Indian Sch Rd. / Uptown Loop (Winrock)**

2012 AM Peak Hour				w/Winrock		2012 PM Peak Hour			w/Winrock	
BASE GEOMETRY				*Base Geom.*		BASE GEOMETRY			*Base Geom.*	
	NO BUILD		BUILD	*BUILD*		NO BUILD		BUILD	*BUILD*	
	Lanes	LOS-Delay	LOS-Delay	*Lanes*	*LOS-Delay*	Lanes	LOS-Delay	LOS-Delay	*Lanes*	*LOS-Delay*
Eastbound - Indian Sch Rd.										
L	1	C - 21.7	C - 23.3	*1*	*A - 7.5*	1	C - 21.4	C - 22.5	*1*	*A - 4.5*
T	2	D - 37.2	D - 37.5	*2*	*B - 12.5*	2	C - 33.0	C - 34.2	*2*	*A - 6.6*
R	1	C - 33.3	C - 32.6	*1*	*B - 10.2*	1	C - 28.6	C - 28.7	*1*	*A - 2.5*
Westbound - Indian Sch Rd.										
L	1	A - 2.3	A - 2.7	*1*	*A - 5.7*	1	A - 5.6	A - 5.7	*1*	*A - 8.9*
T	2	A - 5.0	A - 4.9	*2*	*B - 10.5*	2	B - 11.5	B - 11.8	*2*	*B - 15.2*
R	>	A - 5.0	A - 4.9	*>*	*B - 10.5*	>	B - 11.5	B - 11.8	*>*	*B - 15.2*
Northbound - Uptown Loop (Winrock)										
L	1	D - 39.2	D - 38.7	*1*	*D - 39.1*	1	D - 39.8	D - 37.6	*1*	*D - 42.1*
T	2	D - 39.8	D - 44.3	*2*	*D - 44.8*	2	E - 57.1	D - 44.2	*2*	*F - 88.0*
R	>	D - 39.8	D - 44.3	*>*	*D - 44.8*	>	E - 57.1	D - 44.2	*>*	*F - 88.0*
Southbound - Uptown Loop (Winrock)										
L	1	D - 38.0	D - 38.0	*1*	*D - 38.4*	1	C - 32.5	C - 32.8	*1*	*D - 51.4*
T	2	D - 43.3	D - 43.3	*2*	*D - 43.7*	2	D - 39.2	D - 39.3	*2*	*E - 57.9*
R	>	C - 33.1	C - 33.1	*>*	*C - 33.5*	>	C - 27.3	C - 27.4	*>*	*D - 44.1*
Intersection:		**B - 15.7**	**B - 16.1**		**B - 13.7**		**C - 26.1**	**C - 25.6**		**C - 21.2**

NOTE: > denotes a shared thru/right and / or thru/left turn lane.

The analysis of the intersection of Indian School Rd. / Uptown Loop (Winrock) with the additional Winrock Mall re-population traffic indicates that the levels-of-service of the intersection will be "C" or better. The northbound thru / right turn movements are calculated to exceed level-of-service "E" by about 8 seconds during the PM Peak Hour. Overall, the intersection is below capacity, and no major problems appear to require mitigation

It should also be explained why the average intersection delay is reduced during the 2012 AM Peak Hour after the Winrock Mall re-population traffic has been added. The average intersection delay is a weighted average considering all of the delays and volumes of the various turning movements at the intersection. If the Winrock Mall traffic adds turning movements to those already with low delays, then the weighted average delay of the intersection will be reduced. In this case, the Winrock Mall adds more volume to those movements with minimal delay, thus reducing the weighted average delay at the intersection.

Kristal Metro, P.E.
Tuesday, April 3, 2012

Re: Target Store Development (Indian School Rd. / Louisiana Blvd.)

Intersection: **#3 - Indian School Rd. / Pennsylvania St.**

2012 AM Peak Hour				w/Winrock		2012 PM Peak Hour			s/Winrock	
	BASE GEOMETRY			*Base Geom.*		BASE GEOMETRY			*Base Geom.*	
	NO BUILD		BUILD	*BUILD*		NO BUILD		BUILD	*BUILD*	
	Lanes	LOS-Delay	LOS-Delay	*Lanes*	*LOS-Delay*	Lanes	LOS-Delay	LOS-Delay	*Lanes*	*LOS-Delay*
Eastbound - Indian School Rd.										
L	1	C - 26.0	B - 18.5	*1*	*B - 14.7*	1	A - 9.7	A - 9.4	*1*	*B - 12.0*
T	1	C - 31.5	C - 21.5	*1*	*B - 19.9*	1	C - 25.9	C - 24.6	*1*	*D - 37.3*
R	1	A - 4.7	B - 11.5	*1*	*B - 10.7*	1	A - 1.2	A - 1.0	*1*	*A - 9.4*
Westbound - Indian School Rd.										
L	1	C - 25.5	C - 25.0	*1*	*B - 13.9*	1	C - 23.2	C - 23.3	*1*	*D - 52.4*
T	2	D - 40.0	D - 39.9	*2*	*C - 22.3*	2	C - 24.7	C - 24.9	*2*	*B - 19.5*
R	>	D - 40.0	D - 39.9	>	*C - 22.3*	>	C - 24.7	C - 24.9	>	*B - 19.5*
Northbound - Pennsylvania St.										
L	1	B - 12.8	B - 13.0	*1*	*B - 15.0*	1	C - 20.6	C - 21.5	*1*	*C - 22.6*
T	1	B - 19.0	B - 19.3	*1*	*C - 20.2*	1	C - 33.3	C - 34.7	*1*	*D - 54.7*
R	1	A - 8.8	A - 8.9	*1*	*A - 9.9*	1	B - 16.6	B - 17.3	*1*	*B - 17.0*
Southbound - Pennsylvania St.										
L	1	B - 13.8	B - 14.1	*1*	*B - 14.0*	1	C - 21.7	C - 22.6	*1*	*C - 23.2*
T	1	C - 21.5	C - 22.0	*1*	*C - 23.6*	1	C - 30.9	C - 32.2	*1*	*D - 36.8*
R	1	B - 11.2	B - 11.5	*1*	*B - 10.7*	1	B - 16.5	B - 16.5	*1*	*B - 15.1*
Intersection:		**C - 25.4**	**C - 24.6**		**B - 18.6**		**C - 23.3**	**C - 23.2**		**C - 30.6**

NOTE: > denotes a shared thru/right and / or thru/left turn lane.

The analysis of the intersection of Indian School Rd. /Pennsylvania with the additional Winrock Mall re-population traffic indicates that the levels-of-service of the intersection will be "C" or better. Overall, the intersection is below capacity, and no major problems appear to require mitigation

Kristal Metro, P.E.
Tuesday, April 3, 2012

Re: Target Store Development (Indian School Rd. / Louisiana Blvd.)

Intersection: **#6 - Americas Pkwy (Winrock) / Louisiana Blvd.**

2012 AM Peak Hour				w/Winrock		2012 PM Peak Hour			s/Winrock	
	BASE GEOMETRY			*Base Geom.*		BASE GEOMETRY			*Base Geom.*	
	NO BUILD		BUILD	*BUILD*		NO BUILD		BUILD	*BUILD*	
	Lanes	LOS-Delay	LOS-Delay	*Lanes*	*LOS-Delay*	Lanes	LOS-Delay	LOS-Delay	*Lanes*	*LOS-Delay*
Eastbound - Americas Pkwy (Winrock)										
L	1	D - 37.1	D - 36.9	*1*	*D - 36.7*	1	C - 28.4	C - 28.7	*1*	*D - 39.5*
T	2	D - 42.4	D - 42.2	*2*	*D - 42.0*	2	C - 32.0	C - 31.5	*2*	*D - 42.1*
R	1	C - 27.3	C - 27.2	*1*	*C - 27.2*	1	C - 29.0	C - 30.6	*1*	*D - 40.8*
Westbound - Americas Pkwy (Winrock)										
L	2	D - 41.8	D - 36.2	*2*	*C - 30.4*	2	C - 29.1	C - 28.6	*2*	*D - 39.5*
T	2	D - 44.8	D - 41.7	*2*	*D - 35.9*	2	C - 31.8	C - 30.0	*2*	*C - 34.7*
R	1	B - 18.3	C - 32.5	*1*	*C - 24.0*	1	C - 35.0	C - 22.3	*1*	*C - 27.9*
Northbound - Louisiana Blvd.										
L	2	D - 42.7	D - 42.7	*2*	*D - 42.7*	2	D - 45.7	D - 46.8	*2*	*E - 57.4*
T	4	B - 10.7	B - 11.7	*4*	*B - 12.6*	4	C - 20.4	C - 24.3	*4*	*D - 50.2*
R	>	B - 10.7	B - 11.7	*>*	*B - 12.6*	>	C - 20.4	C - 24.3	*>*	*D - 50.2*
Southbound - Louisiana Blvd.										
L	2	D - 36.5	D - 36.9	*2*	*D - 37.4*	2	D - 45.9	D - 43.7	*2*	*E - 56.1*
T	4	B - 11.4	B - 12.0	*4*	*B - 12.3*	4	B - 13.8	B - 17.7	*4*	*C - 30.3*
R	>	B - 11.4	B - 12.0	*>*	*B - 12.3*	>	B - 13.8	B - 17.7	*>*	*C - 30.3*
Intersection:		**B - 15.9**	**B - 16.7**		**B - 17.2**		**B - 19.9**	**C - 23.6**		**D - 41.9**

NOTE: > denotes a shared thru/right and / or thru/left turn lane.

The analysis of the intersection of America's Parkway (Winrock) / Louisiana Blvd. with the additional Winrock Mall re-population traffic indicates that the levels-of-service of the intersection will be "D" or better. Overall, the intersection below capacity, and no major problems appear to require mitigation.

In summary this supplemental analysis of the four signalized intersections considered in the Target Study with the additional calculated traffic from the Winrock Mall re-population traffic demonstrates that the full BUILD condition will be approaching capacity of the adjacent transportation system, but not exceed its capacity. However, it is also acknowledged that the existing Winrock Mall will be for the most part razed and re-designed and reconstructed. The new plan may generate more traffic than what would be generated in the case considered here that the existing vacant floor space in the mall would be re-populated. In that case, the additional traffic generated by the larger Winrock Mall plan will render this analysis invalid. But this study finds no significant

Re: Target Store Development (Indian School Rd. / Louisiana Blvd.)

impact in the case that the vacant floor space were re-populated with retail commercial uses.

This study finds that the adjacent transportation system does have the capacity to handle the existing background traffic, the proposed Target Store Development traffic, and the calculated additional traffic that would be generated by the re-population of Winrock Mall's vacant floor space.

Please call me if you have questions.

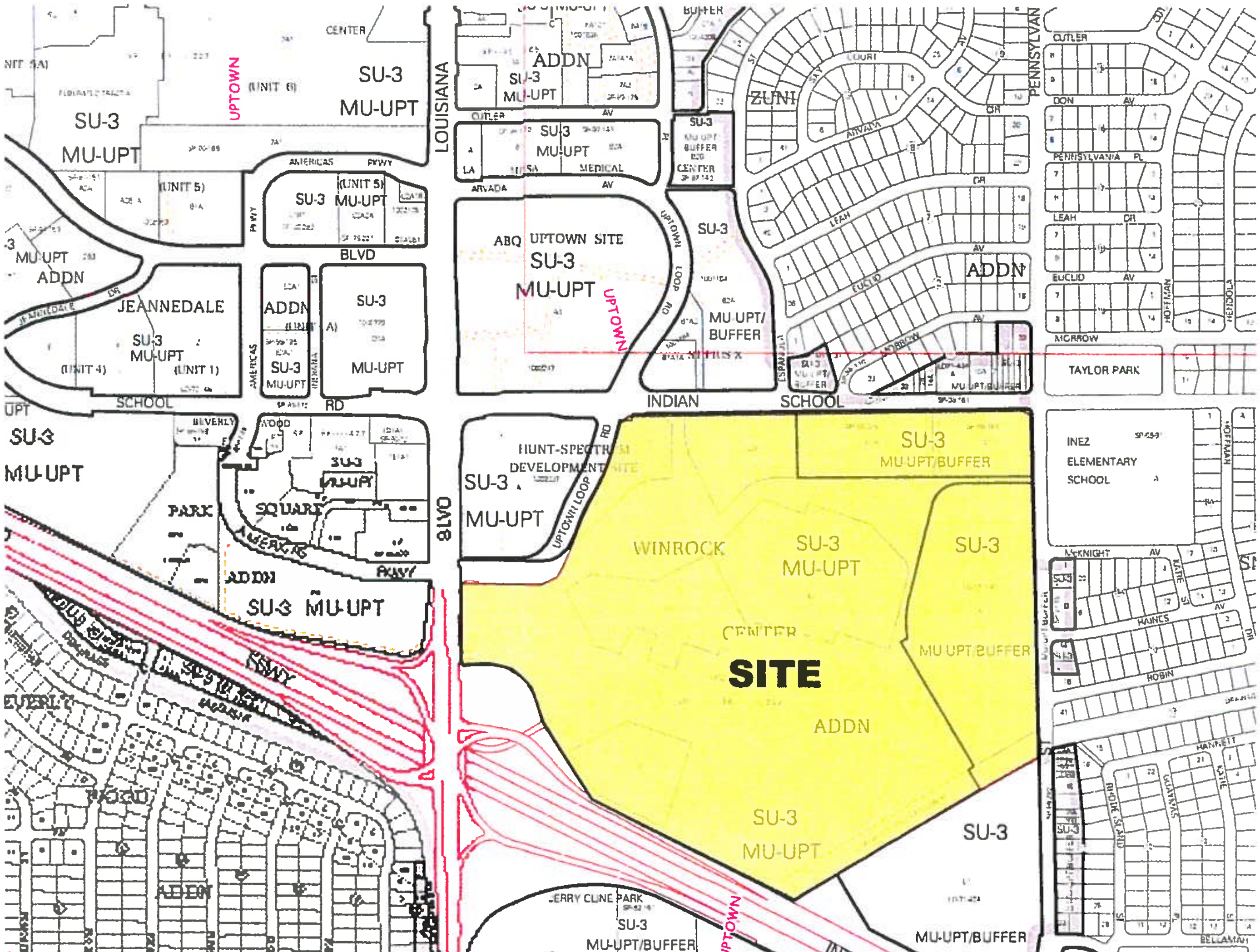
Best Regards,

Terry O. Brown, P.E.

attachments as noted

Page A-1:	Vicinity Map
Page A-2:	Winrock Mall Site Plan
Page A-3:	Trip Generation Summary Table – Winrock Re-population
Page A-4:	Trip Distribution Map (DASZ)
Pages A-5 thru A-8:	Trip Distribution / Trip Assignments Maps
Pages A-9 thru A-17:	Turning Movements Worksheets
Pages A-18 thru A-25:	HCM Signalized Intersection Analyses
Pages A-26 thru A-29:	Detailed Summary of Levels-of-Service / Delays Tables

cc: Richard Dourte, City Engineer, City of Albuquerque
Jim Dobbie, Hunt Development Corporation
Larry Cates, Cates-Clark & Associates, LLP



Winrock Mall

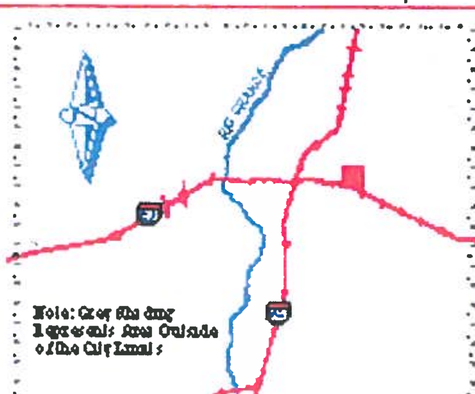
Indian School Rd / Pennsylvania St.
Vicinity Map

For more current information and more details visit: http://www.cabq.gov/gis

AGIS

Albuquerque Geographic Information System

Map amended through: 1/24/2011



Zone Atlas Page:

H-18,19, J-18,19

Selected Symbols

SECTOR PLANS

Design Overlay Zones

City Historic Zones

H-1 Buffer Zone

Petroglyph Mon.

