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Montano Access
(Montano Rd. East of Coors Blvd.)

Access Study

April 14, 2011

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Presented to:

City of Albuquerque
Transportation Development Section

Prepared for:

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Montano Access East of Coors Blvd. ACCESS JUSTIFICATION

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Montano Access East of Coors Blvd.

ACCESS JUSTIFICATION

STUDY PURPOSE

The study is being conducted in conjunction with a request for approval of a right-in, right-out unsignalized access point on the south side of Montano Rd. east of Coors Blvd. The study is being developed to provide adequate justification to present to the Transportation Coordinating Committee (TCC) for consideration of permitting the additional right-in, right-out access along the south side of Montano Rd. between Coors Blvd. and Winterhaven Rd. There is an existing right-in, right-out driveway located on the north side of Montano Rd. at approximately this same location.

STUDY PROCEDURES

This Access Justification Study takes trip generation rate data from the Traffic Impact Study for the Andalucia, Tract 6 Commercial / Residential Development (dated October, 2004) and creates a comparison of two scenarios for access at the intersection of the proposed Montano Driveway. This study utilizes recent traffic count data. The first scenario (CASE "N") considers the case where the proposed driveway does not exist. The second scenario (CASE "Y") considers