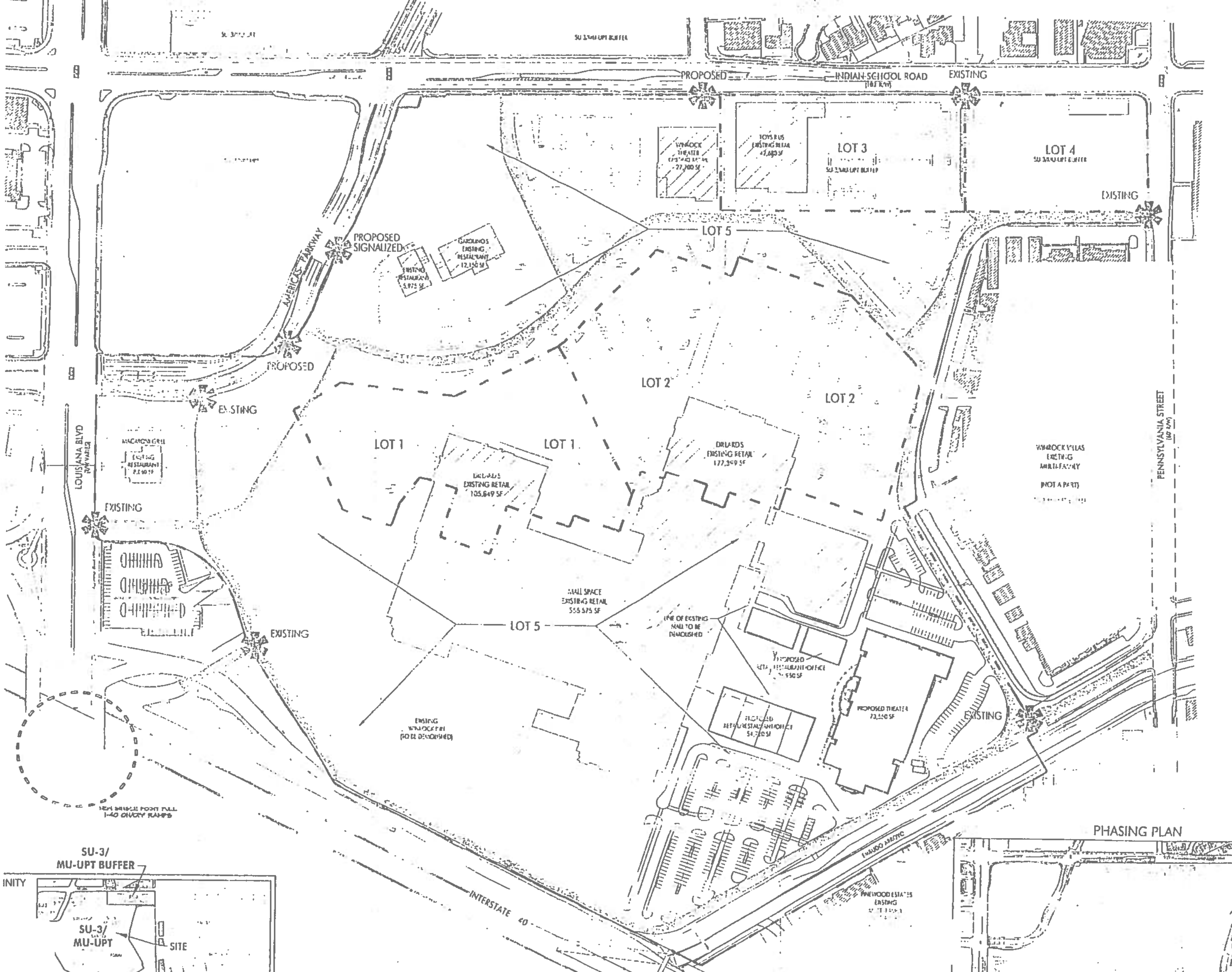
Escarpment

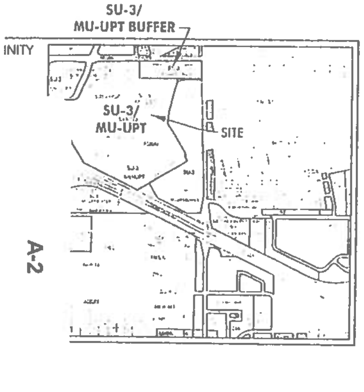
2 Mile Airport Zone

Airport Noise Contours

Wall Overlay Zone

0 750 1,500 Feet





APPROVED ACCESS POINTS PER PREVIOUS SITE DEVELOPMENT PLAN FOR SUBDIVISION ACCESS POINTS TO BE DEVELOPED IN CONJUNCTION WITH FUTURE PHASES.

GENERAL NOTES:

1. LOT LINES ARE SHOWN FOR ILLUSTRATIVE PURPOSES ONLY. FINAL PLATTING FOR THE WINROCK TOWN CENTER SHALL OCCUR AT THE END OF SITE AND BUILDING CONSTRUCTION WITH INDIVIDUAL LOT BOUNDARIES FOR THE SU-3 AREAS AS AGREED TO WITH THE PLANNING DIRECTOR.
2. PHASING AND CONSTRUCTION SHALL BE IN COMPLIANCE WITH THE UPTOWN SECTOR DEVELOPMENT PLAN.
3. FUTURE APPROVALS FOR SPECIFIC DEVELOPMENT PROJECTS SHALL BE IN COMPLIANCE WITH THE UPTOWN SECTOR DEVELOPMENT PLAN AND THIS SITE DEVELOPMENT PLAN FOR SUBDIVISION.
4. PARKING AS SHOWN IS ILLUSTRATIVE AND SUBJECT TO COMPLIANCE WITH THE UPTOWN SECTOR DEVELOPMENT PLAN. A SHARED PARKING AGREEMENT WILL BE REQUIRED FOR THE SITE TENANTS.
5. WINROCK MANAGEMENT SHALL PROVIDE SUFFICIENT ON-SITE SECURITY.
6. SUFFICIENT WAYFINDING SIGNAGE AND RING ROAD STRIPING SHALL BE PROVIDED TO DIRECT USERS TO TENANT LOCATIONS AS WELL AS TO PROJECT EXITS.
7. SURPLUS PARKING AND OPEN SPACE IN PHASE I SHALL BE ATTRIBUTABLE TO FUTURE PHASES.

SITE PLAN FOR SUBDIVISION - REQUIRED INFO.

THIS SITE DEVELOPMENT PLAN FOR SUBDIVISION AMENDS THE PRIOR APPROVED WINROCK MARKET CENTER SI[TE] DEVELOPMENT PLAN FOR SUBDIVISION (DRB-...), PROJECT NO. 1002202.

THE SITE:
THE SITE CONSISTS OF APPROXIMATELY 81.57 ACRES. THE INTERIOR PARCEL LINES SHOWN ON THIS SITE PLAN [ARE] ILLUSTRATIVE. FINAL PLATTING WILL OCCUR AS SPECIFIC DEVELOPMENT PROJECTS ARE PROPOSED. THE SUBJ[ECT] PROPERTY IS PROPOSED TO BE SUBDIVIDED INTO FIVE SEPARATE TRACTS. TRACT 1 AND TRACT 2 ARE THE EXISTING PARCELS (A-3 AND A-2) FOR THE MEN'S AND WOMEN'S DILLARDS STORES AND A PORTION OF THEIR PARKING FIELDS; TRACT 3 IS THE EXISTING TOYS R US LOT (B-1A); TRACT 4 IS THE EXISTING VACANT LOT (B) OF TOYS R US, COMMONLY CALLED THE "CHRISTMAS TREE LOT" AT THE NORTH EAST CORNER OF THE SITE; AN[D] TRACT 5 IS THE REMAINING LOT COMPRISING THE REST OF THE WINROCK CENTER ADDITION (PARCELS A1A, B, C2A PLUS PARCEL D OF THE WINT-SPECTRUM DEVELOPMENT SITE). TRACTS 1, 2 AND 5 ARE ZONED SU-3 MU-UP[T]; TRACTS 3-4 ARE ZONED MU-UPT/BUFFER.

LOT 1	251,644 SF	5.78 AC.	LOT 4	134,870 SF	3.10 AC.
LOT 2	422,230 SF	9.69 AC.	LOT 5	2,554,616 SF	58.64 AC.
LOT 3	181,058 SF	4.16 AC.			

PROPOSED USE:
THE SITE IS ZONED SU-3 MU-UPT AND MU-UPT BUFFER. LAND USES ARE AS FOLLOWS:

*RETAIL/RESTAURANT/THEATER:	906,282 SF.	*USES AND SQUARE FOOTAGES ARE APPRO[VED] PER PREVIOUS SITE DEVELOPMENT PLAN F[OR] SUBDIVISION.
*OFFICE:	24,000 SF.	
*HOTEL:	174 ROOMS	
*MULTI-FAMILY:	66 UNITS (AREA-3.11 AC. GROSS DENSITY-21.1 DU/AC.)	

PEDESTRIAN AND VEHICULAR INGRESS AND EGRESS:
VEHICULAR ACCESS:
LOUISIANA BOULEVARD PROVIDES THE MAJOR SIGNALIZED ACCESS INTO WINROCK TOWN CENTER VIA AMERIC[AS] PARKWAY. ADDITIONAL ACCESS POINTS ARE PROVIDED AT LOUISIANA BOULEVARD, INDIAN SCHOOL ROAD, AN[D] PENNSYLVANIA STREET. THERE IS DIRECT ACCESS FROM WINROCK TOWN CENTER TO I-40 WEST. THESE ACCES[S] POINTS ARE CONSISTENT WITH THE UPTOWN SECTOR DEVELOPMENT PLAN AND PREVIOUS APPROVALS FOR WIN[ROCK].

BICYCLE AND TRAIL ACCESS:
BICYCLE ACCESS IS PROVIDED BY 6 FOOT ON-STREET BIKE LANES IN LOUISIANA BOULEVARD, PENNSYLVANIA STREET, AND INDIAN SCHOOL ROAD. TRAIL ACCESS IS PROVIDED ACROSS PENNSYLVANIA VIA THE PASEO DE MONTANAS TRAIL, AND CONTINUES ALONG WINROCK'S SOUTHERN EDGE AND CONNECTS TO THE PEDESTRIAN OVERPASS AND CONTINUES ACROSS I-40. SIDEWALKS WILL PROVIDE PEDESTRIAN CONNECTIVITY WITHIN WINRO[CK] TOWN CENTER, CONSISTENT WITH THE REQUIREMENTS OF THE UPTOWN SECTOR DEVELOPMENT PLAN.

TRANSIT ACCESS:
LOUISIANA BOULEVARD IS DESIGNATED A MAJOR TRANSIT CORRIDOR, WITH A REGULAR BUS ROUTE AND A RA[PID] RIDE ROUTE AND INDIAN SCHOOL ROAD INCLUDES A COMMUTER ROUTE. THE UPTOWN TRANSIT CENTER IS LOCA[TED] NEARBY OFF INDIAN SCHOOL ROAD, WEST OF LOUISIANA BOULEVARD. A TRANSIT FACILITY IS PROVIDED AT T[HE] SOUTHWEST CORNER OF WINROCK TOWN CENTER, WITH 113 PARKING SPACES PROVIDED.

INTERNAL CIRCULATION REQUIREMENTS:
INTERNAL CIRCULATION IS PROVIDED THROUGH THE SITE VIA A RING ROAD SYSTEM. SIDEWALKS SHALL BE DEVELOPED CONSISTENT WITH THE REQUIREMENTS OF THE UPTOWN SECTOR DEVELOPMENT PLAN.

BUILDING HEIGHTS, SETBACKS AND DESIGN:
BUILDING HEIGHTS, SETBACKS AND DESIGN SHALL BE CONSISTENT WITH THE REQUIREMENTS IN THE UPTOWN SEC[TOR] DEVELOPMENT PLAN AND THE CITY COMPREHENSIVE ZONING CODE.

FAR:
THE MINIMUM FLOOR AREA RATIO (FAR) IS .30 FOR WINROCK TOWN CENTER AS REQUIRED BY THE UPTOWN SEC[TOR] DEVELOPMENT PLAN.

SU-3

AREA	BUILDING	F.A.R.
3,543,478 SF (81.31 AC.)	1,045,603 SF	.30

LANDSCAPE PLAN AND OPEN SPACE:
LANDSCAPE PLANS SHALL BE CONSISTENT WITH CITY STANDARDS AND POLICIES REGARDING WATER CONSERV[ATION] AND POLLEN, THE UPTOWN SECTOR DEVELOPMENT PLAN, AND THE CITY'S COMPREHENSIVE ZONING CODE.

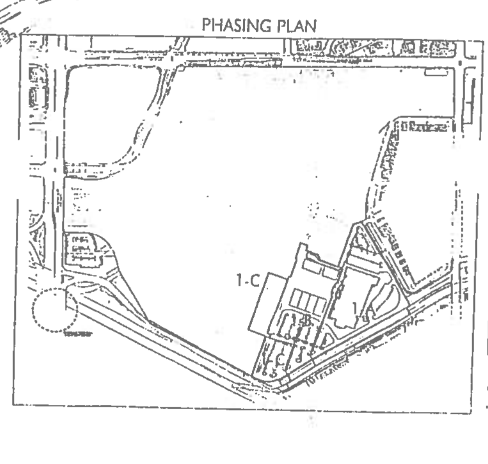
PHASING:
OVERALL PHASE I DEVELOPMENT INCLUDES THE DEMOLITION OF THE MONTGOMERY WARD BUILDING AND THE WINROCK INN.

PROJECT NUMBER: 1002202
APPLICATION NUMBER:

IS AN INFRASTRUCTURE LIST REQUIRED? ( ) YES ( ) NO IF YES, THEN A SET OF APPROVED DRC PLANS WITH A WORK ORDER IS REQUIRED FOR ANY CONSTRUCTION WITHIN PUBLIC RIGHT-OF-WAY OR FOR CONSTRUCTION OF PUBLIC IMPROVEMENTS.

DRB SITE DEVELOPMENT PLAN APPROVAL:

TRAFFIC ENGINEERING, TRANSPORTATION DIVISION	DATE
ABCWUA	DATE
PARKS AND RECREATION DEPARTMENT	DATE
CITY ENGINEER	DATE
*ENVIRONMENTAL HEALTH DEPARTMENT (CONDITIONAL)	DATE
SOLID WASTE MANAGEMENT	DATE
DRB CHAIRPERSON, PLANNING DEPARTMENT	DATE



Winrock
TOWN CENTER

OWNER/DEVELOPER
WINROCK PARTNERS, LLC

PROJECT TEAM
ENGINEERING
HUITT-ZOLLARS
PLANNING/LANDSCAPE ARCHITECTURE
CONSENSUS PLANNING
SURROUNDINGS STUDIO
ARCHITECTURE
STUDIO SOUTHWEST ARCHITECTS

AMENDED SITE DEVELOPMENT PLAN FOR SUBDIVISION
SITE PLAN

SCALE: 1" = 100
NORTH 0 50 100 200

SHEET 1 OF 2
FEBRUARY 8, 2011

4.0 TRIP GENERATION, DISTRIBUTION AND ASSIGNMENT

4.1 TRIP GENERATION

Project trips were generated using the Institute of Transportation Engineers (ITE) Trip Generation, 8th Edition, and the trip generation data are summarized in Table 6. The existing trips from Winrock Center are included in the traffic volume counts collected. Trip generation was performed only for the currently unleased area (523,880 SF of 964,899 SF – 54.3%), as well as a proposed new theater. It was felt that generating trips for the entire center and only considering the percentage that is currently unleased yields the most accurate results. Two land uses were used for the Winrock trip generation, #820 Shopping Center and #445 Movie Theater. Note that the movie theater trip generation is for a Friday, not weekday; therefore, the overall trip generation for that land use should be considered conservative. Table 5 contains the Winrock Center trip generation. Trip generation for the Target development may be found in the Target TIS. The data worksheets are contained in Appendix C.

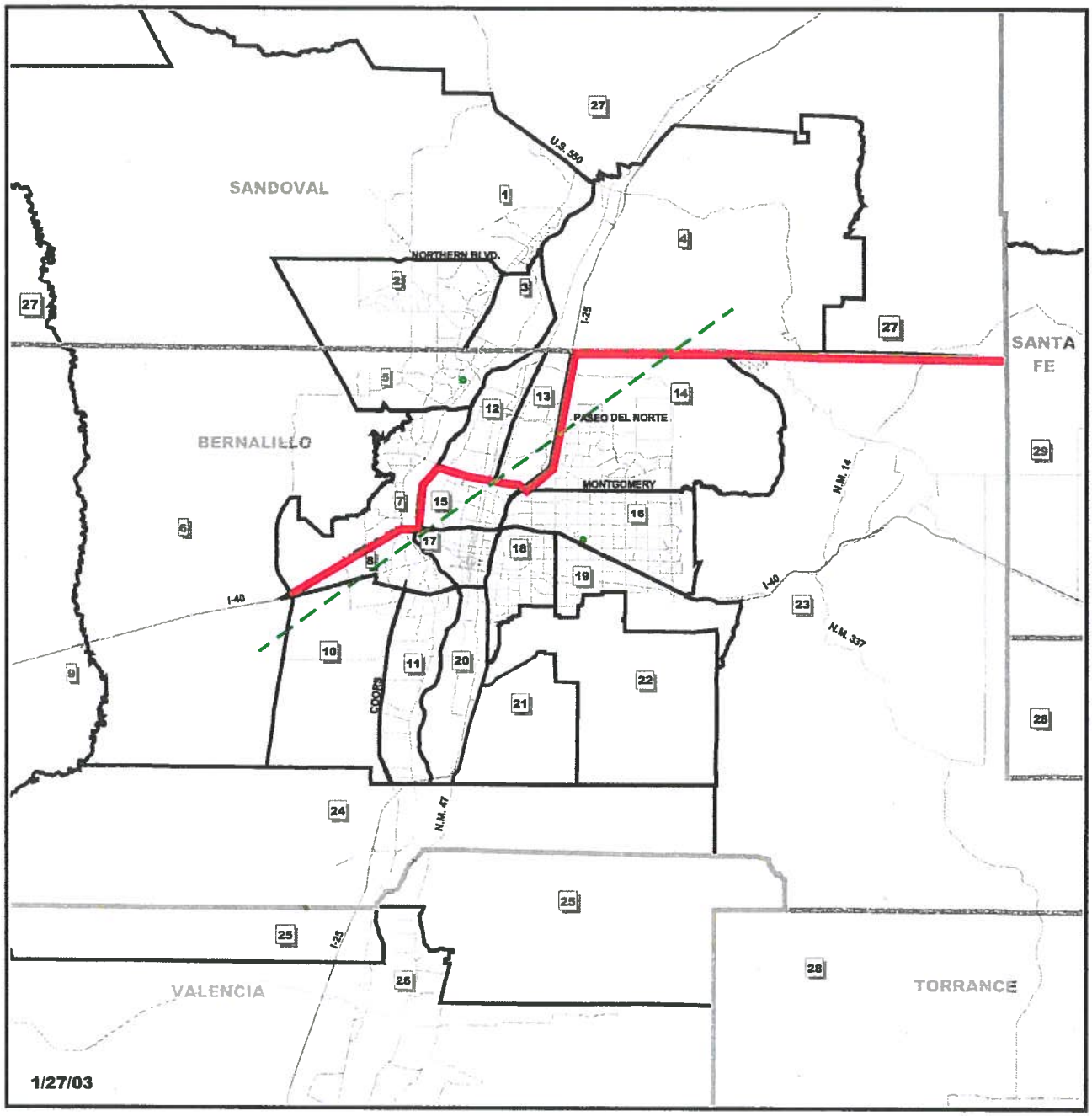
Table 5
Trip Generation - Proposed Land Use

LU Code	Development	SF/Screen	Daily	AM In	AM Out	PM In	PM Out
820	Shopping Center (All of Winrock)	964,899	29638	358	229	1423	1482
820	**Unleased Portion of Winrock (54.3%)**	523,880	16092	194	124	773	805
445	Multiplex Movie Theater	16	4680			221	147
	New Primary Trips		***20772***	***194***	***124***	***994***	***952***

Pass-by trips are a portion of all retail developments. Given that Uptown Loop Rd acts as an extension of the site driveways to the surrounding roadway network, no pass-by trip reduction was applied to the intersection volumes. The new primary trips were used for the study's trip assignment.

4.2 TRIP DISTRIBUTION

The trip distribution from the site was generated using the Mid-Region Council of Governments (MRCOG) 2030 model year databank. Winrock Center is considered semi-regional, with the traffic-shed line approximately at the mid-point separating the Uptown area and Cottonwood Mall. The trip distribution area was determined based upon all data analysis subzones (DASZ) that fall within the Albuquerque Metropolitan Planning Area (AMPA) east of the . An origin-destination (O-D) assignment was made between the site DASZ, #7695, and the other DASZs within the distribution area. A series of O-D subareas were developed, to ascertain the attractiveness of origins (O's) and destinations (D's), to and from the site DASZ (see drawing in Appendix C), based upon logical routing. Table 6 contains subarea routing descriptions to the site and O-D percentages for trips entering and exiting DASZ #7695 for the



22 Subarea Identification Number

Figure 6

Subareas of the MRCOG Region

Mid-Region
Council of Governments
317 Commercial NE, Suite 104
Albuquerque, NM 87102
505-247-1750

Subarea boundaries extend to county boundary where full extent of subarea not shown except for Subarea 29 which only includes southern Santa Fe County.

Hunt Development Corporation - Target Store Site (SE Corner of Indian School Rd. / Louisiana Blvd.) Trip Distribution Subarea Map

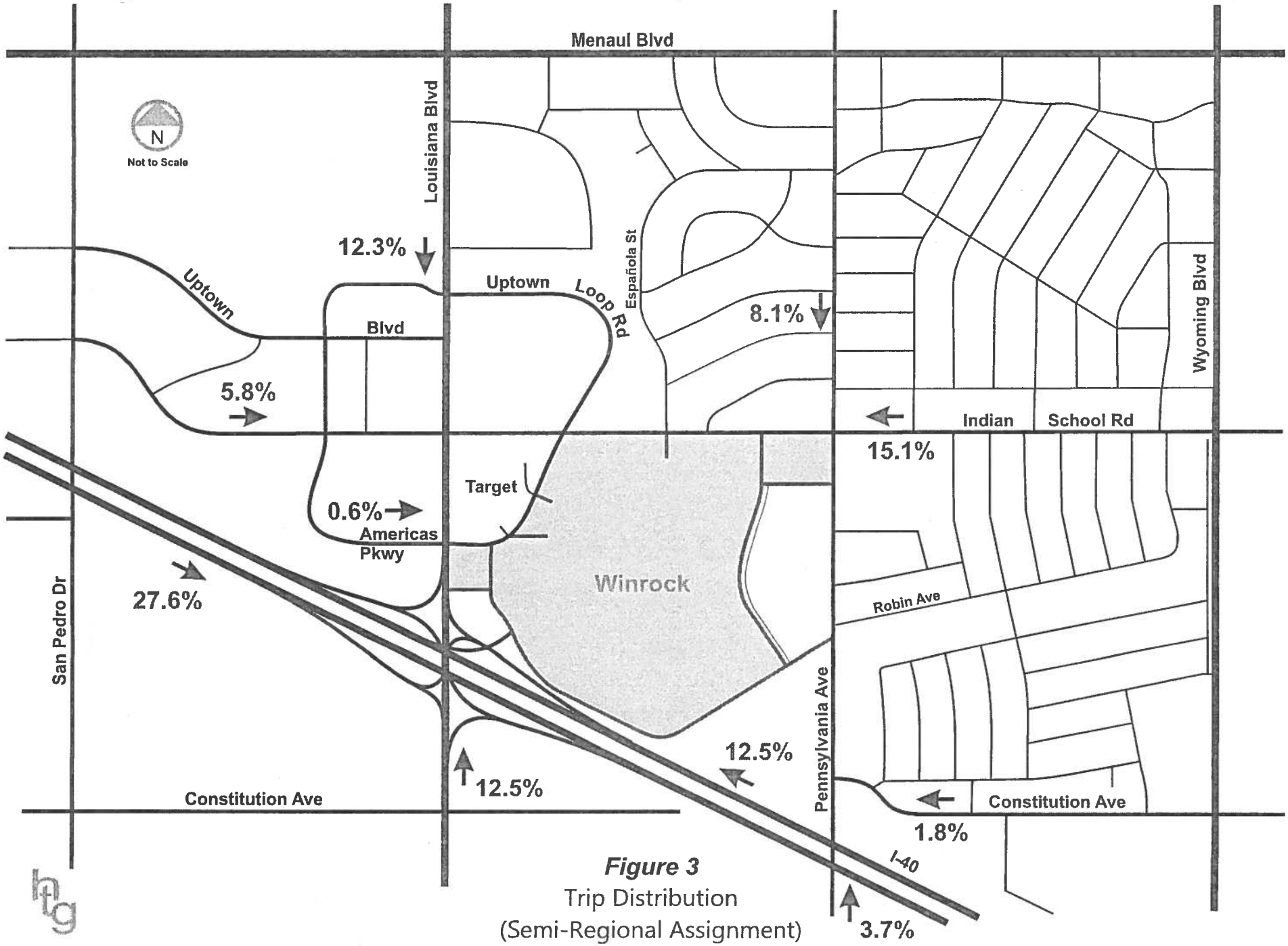
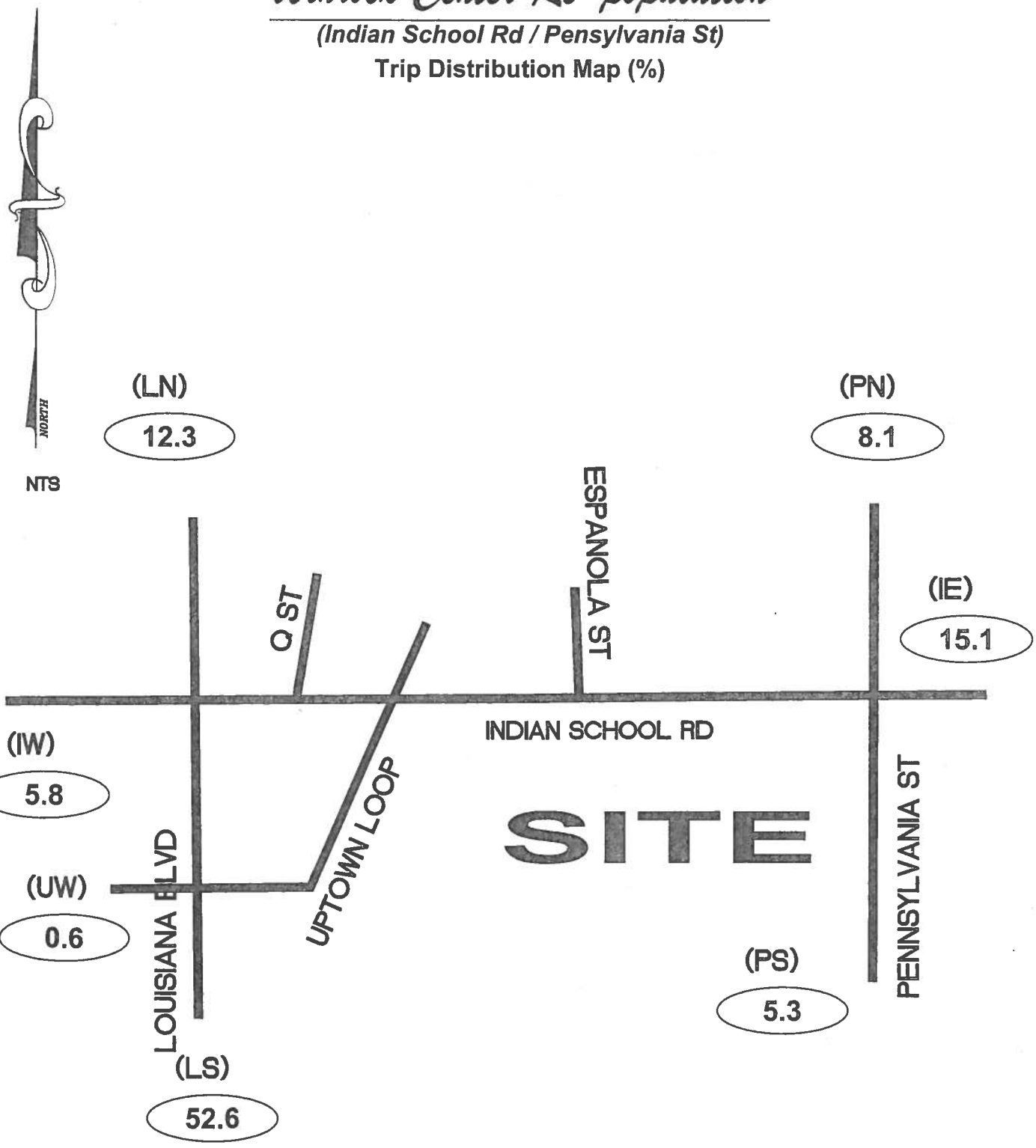


Figure 3
Trip Distribution
(Semi-Regional Assignment)

Winrock Center Re-population

(Indian School Rd / Pensylvania St)

Trip Distribution Map (%)



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(505)883-8807 (Voice)
(505)212-0267 (Fax)

Winrock Center Re-population

(Indian School Rd / Pensylvania St)

Trip Assignments (% Entering)

NTS

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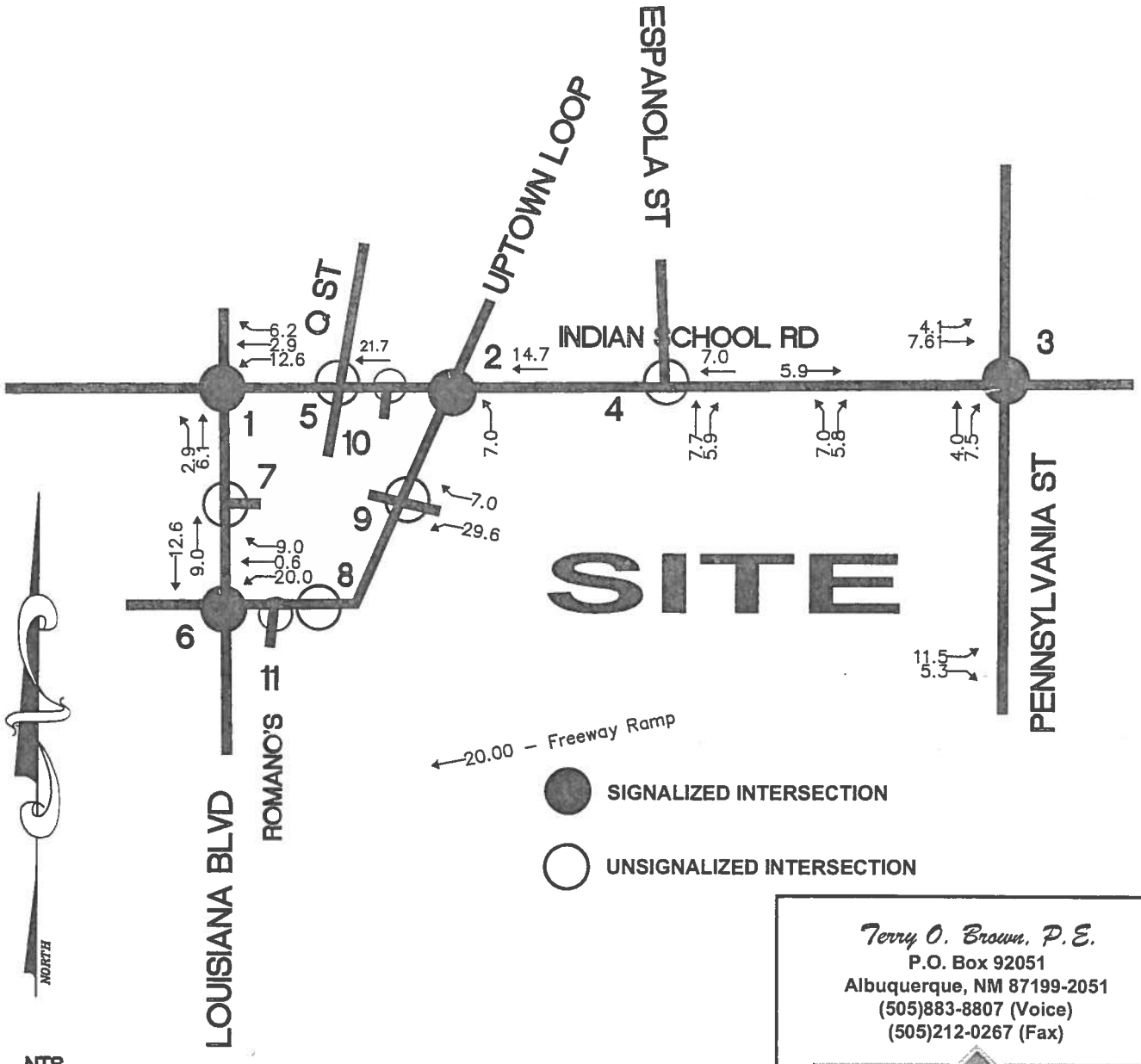
Winrock Center Re-population

(Indian School Rd / Pensylvania St)

Trip Assignments (% Exiting)



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Winrock Center Re-populated

Projected Turning Movements SUMMARY

PROPOSED DEVELOPMENT (2012) - 100% Development

INTERSECTION: Summary

Indian School Rd / Louisiana Blvd

(1)	0.77			0.95			0.82			0.86			PHF
	Eastbound (Indian School Rd)			Westbound (Indian School Rd)			Northbound (Louisiana Blvd)			Southbound (Louisiana Blvd)			
3.0% Truck	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Existing (2012)	20	99	57	181	301	53	204	839	162	54	813	74	
2012 (NO BUILD - A.M.)	*20*	*107*	*57*	*200*	*302*	*54*	*209*	*845*	*162*	*65*	*813*	*74*	
2012 (BUILD - A.M.)	***20***	***113***	***63***	***216***	***306***	***62***	***213***	***853***	***162***	***77***	***825***	***74***	
	0.76			0.88			0.88			0.95			PHF
	Eastbound (Indian School Rd)			Westbound (Indian School Rd)			Northbound (Louisiana Blvd)			Southbound (Louisiana Blvd)			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Existing (2012)	114	385	204	323	242	184	98	1,440	306	218	1,255	90	
2012 (NO BUILD - P.M.)	*114*	*411*	*209*	*435*	*247*	*227*	*121*	*1,473*	*306*	*291*	*1,234*	*90*	
2012 (BUILD - P.M.)	***114***	***440***	***238***	***555***	***275***	***286***	***149***	***1,531***	***306***	***352***	***1,296***	***90***	

Indian School Rd / Uptown Loop

(2)	0.92			0.83			0.75			0.81			PHF
	Eastbound (Indian School Rd)			Westbound (Indian School Rd)			Northbound (Uptown Loop)			Southbound (Uptown Loop)			
3.0% Truck	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Existing (2012)	64	232	2	99	501	66	8	10	38	24	5	23	
2012 (NO BUILD - A.M.)	*64*	*242*	*2*	*102*	*513*	*66*	*8*	*10*	*38*	*24*	*5*	*23*	
2012 (BUILD - A.M.)	***64***	***242***	***19***	***102***	***531***	***66***	***17***	***10***	***38***	***24***	***5***	***23***	
	0.91			0.89			0.82			0.75			PHF
	Eastbound (Indian School Rd)			Westbound (Indian School Rd)			Northbound (Uptown Loop)			Southbound (Uptown Loop)			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Existing (2012)	164	621	35	86	511	55	55	40	85	126	35	90	
2012 (NO BUILD - P.M.)	*165*	*679*	*35*	*95*	*555*	*55*	*55*	*40*	*85*	*126*	*36*	*90*	
2012 (BUILD - P.M.)	***165***	***679***	***124***	***95***	***695***	***55***	***122***	***40***	***85***	***126***	***36***	***90***	

Indian School Rd / Pennsylvania St

(3)	0.85			0.77			0.80			0.95			PHF
	Eastbound (Indian School Rd)			Westbound (Indian School Rd)			Northbound (Pennsylvania St)			Southbound (Pennsylvania St)			
3.0% Truck	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Existing (2012)	48	141	72	98	400	41	89	167	56	50	263	142	
2012 (NO BUILD - A.M.)	*50*	*145*	*75*	*98*	*407*	*41*	*94*	*167*	*56*	*50*	*263*	*145*	
2012 (BUILD - A.M.)	***55***	***154***	***75***	***113***	***422***	***41***	***94***	***172***	***65***	***50***	***271***	***153***	
	0.85			0.94			0.91			0.94			PHF
	Eastbound (Indian School Rd)			Westbound (Indian School Rd)			Northbound (Pennsylvania St)			Southbound (Pennsylvania St)			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Existing (2012)	137	477	134	80	346	42	89	313	99	53	239	87	
2012 (NO BUILD - P.M.)	*145*	*495*	*148*	*98*	*364*	*42*	*103*	*318*	*110*	*53*	*247*	*95*	
2012 (BUILD - P.M.)	***184***	***567***	***148***	***173***	***440***	***42***	***103***	***356***	***181***	***53***	***287***	***136***	

Am Pkwy / Uptown Lp / Louisiana Blvd

(6)	0.85			0.96			0.86			0.90			PHF
	Eastbound (Am Pkwy / Uptown Lp)			Westbound (Am Pkwy / Uptown Lp)			Northbound (Louisiana Blvd)			Southbound (Louisiana Blvd)			
3.0% Truck	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Existing (2012)	20	5	132	42	4	0	284	1,186	53	2	989	39	
2012 (NO BUILD - A.M.)	*27*	*5*	*132*	*91*	*8*	*0*	*284*	*1,290*	*54*	*2*	*1,008*	*39*	
2012 (BUILD - A.M.)	***27***	***6***	***132***	***116***	***9***	***11***	***284***	***1,290***	***112***	***20***	***1,024***	***39***	
	0.77			0.67			0.92			0.93			PHF
	Eastbound (Am Pkwy / Uptown Lp)			Westbound (Am Pkwy / Uptown Lp)			Northbound (Louisiana Blvd)			Southbound (Louisiana Blvd)			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Existing (2012)	31	16	270	83	3	3	135	1,677	132	19	1,596	28	
2012 (NO BUILD - P.M.)	*50*	*17*	*270*	*369*	*22*	*4*	*136*	*1,972*	*135*	*35*	*1,596*	*28*	
2012 (BUILD - P.M.)	***50***	***23***	***270***	***559***	***28***	***90***	***136***	***1,972***	***433***	***125***	***1,716***	***28***	

Winrock Center Re-populated

Projected Turning Movements Worksheet

Indian School Rd / Louisiana Blvd

INTERSECTION: E-W Street: **Indian School Rd** (1)

N-S Street: **Louisiana Blvd**

Year of Existing Counts 2011

Implementation Year **2012**

Growth Rates	1.70%			0.00%			0.00%			0.00%		
	Eastbound (Indian School Rd)			Westbound (Indian School Rd)			Northbound (Louisiana Blvd)			Southbound (Louisiana Blvd)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	20	97	56	181	301	53	204	839	162	54	813	74
Background Traffic Growth	0	2	1	0	0	0	0	0	0	0	0	0
Subtotal	20	99	57	181	301	53	204	839	162	54	813	74
Target Commercial Center	0	8	0	19	1	1	5	6	0	11	0	0
Subtotal (NO BUILD - A.M.)	***20***	***107***	***57***	***200***	***302***	***54***	***209***	***845***	***162***	***65***	***813***	***74***
Percent Commercial Trips Generated(Entering)	*0.00%*	*2.90%*	*2.90%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*6.10%*	*6.20%*	*0.00%*
Percent Commercial Trips Generated(Exiting)	*0.00%*	*0.00%*	*0.00%*	*12.60%*	*2.90%*	*6.20%*	*2.90%*	*6.10%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*
Total Trips Generated	0	6	6	16	4	8	4	8	0	12	12	0
Total AM Peak Hour BUILD Volumes	**20**	**113**	**63**	**216**	**306**	**62**	**213**	**853**	**162**	**77**	**825**	**74**

	Eastbound (Indian School Rd)			Westbound (Indian School Rd)			Northbound (Louisiana Blvd)			Southbound (Louisiana Blvd)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	112	379	201	323	242	184	98	1,440	306	218	1,255	90
Background Traffic Growth	2	6	3	0	0	0	0	0	0	0	0	0
Subtotal	114	385	204	323	242	184	98	1,440	306	218	1,255	90
Target Commercial Center	0	22	0	112	2	36	20	26	0	62	-32	0
Winrock Theater Trips	0	4	5	0	3	7	3	7	0	11	11	0
Subtotal (NO BUILD - P.M.)	***114***	***411***	***209***	***435***	***247***	***227***	***121***	***1,473***	***306***	***291***	***1,234***	***90***
Percent Commercial Trips Generated(Entering)	*0.00%*	*2.90%*	*2.90%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*6.10%*	*6.20%*	*0.00%*
Percent Commercial Trips Generated(Exiting)	*0.00%*	*0.00%*	*0.00%*	*12.60%*	*2.90%*	*6.20%*	*2.90%*	*6.10%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*
Total Trips Generated	0	29	29	120	28	59	28	58	0	61	62	0
Total PM Peak Hour BUILD Volumes	**114**	**440**	**238**	**555**	**275**	**286**	**149**	**1,531**	**306**	**352**	**1,296**	**90**

	Entering	Exiting		
Number of Commercial Trips Generated	**194**	**124**	A.M.	100% Commercial Development
	994	**952**	P.M.	

	Eastbound (Indian School Rd)			Westbound (Indian School Rd)			Northbound (Louisiana Blvd)			Southbound (Louisiana Blvd)		
2012 AM Peak Hr. Volumes	20	99	57	181	301	53	204	839	162	54	813	74
2012 PM Peak Hr. Volumes	114	385	204	323	242	184	98	1,440	306	218	1,255	90

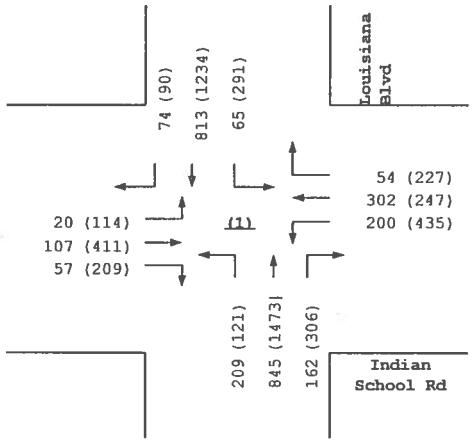
Pass-by Trip Calculations:

AM Pass-by Trips	***Eastbound (Indian School Rd)***			***Westbound (Indian School Rd)***			***Northbound (Louisiana Blvd)***			***Southbound (Louisiana Blvd)***		
Percent Entering	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*
Volume Entering	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Percent Exiting	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*
Volume Exiting	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Net AM Passby Trips	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***

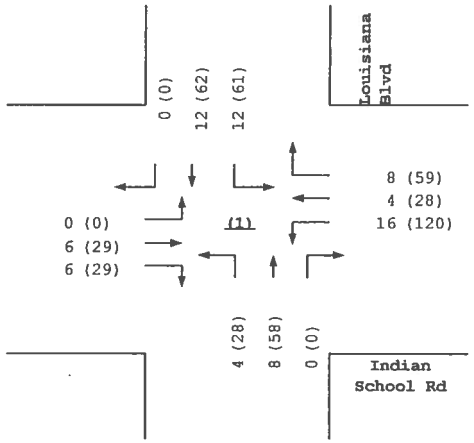
PM Pass-by Trips	***Eastbound (Indian School Rd)***			***Westbound (Indian School Rd)***			***Northbound (Louisiana Blvd)***			***Southbound (Louisiana Blvd)***		
Percent Entering	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*33.00%*	*-33.00%*	*0.00%*
Volume Entering	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Percent Exiting	*0.00%*	*0.00%*	*0.00%*	*33.00%*	*0.00%*	*34.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*
Volume Exiting	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Net PM Passby Trips	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***

	Entering	*Exiting*	
Pass-by Trips	*0*	*0*	*AM*
	0	*0*	*PM*

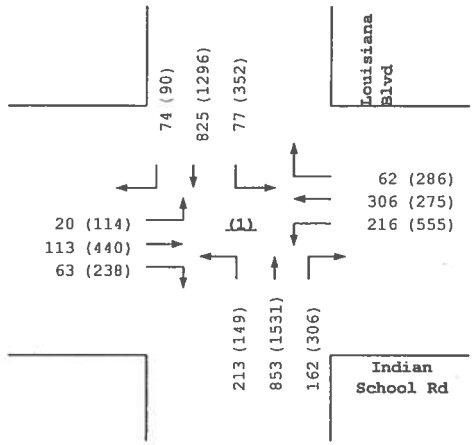
2012
NO BUILD



Trips



2012
BUILD



Indian School Rd / Louisiana Blvd

Winrock Center Re-populated

Projected Turning Movements Worksheet

Indian School Rd / Uptown Loop

INTERSECTION: E-W Street: **Indian School Rd** (2)

N-S Street: **Uptown Loop**

Year of Existing Counts 2011

Implementation Year **2012**

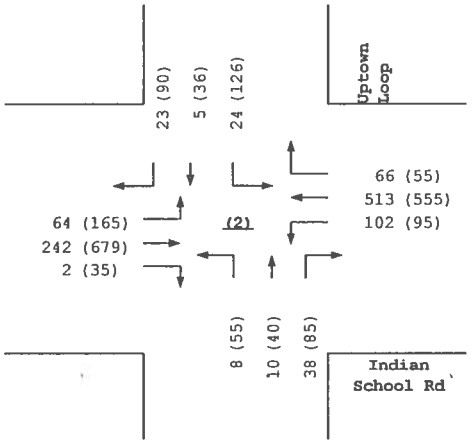
Growth Rates	0.00%			0.00%			0.00%			0.00%		
	Eastbound (Indian School Rd)			Westbound (Indian School Rd)			Northbound (Uptown Loop)			Southbound (Uptown Loop)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	64	232	2	99	501	66	8	10	38	24	5	23
Background Traffic Growth	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal	64	232	2	99	501	66	8	10	38	24	5	23
Target Commercial Center	0	10	0	3	12	0	0	0	0	0	0	0
Subtotal (NO BUILD - A.M.)	***64***	***242***	***2***	***102***	***513***	***66***	***8***	***10***	***38***	***24***	***5***	***23***
Percent Commercial Trips Generated(Entering)	*0.00%*	*0.00%*	*9.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*
Percent Commercial Trips Generated(Exiting)	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*14.70%*	*0.00%*	*7.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*
Total Trips Generated	0	0	17	0	18	0	9	0	0	0	0	0
Total AM Peak Hour BUILD Volumes	**64**	**242**	**19**	**102**	**531**	**66**	**17**	**10**	**38**	**24**	**5**	**23**

	Eastbound (Indian School Rd)			Westbound (Indian School Rd)			Northbound (Uptown Loop)			Southbound (Uptown Loop)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	164	621	35	86	511	55	55	40	85	126	35	90
Background Traffic Growth	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal	164	621	35	86	511	55	55	40	85	126	35	90
Target Commercial Center	1	42	0	9	34	0	0	0	0	0	1	0
Winrock Theater Trips	0	16	0	0	10	0	0	0	0	0	0	0
Subtotal (NO BUILD - P.M.)	***165***	***679***	***35***	***95***	***555***	***55***	***55***	***40***	***85***	***126***	***36***	***90***
Percent Commercial Trips Generated(Entering)	*0.00%*	*0.00%*	*9.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*
Percent Commercial Trips Generated(Exiting)	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*14.70%*	*0.00%*	*7.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*
Total Trips Generated	0	0	89	0	140	0	67	0	0	0	0	0
Total PM Peak Hour BUILD Volumes	**165**	**679**	**124**	**95**	**695**	**55**	**122**	**40**	**85**	**126**	**36**	**90**

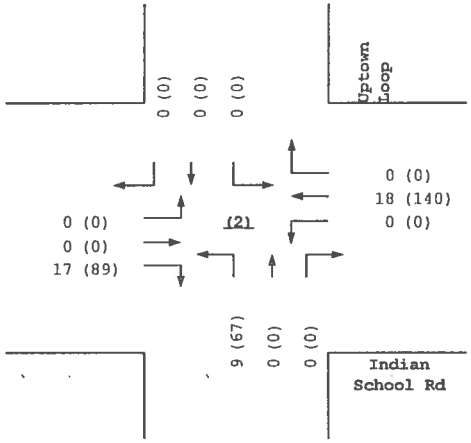
	Entering	Exiting		
Number of Commercial Trips Generated	**194**	**124**	A.M.	100% Commercial Development
	994	**952**	P.M.	

	Eastbound (Indian School Rd)			Westbound (Indian School Rd)			Northbound (Uptown Loop)			Southbound (Uptown Loop)		
2012 AM Peak Hr. Volumes	64	232	2	99	501	66	8	10	38	24	5	23
2012 PM Peak Hr. Volumes	164	621	35	86	511	55	55	40	85	126	35	90

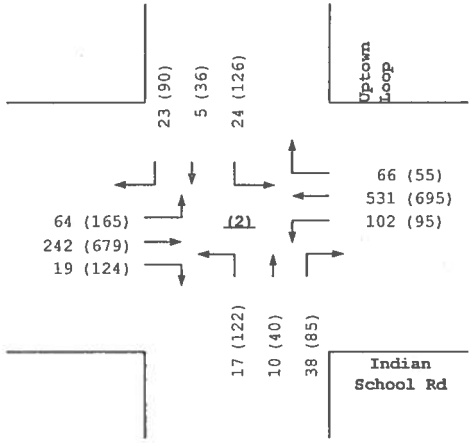
2012
NO BUILD



Trips



2012
BUILD



Indian School Rd / Uptown Loop

Winrock Center Re-populated

Projected Turning Movements Worksheet

Indian School Rd / Pennsylvania St

INTERSECTION: E-W Street: **Indian School Rd** (3)

N-S Street: **Pennsylvania St**

Year of Existing Counts 2011

Implementation Year **2012**

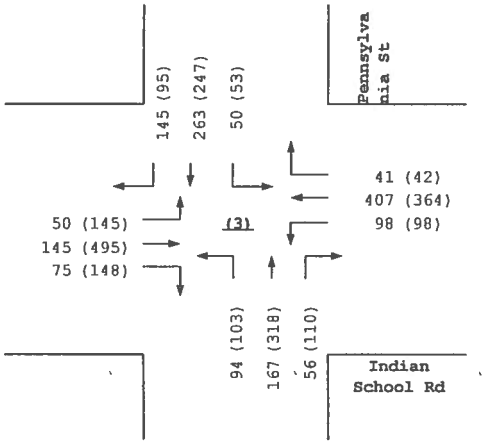
Growth Rates	0.14%			8.40%			0.00%			7.20%		
	Eastbound (Indian School Rd)			Westbound (Indian School Rd)			Northbound (Pennsylvania St)			Southbound (Pennsylvania St)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	48	141	72	90	369	38	89	167	56	47	245	132
Background Traffic Growth	0	0	0	8	31	3	0	0	0	3	18	10
Subtotal	48	141	72	98	400	41	89	167	56	50	263	142
Target Commercial Center	2	4	3	0	7	0	5	0	0	0	0	3
Subtotal (NO BUILD - A.M.)	***50***	***145***	***75***	***98***	***407***	***41***	***94***	***167***	***56***	***50***	***263***	***145***
Percent Commercial Trips Generated(Entering)	*0.00%*	*0.00%*	*0.00%*	*7.50%*	*7.60%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*4.00%*	*4.10%*
Percent Commercial Trips Generated(Exiting)	*4.10%*	*7.61%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*4.00%*	*7.50%*	*0.00%*	*0.00%*	*0.00%*
Total Trips Generated	5	9	0	15	15	0	0	5	9	0	8	8
Total AM Peak Hour BUILD Volumes	**55**	**154**	**75**	**113**	**422**	**41**	**94**	**172**	**65**	**50**	**271**	**153**

	Eastbound (Indian School Rd)			Westbound (Indian School Rd)			Northbound (Pennsylvania St)			Southbound (Pennsylvania St)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	137	476	134	74	319	39	89	313	99	49	223	81
Background Traffic Growth	0	1	0	6	27	3	0	0	0	4	16	6
Subtotal	137	477	134	80	346	42	89	313	99	53	239	87
Target Commercial Center	8	18	14	0	18	0	14	0	0	0	0	8
Winrock Theater Trips	0	0	0	18	0	0	0	5	11	0	8	0
Subtotal (NO BUILD - P.M.)	***145***	***495***	***148***	***98***	***364***	***42***	***103***	***318***	***110***	***53***	***247***	***95***
Percent Commercial Trips Generated(Entering)	*0.00%*	*0.00%*	*0.00%*	*7.50%*	*7.60%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*4.00%*	*4.10%*
Percent Commercial Trips Generated(Exiting)	*4.10%*	*7.61%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*4.00%*	*7.50%*	*0.00%*	*0.00%*	*0.00%*
Total Trips Generated	39	72	0	75	76	0	0	38	71	0	40	41
Total PM Peak Hour BUILD Volumes	**184**	**567**	**148**	**173**	**440**	**42**	**103**	**356**	**181**	**53**	**287**	**136**

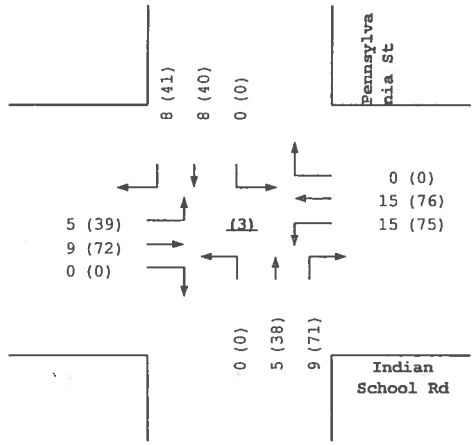
	Entering	Exiting		
Number of Commercial Trips Generated	**194**	**124**	A.M.	100% Commercial Development
	994	**952**	P.M.	

	Eastbound (Indian School Rd)			Westbound (Indian School Rd)			Northbound (Pennsylvania St)			Southbound (Pennsylvania St)		
2012 AM Peak Hr. Volumes	48	141	72	98	400	41	89	167	56	50	263	142
2012 PM Peak Hr. Volumes	137	477	134	80	346	42	89	313	99	53	239	87

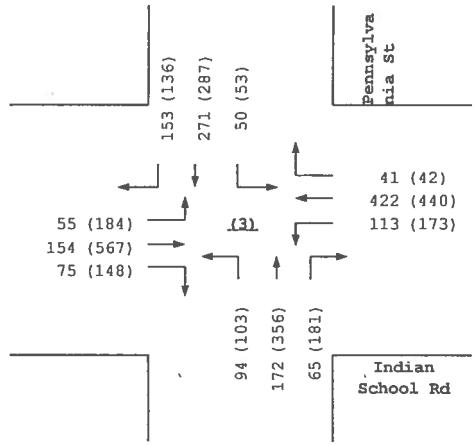
2012
NO BUILD



Trips



2012
BUILD



Indian School Rd / Pennsylvania St

Winrock Center Re-populated

Projected Turning Movements Worksheet

Am Pkwy / Uptown Lp / Louisiana Blvd

INTERSECTION: E-W Street: **Am Pkwy / Uptown Lp** (6)
N-S Street: **Louisiana Blvd**

Year of Existing Counts **2011**
Implementation Year **2012**

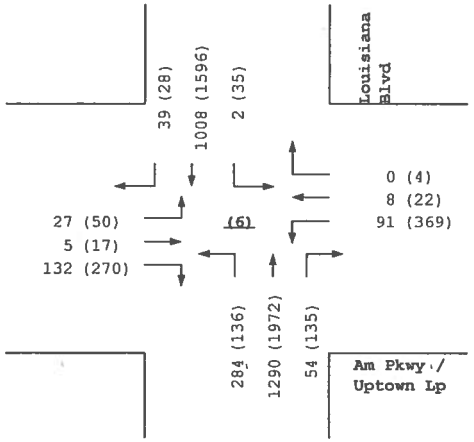
Growth Rates	0.00%			0.00%			0.00%			0.00%		
	Eastbound (Am Pkwy / Uptown Lp)			Westbound (Am Pkwy / Uptown Lp)			Northbound (Louisiana Blvd)			Southbound (Louisiana Blvd)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	20	5	132	42	4	0	284	1,186	53	2	989	39
Background Traffic Growth	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal	20	5	132	42	4	0	284	1,186	53	2	989	39
Target Commercial Center	7	0	0	49	4	0	0	104	1	0	19	0
Subtotal (NO BUILD - A.M.)	***27***	***5***	***132***	***91***	***8***	***0***	***284***	***1,290***	***54***	***2***	***1,008***	***39***
Percent Commercial Trips Generated(Entering)	*0.00%*	*0.60%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*30.00%*	*9.10%*	*0.00%*	*0.00%*
Percent Commercial Trips Generated(Exiting)	*0.00%*	*0.00%*	*0.00%*	*20.00%*	*0.60%*	*9.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*12.60%*	*0.00%*
Total Trips Generated	0	1	0	25	1	11	0	0	58	18	16	0
Total AM Peak Hour BUILD Volumes	**27**	**6**	**132**	**116**	**9**	**11**	**284**	**1,290**	**112**	**20**	**1,024**	**39**

	Eastbound (Am Pkwy / Uptown Lp)			Westbound (Am Pkwy / Uptown Lp)			Northbound (Louisiana Blvd)			Southbound (Louisiana Blvd)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	31	16	270	83	3	3	135	1,677	132	19	1,596	28
Background Traffic Growth	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal	31	16	270	83	3	3	135	1,677	132	19	1,596	28
Target Commercial Center	19	0	0	286	19	1	0	285	3	0	0	0
Winrock Theater Trips	0	1	0	0	0	0	1	10	0	16	0	0
Subtotal (NO BUILD - P.M.)	***50***	***17***	***270***	***369***	***22***	***4***	***136***	***1,972***	***135***	***35***	***1,596***	***28***
Percent Commercial Trips Generated(Entering)	*0.00%*	*0.60%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*30.00%*	*9.10%*	*0.00%*	*0.00%*
Percent Commercial Trips Generated(Exiting)	*0.00%*	*0.00%*	*0.00%*	*20.00%*	*0.60%*	*9.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*12.60%*	*0.00%*
Total Trips Generated	0	6	0	190	6	86	0	0	298	90	120	0
Total PM Peak Hour BUILD Volumes	**50**	**23**	**270**	**559**	**28**	**90**	**136**	**1,972**	**433**	**125**	**1,716**	**28**

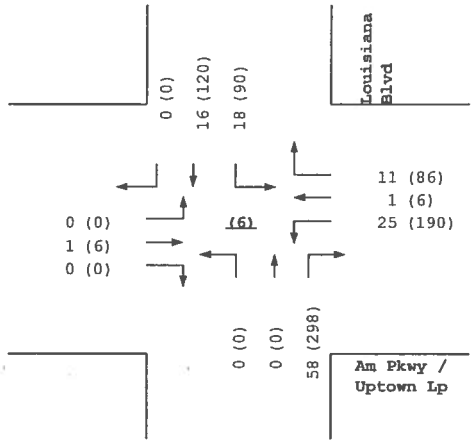
	Entering	Exiting		
Number of Commercial Trips Generated	**194**	**124**	A.M.	100% Commercial Development
	994	**952**	P.M.	

	Eastbound (Am Pkwy / Uptown Lp)			Westbound (Am Pkwy / Uptown Lp)			Northbound (Louisiana Blvd)			Southbound (Louisiana Blvd)		
2012 AM Peak Hr. Volumes	20	5	132	42	4	0	284	1,186	53	2	989	39
2012 PM Peak Hr. Volumes	31	16	270	83	3	3	135	1,677	132	19	1,596	28

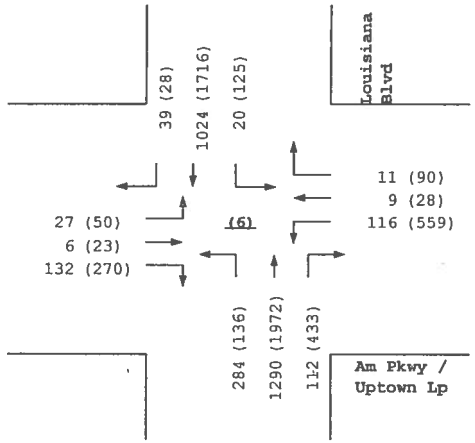
2012
NO BUILD



Trips



2012
BUILD



Am Pkwy / Uptown Lp / Louisiana Blvd

Timings
1: Louisiana Blvd & Indian School Rd

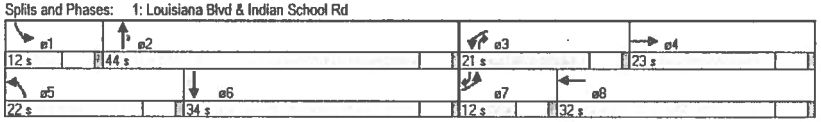
Terry O. Brown, PE
2/9/2012 - Synchro 8

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Volume (vph)	20	113	216	306	213	853	162	77	825	74
Turn Type	Prot	NA	Prot	NA	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	7	4	3	8	5	2	3	1	6	7
Permitted Phases							2			6
Detector Phase	7	4	3	8	5	2	3	1	6	7
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	21.0	10.0	21.0	10.0	21.0	10.0	10.0	21.0	10.0
Total Split (s)	12.0	23.0	21.0	32.0	22.0	44.0	21.0	12.0	34.0	12.0
Total Split (%)	12.0%	23.0%	21.0%	32.0%	22.0%	44.0%	21.0%	12.0%	34.0%	12.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	C-Max	None	None	C-Max	None
Act Effct Green (s)	6.5	10.3	11.9	17.9	12.9	51.9	68.8	8.0	44.8	56.3
Actuated g/C Ratio	0.06	0.10	0.12	0.18	0.13	0.52	0.69	0.08	0.45	0.56
v/c Ratio	0.23	0.55	0.56	0.61	0.59	0.32	0.17	0.33	0.34	0.09
Control Delay	49.1	31.8	39.1	30.8	54.7	5.3	1.4	46.3	19.5	3.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.1	31.8	39.1	30.8	54.7	5.3	1.4	46.3	19.5	3.4
LOS	D	C	D	C	D	A	A	D	B	A
Approach Delay		33.6		33.9		13.3			20.4	
Approach LOS		C		C		B			C	

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 88 (88%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.61
Intersection Signal Delay: 20.7 Intersection LOS: C
Intersection Capacity Utilization 49.3% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 1: Louisiana Blvd & Indian School Rd



HCM Signalized Intersection Capacity Analysis
1: Louisiana Blvd & Indian School Rd

Terry O. Brown, PE
2/9/2012 - Synchro 8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	113	63	216	306	62	213	853	162	77	825	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	0.95		0.97	0.95		0.97	0.86	1.00	0.97	0.86	1.00
Frt	1.00	0.95		1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1752	3317		3400	3417		3400	6346	1568	3400	6346	1568
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1752	3317		3400	3417		3400	6346	1568	3400	6346	1568
Peak-hour factor, PHF	0.77	0.77	0.77	0.95	0.95	0.95	0.82	0.82	0.82	0.86	0.86	0.86
Adj. Flow (vph)	26	147	82	227	322	65	260	1040	198	90	959	86
RTOR Reduction (vph)	0	73	0	0	19	0	0	0	76	0	0	44
Lane Group Flow (vph)	26	156	0	227	368	0	260	1040	122	90	959	42
Turn Type	Prot	NA		Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases									2			6
Actuated Green, G (s)	5.4	11.4		11.9	17.9		12.9	49.9	61.8	6.8	43.8	49.2
Effective Green, g (s)	5.4	11.4		11.9	17.9		12.9	49.9	61.8	6.8	43.8	49.2
Actuated g/C Ratio	0.05	0.11		0.12	0.18		0.13	0.50	0.62	0.07	0.44	0.49
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	95	378		405	612		439	3167	1047	231	2780	850
v/s Ratio Prot	0.01	0.05		c0.07	c0.11		c0.08	c0.16	0.01	0.03	0.15	0.00
v/s Ratio Perm									0.06			0.02
v/c Ratio	0.27	0.41		0.56	0.60		0.59	0.33	0.12	0.39	0.34	0.05
Uniform Delay, d1	45.4	41.2		41.6	37.8		41.1	15.0	7.9	44.6	18.6	13.2
Progression Factor	1.00	1.00		0.82	0.74		1.21	0.33	0.96	1.00	1.00	1.00
Incremental Delay, d2	1.6	0.7		1.7	1.6		2.0	0.3	0.0	1.1	0.3	0.0
Delay (s)	47.0	41.9		35.9	29.7		51.8	5.1	7.6	45.7	18.9	13.3
Level of Service	D	D		D	C		D	A	A	D	B	B
Approach Delay (s)		42.4			32.0			13.6			20.6	
Approach LOS		D			C			B			C	

Intersection Summary

HCM Average Control Delay	21.2	HCM Level of Service		C	
HCM Volume to Capacity ratio	0.45				
Actuated Cycle Length (s)	100.0	Sum of lost time (s)		15.0	
Intersection Capacity Utilization	49.3%	ICU Level of Service		A	
Analysis Period (min)	15				

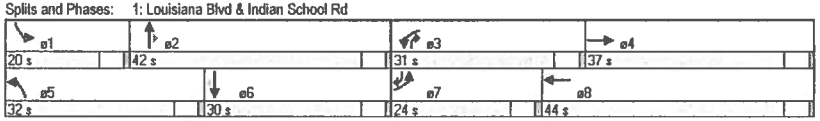
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Volume (vph)	114	440	555	275	149	1531	306	352	1296	90
Turn Type	Prot	NA	Prot	NA	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	7	4	3	8	5	2	3	1	6	7
Permitted Phases							2			6
Detector Phase	7	4	3	8	6	2	3	1	6	7
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	21.0	10.0	21.0	10.0	21.0	10.0	10.0	21.0	10.0
Total Split (s)	24.0	37.0	31.0	44.0	32.0	42.0	31.0	20.0	30.0	24.0
Total Split (%)	18.5%	28.5%	23.8%	33.8%	24.6%	32.3%	23.8%	15.4%	23.1%	18.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?										
Recall Mode	Min	Min	Min	Min	Min	C-Max	Min	Min	C-Max	Min
Act Effct Green (s)	15.7	32.5	25.5	42.3	11.8	37.0	67.5	15.0	40.2	60.9
Actuated g/C Ratio	0.12	0.25	0.20	0.33	0.09	0.28	0.52	0.12	0.31	0.47
v/c Ratio	0.71	1.01	0.92	0.53	0.55	0.96	0.42	0.95	0.70	0.12
Control Delay	73.0	76.8	68.6	34.0	91.9	30.7	2.3	90.8	42.1	4.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.0	76.8	68.6	34.0	91.9	30.7	2.3	90.8	42.1	4.0
LOS	E	E	E	C	F	C	A	F	D	A
Approach Delay		76.3		51.0		30.9			50.0	
Approach LOS		E		D		C			D	

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 19 (15%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.01
Intersection Signal Delay: 47.7 Intersection LOS: D
Intersection Capacity Utilization 84.5% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 1: Louisiana Blvd & Indian School Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	114	440	238	555	275	286	149	1531	306	352	1296	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	0.95		0.97	0.95		0.97	0.86	1.00	0.97	0.86	1.00
Frt	1.00	0.95		1.00	0.92		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1752	3320		3400	3237		3400	6346	1568	3400	6346	1568
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1752	3320		3400	3237		3400	6346	1568	3400	6346	1568
Peak-hour factor, PHF	0.76	0.76	0.76	0.90	0.88	0.88	0.88	0.88	0.88	0.95	0.95	0.95
Adj. Flow (vph)	150	579	313	617	312	325	169	1740	348	371	1364	95
RTOR Reduction (vph)	0	56	0	0	140	0	0	0	19	0	0	54
Lane Group Flow (vph)	150	837	0	617	497	0	169	1740	329	371	1364	41
Turn Type	Prot	NA		Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases									2			6
Actuated Green, G (s)	15.7	32.5		25.5	42.3		11.8	37.0	62.5	15.0	40.2	55.9
Effective Green, g (s)	15.7	32.5		25.5	42.3		11.8	37.0	62.5	15.0	40.2	55.9
Actuated g/C Ratio	0.12	0.25		0.20	0.33		0.09	0.28	0.48	0.12	0.31	0.43
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	212	830		667	1053		309	1806	814	392	1962	735
v/s Ratio Prot	0.09	c0.25		c0.18	0.15		0.05	c0.27	0.08	c0.11	c0.21	0.01
v/s Ratio Perm									0.13			0.02
v/c Ratio	0.71	1.01		0.93	0.47		0.55	0.96	0.40	0.95	0.70	0.06
Uniform Delay, d1	54.9	48.8		51.3	35.0		56.5	45.8	21.8	57.1	39.5	21.6
Progression Factor	1.00	1.00		0.95	1.34		1.59	0.49	0.10	1.00	1.00	1.00
Incremental Delay, d2	10.3	33.2		18.1	0.3		0.8	7.1	0.1	31.7	2.1	0.0
Delay (s)	65.2	81.9		66.8	47.3		90.7	29.8	2.2	88.8	41.6	21.7
Level of Service	E	F		E	D		F	C	A	F	D	C
Approach Delay (s)		79.5			56.9			30.1			50.1	
Approach LOS		E			E			C			D	

Intersection Summary

HCM Average Control Delay	49.2	HCM Level of Service	D	
HCM Volume to Capacity ratio	1.01			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	25.0	
Intersection Capacity Utilization	84.5%	ICU Level of Service	E	
Analysis Period (min)	15			

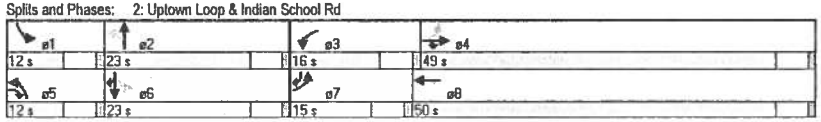
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Volume (vph)	64	242	19	102	531	17	10	24	5	23
Turn Type	pm+pt	NA	pt+ov	pm+pt	NA	pm+pt	NA	pm+pt	NA	pt+ov
Protected Phases	7	4	4 5	3	8	5	2	1	6	6 7
Permitted Phases	4			8		2		6		
Detector Phase	7	4	4 5	3	8	5	2	1	6	6 7
Switch Phase										
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	10.0	21.0		10.0	21.0	10.0	21.0	10.0	21.0	
Total Split (s)	15.0	49.0		16.0	50.0	12.0	23.0	12.0	23.0	
Total Split (%)	15.0%	49.0%		16.0%	50.0%	12.0%	23.0%	12.0%	23.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	Min	C-Min		Min	C-Min	Min	Min	Min	Min	
Act Effct Green (s)	65.6	59.1	70.7	67.8	60.1	12.9	6.3	13.5	6.6	18.3
Actuated g/C Ratio	0.66	0.59	0.71	0.68	0.60	0.13	0.06	0.14	0.07	0.18
v/c Ratio	0.14	0.13	0.02	0.16	0.35	0.11	0.26	0.15	0.03	0.09
Control Delay	6.3	13.4	5.2	5.2	10.8	34.4	19.9	34.8	43.0	12.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.3	13.4	5.2	5.2	10.8	34.4	19.9	34.8	43.0	12.7
LOS	A	B	A	A	B	C	B	C	D	B
Approach Delay		11.5			9.9		23.7		25.9	
Approach LOS		B			A		C		C	

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 41 (41%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.35
Intersection Signal Delay: 12.0 Intersection LOS: B
Intersection Capacity Utilization 41.4% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 2: Uptown Loop & Indian School Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	64	242	19	102	531	66	17	10	38	24	5	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.88		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1752	3505	1568	1752	3446		1752	3086		1752	3505	1568
Flt Permitted	0.35	1.00	1.00	0.58	1.00		0.75	1.00		0.68	1.00	1.00
Satd. Flow (perm)	642	3505	1568	1069	3446		1390	3086		1256	3505	1568
Peak-hour factor, PHF	0.92	0.92	0.92	0.83	0.83	0.83	0.75	0.75	0.75	0.81	0.81	0.81
Adj. Flow (vph)	70	263	21	123	640	80	23	13	51	30	6	28
RTOR Reduction (vph)	0	0	6	0	7	0	0	48	0	0	0	23
Lane Group Flow (vph)	70	263	15	123	713	0	23	16	0	30	6	5
Turn Type	pm+pt	NA	pt+ov	pm+pt	NA		pm+pt	NA		pm+pt	NA	pt+ov
Protected Phases	7	4	4 5	3	8		5	2		1	6	6 7
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	65.8	59.1	70.7	67.8	60.1		12.9	6.3		13.5	6.6	18.3
Effective Green, g (s)	65.8	59.1	70.7	67.8	60.1		12.9	6.3		13.5	6.6	18.3
Actuated g/C Ratio	0.66	0.59	0.71	0.68	0.60		0.13	0.06		0.14	0.07	0.18
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	497	2071	1109	777	2071		203	194		204	231	287
v/s Ratio Prot	0.01	0.08	0.01	c0.01	c0.21		0.01	0.01		c0.01	0.00	0.00
v/s Ratio Perm	0.08			0.10			0.01			c0.01		
v/c Ratio	0.14	0.13	0.01	0.16	0.34		0.11	0.08		0.15	0.03	0.02
Uniform Delay, d1	6.2	9.0	4.3	5.6	10.0		38.4	44.1		38.1	43.7	33.5
Progression Factor	1.18	1.37	2.36	1.00	1.00		1.01	1.01		1.00	1.00	1.00
Incremental Delay, d2	0.1	0.1	0.0	0.1	0.5		0.2	0.2		0.3	0.0	0.0
Delay (s)	7.5	12.5	10.2	5.7	10.5		39.1	44.8		38.4	43.7	33.5
Level of Service	A	B	B	A	B		D	D		D	D	C
Approach Delay (s)		11.4			9.8			43.3			36.8	
Approach LOS		B			A			D			D	

Intersection Summary

HCM Average Control Delay	13.7	HCM Level of Service		B	
HCM Volume to Capacity ratio	0.27				
Actuated Cycle Length (s)	100.0	Sum of lost time (s)		10.0	
Intersection Capacity Utilization	41.4%	ICU Level of Service		A	
Analysis Period (min)	15				

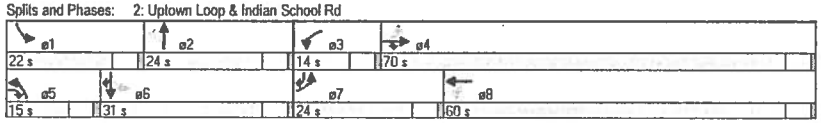
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Volume (vph)	165	679	124	95	695	122	40	126	36	90
Turn Type	pm+pt	NA	pt+ov	pm+pt	NA	pm+pt	NA	pm+pt	NA	pt+ov
Protected Phases	7	4	4 5	3	8	5	2	1	6	6 7
Permitted Phases	4			8		2		6		
Detector Phase	7	4	4 5	3	8	5	2	1	6	6 7
Switch Phase										
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	10.0	21.0		10.0	21.0	10.0	21.0	10.0	21.0	
Total Split (s)	24.0	70.0		14.0	60.0	15.0	24.0	22.0	31.0	
Total Split (%)	18.5%	53.8%		10.8%	46.2%	11.5%	18.5%	16.9%	23.8%	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	Min	C-Min		Min	C-Min	Min	Min	Min	Min	
Act Effct Green (s)	88.6	78.5	98.3	84.6	76.5	22.6	7.8	24.1	8.6	23.7
Actuated g/C Ratio	0.68	0.60	0.76	0.65	0.59	0.17	0.06	0.19	0.07	0.18
v/c Ratio	0.41	0.35	0.11	0.23	0.41	0.53	0.53	0.61	0.21	0.31
Control Delay	5.1	7.1	1.3	8.5	16.4	40.2	35.8	52.6	58.5	9.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.1	7.1	1.3	8.5	16.4	40.2	35.8	52.6	58.5	9.1
LOS	A	A	A	A	B	D	D	D	E	A
Approach Delay		6.0			15.5		38.0		37.9	
Approach LOS		A			B		D		D	

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 20 (15%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.61
Intersection Signal Delay: 17.1 Intersection LOS: B
Intersection Capacity Utilization 57.9% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 2: Uptown Loop & Indian School Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	165	679	124	95	695	55	122	40	85	126	36	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.90		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1752	3505	1568	1752	3466		1752	3147		1752	3505	1568
Flt Permitted	0.27	1.00	1.00	0.33	1.00		0.72	1.00		0.54	1.00	1.00
Satd. Flow (perm)	503	3505	1568	614	3466		1336	3147		994	3505	1568
Peak-hour factor, PHF	0.91	0.91	0.91	0.89	0.89	0.89	0.82	0.82	0.82	0.75	0.75	0.75
Adj. Flow (vph)	181	746	136	107	781	62	149	49	104	168	48	120
RTOR Reduction (vph)	0	0	21	0	3	0	0	98	0	0	0	98
Lane Group Flow (vph)	181	746	115	107	840	0	149	55	0	168	48	22
Turn Type	pm+pt	NA	pt+ov	pm+pt	NA		pm+pt	NA		pm+pt	NA	pt+ov
Protected Phases	7	4	4 5	3	8		5	2		1	6	6 7
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	88.6	78.4	98.2	84.6	76.4		22.8	7.8		24.2	8.6	23.8
Effective Green, g (s)	88.6	78.4	98.2	84.6	76.4		22.6	7.8		24.2	8.6	23.8
Actuated g/C Ratio	0.68	0.60	0.76	0.65	0.59		0.17	0.06		0.19	0.07	0.18
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	441	2114	1184	471	2037		280	189		276	232	287
v/s Ratio Prot	c0.03	0.21	0.07	0.01	0.24		0.06	0.02		c0.07	0.01	0.01
v/s Ratio Perm	c0.25			0.13			0.03			c0.04		
v/c Ratio	0.41	0.35	0.10	0.23	0.41		0.53	0.29		0.61	0.21	0.08
Uniform Delay, d1	8.5	13.0	4.2	8.7	14.6		48.5	58.5		47.6	57.5	44.0
Progression Factor	0.50	0.49	0.59	1.00	1.00		0.84	1.50		1.00	1.00	1.00
Incremental Delay, d2	0.3	0.2	0.0	0.2	0.6		1.2	0.5		3.8	0.4	0.1
Delay (s)	4.5	6.6	2.5	8.9	15.2		42.1	88.0		51.4	57.9	44.1
Level of Service	A	A	A	A	B		D	F		D	E	D
Approach Delay (s)		5.7			14.5			65.4			49.7	
Approach LOS		A			B			E			D	

Intersection Summary

HCM Average Control Delay	21.2	HCM Level of Service		C	
HCM Volume to Capacity ratio	0.43				
Actuated Cycle Length (s)	130.0	Sum of lost time (s)		10.0	
Intersection Capacity Utilization	57.9%	ICU Level of Service		B	
Analysis Period (min)	15				

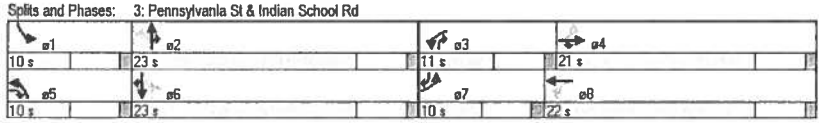
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	55	154	75	113	422	94	172	65	50	271	153
Turn Type	pm+pt	NA	pt+ov	pm+pt	NA	pm+pt	NA	pt+ov	pm+pt	NA	pt+ov
Protected Phases	7	4	4 5	3	8	5	2	2 3	1	6	6 7
Permitted Phases	4			8		2			6		
Detector Phase	7	4	4 5	3	8	5	2	2 3	1	6	6 7
Switch Phase											
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	21.0		10.0	21.0	10.0	21.0		10.0	21.0	
Total Split (s)	10.0	21.0		11.0	22.0	10.0	23.0		10.0	23.0	
Total Split (%)	15.4%	32.3%		16.9%	33.8%	15.4%	35.4%		15.4%	35.4%	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?											
Recall Mode	Min	Min		Min	Min	Min	Min		Min	Min	
Act Effct Green (s)	18.5	13.5	23.6	20.6	14.5	19.0	13.9	25.1	19.0	13.9	24.1
Actuated g/C Ratio	0.31	0.23	0.40	0.35	0.25	0.32	0.24	0.43	0.32	0.24	0.41
v/c Ratio	0.23	0.43	0.13	0.32	0.70	0.34	0.49	0.11	0.13	0.65	0.22
Control Delay	13.6	23.6	3.9	14.1	24.8	14.7	23.8	3.4	12.0	28.2	3.2
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	13.6	23.6	3.9	14.1	24.8	14.7	23.8	3.4	12.0	28.2	3.2
LOS	B	C	A	B	C	B	C	A	B	C	A
Approach Delay		16.4			22.7		17.2			18.4	
Approach LOS		B			C		B			B	

Intersection Summary

Cycle Length: 65
Actuated Cycle Length: 58.8
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.70
Intersection Signal Delay: 19.4 — Intersection LOS: B
Intersection Capacity Utilization 53.3% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 3: Pennsylvania St & Indian School Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	55	154	75	113	422	41	94	172	65	50	271	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1752	1845	1568	1752	3458		1752	1845	1568	1752	1845	1568
Flt Permitted	0.32	1.00	1.00	0.60	1.00		0.44	1.00	1.00	0.58	1.00	1.00
Satd. Flow (perm)	586	1845	1568	1101	3458		814	1845	1568	1062	1845	1568
Peak-hour factor, PHF	0.85	0.85	0.85	0.77	0.77	0.77	0.80	0.80	0.80	0.95	0.95	0.95
Adj. Flow (vph)	65	181	88	147	548	53	118	215	81	53	285	161
RTOR Reduction (vph)	0	0	53	0	11	0	0	0	46	0	0	95
Lane Group Flow (vph)	65	181	35	147	590	0	118	215	35	53	285	66
Turn Type	pm+pt	NA	pt+ov	pm+pt	NA		pm+pt	NA	pt+ov	pm+pt	NA	pt+ov
Protected Phases	7	4	4 5	3	8		5	2	2 3	1	6	6 7
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	18.6	13.5	23.6	20.6	14.5		19.0	13.9	25.0	19.0	13.9	24.0
Effective Green, g (s)	18.6	13.5	23.6	20.6	14.5		19.0	13.9	25.0	19.0	13.9	24.0
Actuated g/C Ratio	0.32	0.23	0.40	0.35	0.25		0.32	0.24	0.43	0.32	0.24	0.41
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	287	425	631	455	856		346	438	669	404	438	642
v/s Ratio Prot	0.02	0.10	0.02	c0.03	c0.17		c0.03	0.12	0.02	0.01	c0.15	0.04
v/s Ratio Perm	0.05			0.08			0.08			0.03		
v/c Ratio	0.23	0.43	0.06	0.32	0.69		0.34	0.49	0.05	0.13	0.65	0.10
Uniform Delay, d1	14.3	19.2	10.7	13.5	20.0		14.5	19.3	9.8	13.8	20.2	10.7
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	0.7	0.0	0.4	2.3		0.6	0.9	0.0	0.1	3.4	0.1
Delay (s)	14.7	19.9	10.7	13.9	22.3		15.0	20.2	9.9	14.0	23.6	10.7
Level of Service	B	B	B	B	C		B	C	A	B	C	B
Approach Delay (s)		16.5			20.7			16.7			18.4	
Approach LOS		B			C			B			B	

Intersection Summary

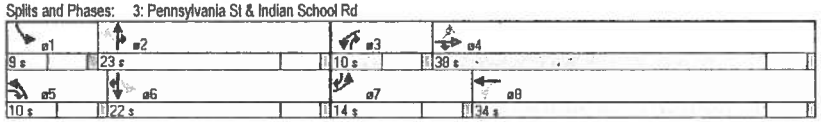
HCM Average Control Delay	18.6	HCM Level of Service		B	
HCM Volume to Capacity ratio	0.52				
Actuated Cycle Length (s)	58.6	Sum of lost time (s)		15.0	
Intersection Capacity Utilization	53.3%	ICU Level of Service		A	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	184	667	148	173	440	103	356	181	53	287	136
Turn Type	pm+pt	NA	pt+ov	pm+pt	NA	pm+pt	NA	pt+ov	pm+pt	NA	pt+ov
Protected Phases	7	4	4 5	3	8	5	2	2 3	1	6	6 7
Permitted Phases	4			8		2			6		
Detector Phase	7	4	4 5	3	8	5	2	2 3	1	6	6 7
Switch Phase											
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	21.0		10.0	21.0	10.0	21.0		10.0	21.0	
Total Split (s)	14.0	38.0		10.0	34.0	10.0	23.0		9.0	22.0	
Total Split (%)	17.5%	47.5%		12.5%	42.5%	12.5%	28.8%		11.3%	27.5%	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?											
Recall Mode	Min	Min		Min	Min	Min	Min		Min	Min	
Act Effct Green (s)	39.6	30.9	40.9	32.2	27.2	22.9	17.8	27.9	20.9	16.8	30.5
Actuated g/C Ratio	0.51	0.40	0.53	0.41	0.35	0.29	0.23	0.36	0.27	0.22	0.39
v/c Ratio	0.48	0.91	0.19	0.88	0.42	0.47	0.92	0.29	0.30	0.76	0.21
Control Delay	13.7	40.9	2.6	56.0	19.9	26.2	60.7	5.4	22.9	43.8	5.7
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	13.7	40.9	2.6	56.0	19.9	26.2	60.7	5.4	22.9	43.8	5.7
LOS	B	D	A	E	B	C	E	A	C	D	A
Approach Delay		29.1			29.4		39.5			30.6	
Approach LOS		C			C		D			C	

Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 77.8	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.92	
Intersection Signal Delay: 31.9	Intersection LOS: C
Intersection Capacity Utilization 79.0%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 3: Pennsylvania St & Indian School Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	184	567	148	173	440	42	103	356	181	53	287	136
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1752	1845	1568	1752	3459		1752	1845	1568	1752	1845	1568
Flt Permitted	0.35	1.00	1.00	0.15	1.00		0.30	1.00	1.00	0.24	1.00	1.00
Satd. Flow (perm)	643	1845	1568	271	3459		561	1845	1568	437	1845	1568
Peak-hour factor, PHF	0.85	0.85	0.85	0.94	0.94	0.94	0.91	0.91	0.91	0.94	0.94	0.94
Adj. Flow (vph)	216	667	174	184	468	45	113	391	199	56	305	145
RTOR Reduction (vph)	0	0	76	0	9	0	0	0	115	0	0	72
Lane Group Flow (vph)	216	667	98	184	504	0	113	391	84	56	305	73
Turn Type	pm+pt	NA	pt+ov	pm+pt	NA		pm+pt	NA	pt+ov	pm+pt	NA	pt+ov
Protected Phases	7	4	4 5	3	8		5	2	2 3	1	6	6 7
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	39.6	30.9	40.9	32.2	27.2		22.9	17.9	27.9	20.9	16.9	30.6
Effective Green, g (s)	39.6	30.9	40.9	32.2	27.2		22.9	17.9	27.9	20.9	16.9	30.6
Actuated g/C Ratio	0.51	0.40	0.53	0.41	0.35		0.29	0.23	0.36	0.27	0.22	0.39
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	451	733	824	207	1209		242	424	562	185	401	617
v/s Ratio Prot	0.05	c0.36	0.06	c0.06	0.15		c0.03	c0.21	0.05	0.02	0.17	0.05
v/s Ratio Perm	0.19			0.31			0.11			0.07		
v/c Ratio	0.48	0.91	0.12	0.89	0.42		0.47	0.92	0.15	0.30	0.76	0.12
Uniform Delay, d1	11.2	22.1	9.3	18.7	19.3		21.2	29.3	16.9	22.3	28.6	15.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.8	15.2	0.1	33.6	0.2		1.4	25.4	0.1	0.9	8.3	0.1
Delay (s)	12.0	37.3	9.4	52.4	19.5		22.8	54.7	17.0	23.2	36.8	15.1
Level of Service	B	D	A	D	B		C	D	B	C	D	B
Approach Delay (s)		27.5			28.2			38.9			29.1	
Approach LOS		C			C			D			C	

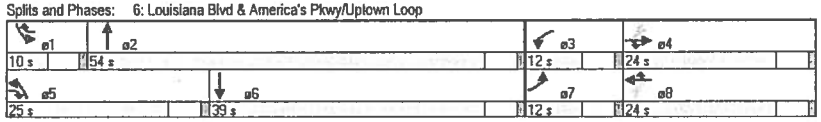
Intersection Summary			
HCM Average Control Delay	30.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	77.8	Sum of lost time (s)	15.0
Intersection Capacity Utilization	79.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Volume (vph)	27	6	132	116	9	11	284	1290	20	1024
Turn Type	pm+pt	NA	pt+ov	pm+pt	NA	pt+ov	Prot	NA	Prot	NA
Protected Phases	7	4	4 5	3	8	8 1	5	2	1	6
Permitted Phases	4			8						
Detector Phase	7	4	4 5	3	8	8 1	5	2	1	6
Switch Phase										
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	21.0		10.0	21.0		10.0	21.0	10.0	21.0
Total Split (s)	12.0	24.0		12.0	24.0		25.0	54.0	10.0	39.0
Total Split (%)	12.0%	24.0%		12.0%	24.0%		25.0%	54.0%	10.0%	39.0%
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lag
Lead-Lag Optimize?										
Recall Mode	Min	Min		Min	Min		Min	C-Min	Min	C-Min
Act Effct Green (s)	15.4	8.5	28.6	17.4	9.5	20.6	15.1	57.4	6.2	48.5
Actuated g/C Ratio	0.15	0.08	0.29	0.17	0.10	0.21	0.15	0.57	0.06	0.48
v/c Ratio	0.13	0.02	0.30	0.24	0.03	0.03	0.64	0.45	0.11	0.39
Control Delay	31.1	39.8	11.8	27.6	34.3	11.5	45.6	13.0	38.0	13.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.1	39.8	11.8	27.6	34.3	11.5	45.6	13.0	38.0	13.0
LOS	C	D	B	C	C	B	D	B	D	B
Approach Delay		16.0			26.8			18.5		13.5
Approach LOS		B			C			B		B

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 79 (79%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.64
Intersection Signal Delay: 17.0 — Intersection LOS: B
Intersection Capacity Utilization 47.2% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 6: Louisiana Blvd & America's Pkwy/Uptown Loop



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	27	6	132	116	9	11	284	1290	112	20	1024	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.97	0.86		0.97	0.86	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1752	3505	1568	3400	3505	1568	3400	6270		3400	6311	
Flt Permitted	0.75	1.00	1.00	0.67	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1386	3505	1568	2411	3505	1568	3400	6270		3400	6311	
Peak-hour factor, PHF	0.85	0.85	0.85	0.96	0.96	0.96	0.86	0.86	0.86	0.90	0.90	0.90
Adj. Flow (vph)	32	7	155	121	9	11	330	1500	130	22	1138	43
RTOR Reduction (vph)	0	0	69	0	0	9	0	12	0	0	4	0
Lane Group Flow (vph)	32	7	86	121	9	2	330	1618	0	22	1177	0
Turn Type	pm+pt	NA	pt+ov	pm+pt	NA	pt+ov	Prot	NA		Prot	NA	
Protected Phases	7	4	4 5	3	8	8 1	5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	15.4	8.5	28.6	17.4	9.5	20.7	15.1	57.4		6.2	48.5	
Effective Green, g (s)	15.4	8.5	28.6	17.4	9.5	20.7	15.1	57.4		6.2	48.5	
Actuated g/C Ratio	0.15	0.08	0.29	0.17	0.10	0.21	0.15	0.57		0.06	0.48	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	239	298	448	498	333	325	513	3599		211	3061	
v/s Ratio Prot	0.01	0.00	0.06	c0.02	0.00	0.00	c0.10	c0.26		0.01	0.19	
v/s Ratio Perm	0.01			c0.02								
v/c Ratio	0.13	0.02	0.19	0.24	0.03	0.01	0.64	0.45		0.10	0.38	
Uniform Delay, d1	36.5	41.9	27.0	35.4	41.1	31.5	39.9	12.2		44.3	16.3	
Progression Factor	1.00	1.00	1.00	0.85	0.87	0.76	1.00	1.00		0.84	0.73	
Incremental Delay, d2	0.3	0.0	0.2	0.3	0.0	0.0	2.8	0.4		0.2	0.3	
Delay (s)	36.7	42.0	27.2	30.4	35.9	24.0	42.7	12.6		37.4	12.3	
Level of Service	D	D	C	C	D	C	D	B		D	B	
Approach Delay (s)		29.3			30.2			17.7			12.8	
Approach LOS		C			C			B			B	

Intersection Summary

HCM Average Control Delay	17.2	HCM Level of Service		B	
HCM Volume to Capacity ratio	0.41				
Actuated Cycle Length (s)	100.0	Sum of lost time (s)		10.0	
Intersection Capacity Utilization	47.2%	ICU Level of Service		A	
Analysis Period (min)	15				

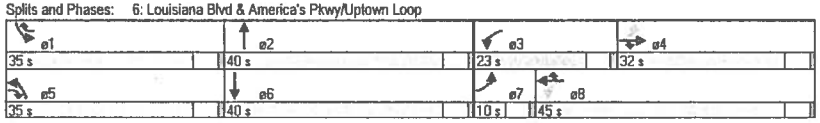
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Volume (vph)	50	23	270	559	28	90	136	1972	125	1716
Turn Type	pm+pt	NA	pt+ov	pm+pt	NA	pt+ov	Prot	NA	Prot	NA
Protected Phases	7	4	4 5	3	8	8 1	5	2	1	6
Permitted Phases	4			8						
Detector Phase	7	4	4 5	3	8	8 1	5	2	1	6
Switch Phase										
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	21.0		10.0	21.0		10.0	21.0	10.0	21.0
Total Split (s)	10.0	32.0		23.0	45.0		35.0	40.0	35.0	40.0
Total Split (%)	7.7%	24.6%		17.7%	34.6%		26.9%	30.8%	26.9%	30.8%
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lag
Lead-Lag Optimize?										
Recall Mode	Min	Min		Min	Min		Min	C-Min	Min	C-Min
Act Effct Green (s)	30.9	25.9	42.7	48.9	38.9	54.4	11.8	55.6	10.5	54.3
Actuated g/C Ratio	0.24	0.20	0.33	0.38	0.30	0.42	0.09	0.43	0.08	0.42
v/c Ratio	0.19	0.04	0.67	0.75	0.04	0.17	0.48	0.98	0.49	0.71
Control Delay	29.2	41.5	42.8	40.9	34.1	8.9	60.6	50.0	58.5	31.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.2	41.5	42.8	40.9	34.1	8.9	60.6	50.0	58.5	31.2
LOS	C	D	D	D	C	A	E	D	E	C
Approach Delay		40.7			36.4			50.6		33.0
Approach LOS		D			D			D		C

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 4 (3%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.98
Intersection Signal Delay: 42.0 Intersection LOS: D
Intersection Capacity Utilization 75.1% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 6: Louisiana Blvd & America's Pkwy/Uptown Loop



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	23	270	559	28	90	136	1972	433	125	1716	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.97	0.86		0.97	0.86	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1752	3505	1568	3400	3505	1568	3400	6174		3400	6330	
Flt Permitted	0.73	1.00	1.00	0.62	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1350	3505	1568	2209	3505	1568	3400	6174		3400	6330	
Peak-hour factor, PHF	0.77	0.77	0.77	0.75	0.75	0.75	0.92	0.92	0.92	0.93	0.93	0.93
Adj. Flow (vph)	65	30	351	745	37	120	148	2143	471	134	1845	30
RTOR Reduction (vph)	0	0	7	0	0	52	0	24	0	0	1	0
Lane Group Flow (vph)	65	30	344	745	37	68	148	2590	0	134	1874	0
Turn Type	pm+pt	NA	pt+ov	pm+pt	NA	pt+ov	Prot	NA		Prot	NA	
Protected Phases	7	4	4 5	3	8	8 1	5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	30.9	25.9	42.7	48.9	38.9	54.4	11.8	55.6		10.5	54.3	
Effective Green, g (s)	30.9	25.9	42.7	48.9	38.9	54.4	11.8	55.6		10.5	54.3	
Actuated g/C Ratio	0.24	0.20	0.33	0.38	0.30	0.42	0.09	0.43		0.08	0.42	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	336	698	515	996	1049	656	309	2641		275	2644	
v/s Ratio Prot	0.01	0.01	c0.22	c0.10	0.01	0.04	0.04	c0.42		0.04	0.30	
v/s Ratio Perm	0.04			c0.18								
v/c Ratio	0.19	0.04	0.67	0.75	0.04	0.10	0.48	0.98		0.49	0.71	
Uniform Delay, d1	39.2	42.0	37.6	33.6	32.3	23.0	56.2	36.7		57.2	31.3	
Progression Factor	1.00	1.00	1.00	1.09	1.08	1.21	1.00	1.00		0.97	0.94	
Incremental Delay, d2	0.3	0.0	3.3	3.1	0.0	0.1	1.2	13.5		0.8	1.0	
Delay (s)	39.5	42.1	40.8	39.5	34.7	27.9	57.4	50.2		56.1	30.3	
Level of Service	D	D	D	D	C	C	E	D		E	C	
Approach Delay (s)		40.7			37.8			50.6			32.0	
Approach LOS		D			D			D			C	

Intersection Summary

HCM Average Control Delay	41.9	HCM Level of Service		D	
HCM Volume to Capacity ratio	0.80				
Actuated Cycle Length (s)	130.0	Sum of lost time (s)		5.0	
Intersection Capacity Utilization	75.1%	ICU Level of Service		D	
Analysis Period (min)	15				

c Critical Lane Group

Detailed Summary

Signalized Intersection Analyses 2012

Int. No.: 1
Project: **Target Commercial Center w/Winrock Re-Populated**
EW Street: **Indian School Rd.**
NS Street: **Louisiana Blvd.**
Intersection: **#1 - Indian School Rd. / Louisiana Blvd.**

2012 AM Peak Hour				w/Winrock		2012 PM Peak Hour			w/Winrock	
	BASE GEOMETRY			*Base Geom.*		BASE GEOMETRY			*Base Geom.*	
	NO BUILD		BUILD	*BUILD*		NO BUILD		BUILD	*BUILD*	
	Lanes	LOS-Delay	LOS-Delay	*Lanes*	*LOS-Delay*	Lanes	LOS-Delay	LOS-Delay	*Lanes*	*LOS-Delay*
Eastbound - Indian School Rd.										
L	1	D - 47.0	D - 47.0	***1***	*D - 47.0*	1	D - 47.4	D - 47.4	***1***	*E - 65.2*
T	2	D - 41.1	D - 41.7	***2***	*D - 41.9*	2	D - 48.0	E - 66.5	***2***	*F - 81.9*
R	>	D - 41.1	D - 41.7	**>**	*D - 41.9*	>	D - 48.0	E - 66.5	**>**	*F - 81.9*
Westbound - Indian School Rd.										
L	2	C - 30.3	D - 35.7	***2***	*D - 35.9*	2	D - 49.5	E - 55.3	***2***	*E - 66.8*
T	2	C - 26.4	C - 24.3	***2***	*C - 29.7*	2	C - 34.8	C - 33.0	***2***	*D - 47.3*
R	>	C - 26.4	C - 24.3	**>**	*C - 29.7*	>	C - 34.8	C - 33.0	**>**	*D - 47.3*
Northbound - Louisiana Blvd.										
L	2	D - 45.6	D - 46.1	***2***	*D - 51.8*	2	E - 65.3	E - 65.5	***2***	*F - 90.7*
T	4	A - 5.9	A - 6.3	***4***	*A - 5.1*	4	B - 16.1	C - 21.4	***4***	*C - 29.8*
R	1	B - 11.0	A - 6.3	***1***	*A - 7.6*	1	A - 1.6	A - 2.0	***1***	*A - 2.2*
Southbound - Louisiana Blvd.										
L	2	D - 45.8	D - 45.6	***2***	*D - 45.7*	2	E - 56.2	E - 70.0	***2***	*F - 88.8*
T	4	B - 18.3	B - 18.5	***4***	*B - 18.9*	4	C - 27.1	C - 29.4	***4***	*D - 41.6*
R	1	B - 12.8	B - 12.9	***1***	*B - 13.3*	1	B - 13.3	B - 14.8	***1***	*C - 21.7*
Intersection:		**B - 19.7**	**C - 20.3**		**C - 21.2**		**C - 29.7**	**D - 36.4**		**D - 49.2**

NOTE: > denotes a shared thru/right and / or thru/left turn lane.

Detailed Summary

Signalized Intersection Analyses 2012

Int. No.: 2
Project: **Target Commercial Center w/Winrock Re-Populated**
EW Street: **Indian Sch Rd.**
NS Street: **Uptown Loop (Winrock)**
Intersection: **#2 - Indian Sch Rd. / Uptown Loop (Winrock)**

2012 AM Peak Hour				w/Winrock		2012 PM Peak Hour			w/Winrock	
	BASE GEOMETRY			*Base Geom.*		BASE GEOMETRY			*Base Geom.*	
	NO BUILD		BUILD	*BUILD*		NO BUILD		BUILD	*BUILD*	
	Lanes	LOS-Delay	LOS-Delay	*Lanes*	*LOS-Delay*	Lanes	LOS-Delay	LOS-Delay	*Lanes*	*LOS-Delay*
Eastbound - Indian Sch Rd.										
L	1	C - 21.7	C - 23.3	*1*	*A - 7.5*	1	C - 21.4	C - 22.5	*1*	*A - 4.5*
T	2	D - 37.2	D - 37.5	*2*	*B - 12.5*	2	C - 33.0	C - 34.2	*2*	*A - 6.6*
R	1	C - 33.3	C - 32.6	*1*	*B - 10.2*	1	C - 28.6	C - 28.7	*1*	*A - 2.5*
Westbound - Indian Sch Rd.										
L	1	A - 2.3	A - 2.7	*1*	*A - 5.7*	1	A - 5.6	A - 5.7	*1*	*A - 8.9*
T	2	A - 5.0	A - 4.9	*2*	*B - 10.5*	2	B - 11.5	B - 11.8	*2*	*B - 15.2*
R	>	A - 5.0	A - 4.9	>	*B - 10.5*	>	B - 11.5	B - 11.8	>	*B - 15.2*
Northbound - Uptown Loop (Winrock)										
L	1	D - 39.2	D - 38.7	*1*	*D - 39.1*	1	D - 39.8	D - 37.6	*1*	*D - 42.1*
T	2	D - 39.8	D - 44.3	*2*	*D - 44.8*	2	E - 57.1	D - 44.2	*2*	*F - 88.0*
R	>	D - 39.8	D - 44.3	>	*D - 44.8*	>	E - 57.1	D - 44.2	>	*F - 88.0*
Southbound - Uptown Loop (Winrock)										
L	1	D - 38.0	D - 38.0	*1*	*D - 38.4*	1	C - 32.5	C - 32.8	*1*	*D - 51.4*
T	2	D - 43.3	D - 43.3	*2*	*D - 43.7*	2	D - 39.2	D - 39.3	*2*	*E - 57.9*
R	>	C - 33.1	C - 33.1	>	*C - 33.5*	>	C - 27.3	C - 27.4	>	*D - 44.1*
Intersection:		**B - 15.7**	**B - 16.1**		**B - 13.7**		**C - 26.1**	**C - 25.6**		**C - 21.2**

NOTE: > denotes a shared thru/right and / or thru/left turn lane.

Detailed Summary

Signalized Intersection Analyses 2012

Int. No.: 3
Project: **Target Commercial Center w/Winrock Re-Populated**
EW Street: **Indian School Rd.**
NS Street: **Pennsylvania St.**
Intersection: **#3 - Indian School Rd. / Pennsylvania St.**

2012 AM Peak Hour		w/Winrock				2012 PM Peak Hour		s/Winrock		
	BASE GEOMETRY			Base Geom.		BASE GEOMETRY			Base Geom.	
	NO BUILD		BUILD	BUILD		NO BUILD		BUILD	BUILD	
	Lanes	LOS-Delay	LOS-Delay	Lanes	LOS-Delay	Lanes	LOS-Delay	LOS-Delay	Lanes	LOS-Delay
Eastbound - Indian School Rd.										
L	1	C - 26.0	B - 18.5	1	B - 14.7	1	A - 9.7	A - 9.4	1	B - 12.0
T	1	C - 31.5	C - 21.5	1	B - 19.9	1	C - 25.9	C - 24.6	1	D - 37.3
R	1	A - 4.7	B - 11.5	1	B - 10.7	1	A - 1.2	A - 1.0	1	A - 9.4
Westbound - Indian School Rd.										
L	1	C - 25.5	C - 25.0	1	B - 13.9	1	C - 23.2	C - 23.3	1	D - 52.4
T	2	D - 40.0	D - 39.9	2	C - 22.3	2	C - 24.7	C - 24.9	2	B - 19.5
R	>	D - 40.0	D - 39.9	>	C - 22.3	>	C - 24.7	C - 24.9	>	B - 19.5
Northbound - Pennsylvania St.										
L	1	B - 12.8	B - 13.0	1	B - 15.0	1	C - 20.6	C - 21.5	1	C - 22.6
T	1	B - 19.0	B - 19.3	1	C - 20.2	1	C - 33.3	C - 34.7	1	D - 54.7
R	1	A - 8.8	A - 8.9	1	A - 9.9	1	B - 16.6	B - 17.3	1	B - 17.0
Southbound - Pennsylvania St.										
L	1	B - 13.8	B - 14.1	1	B - 14.0	1	C - 21.7	C - 22.6	1	C - 23.2
T	1	C - 21.5	C - 22.0	1	C - 23.6	1	C - 30.9	C - 32.2	1	D - 36.8
R	1	B - 11.2	B - 11.5	1	B - 10.7	1	B - 16.5	B - 16.5	1	B - 15.1
Intersection:	**C - 25.4**	**C - 24.6**		**B - 18.6**		**C - 23.3**	**C - 23.2**		**C - 30.6**	

NOTE: > denotes a shared thru/right and / or thru/left turn lane.

Detailed Summary

Signalized Intersection Analyses 2012

Int. No.: 6
Project: **Target Commercial Center w/Winrock Re-Populated**
EW Street: **Americas Pkwy (Winrock)**
NS Street: **Louisiana Blvd.**
Intersection: **#6 - Americas Pkwy (Winrock) / Louisiana Blvd.**

2012 AM Peak Hour				w/Winrock		2012 PM Peak Hour			s/Winrock	
	BASE GEOMETRY			*Base Geom.*		BASE GEOMETRY			*Base Geom.*	
	NO BUILD		BUILD	*BUILD*		NO BUILD		BUILD	*BUILD*	
	Lanes	LOS-Delay	LOS-Delay	*Lanes*	*LOS-Delay*	Lanes	LOS-Delay	LOS-Delay	*Lanes*	*LOS-Delay*
Eastbound - Americas Pkwy (Winrock)										
L	1	D - 37.1	D - 36.9	***1***	*D - 36.7*	1	C - 28.4	C - 28.7	***1***	*D - 39.5*
T	2	D - 42.4	D - 42.2	***2***	*D - 42.0*	2	C - 32.0	C - 31.5	***2***	*D - 42.1*
R	1	C - 27.3	C - 27.2	***1***	*C - 27.2*	1	C - 29.0	C - 30.6	***1***	*D - 40.8*
Westbound - Americas Pkwy (Winrock)										
L	2	D - 41.8	D - 36.2	***2***	*C - 30.4*	2	C - 29.1	C - 28.6	***2***	*D - 39.5*
T	2	D - 44.8	D - 41.7	***2***	*D - 35.9*	2	C - 31.8	C - 30.0	***2***	*C - 34.7*
R	1	B - 18.3	C - 32.5	***1***	*C - 24.0*	1	C - 35.0	C - 22.3	***1***	*C - 27.9*
Northbound - Louisiana Blvd.										
L	2	D - 42.7	D - 42.7	***2***	*D - 42.7*	2	D - 45.7	D - 46.8	***2***	*E - 57.4*
T	4	B - 10.7	B - 11.7	***4***	*B - 12.6*	4	C - 20.4	C - 24.3	***4***	*D - 50.2*
R	>	B - 10.7	B - 11.7	***>***	*B - 12.6*	>	C - 20.4	C - 24.3	***>***	*D - 50.2*
Southbound - Louisiana Blvd.										
L	2	D - 36.5	D - 36.9	***2***	*D - 37.4*	2	D - 45.9	D - 43.7	***2***	*E - 56.1*
T	4	B - 11.4	B - 12.0	***4***	*B - 12.3*	4	B - 13.8	B - 17.7	***4***	*C - 30.3*
R	>	B - 11.4	B - 12.0	***>***	*B - 12.3*	>	B - 13.8	B - 17.7	***>***	*C - 30.3*
Intersection:		**B - 15.9**	**B - 16.7**		**B - 17.2**		**B - 19.9**	**C - 23.6**		**D - 41.9**

NOTE: > denotes a shared thru/right and / or thru/left turn lane.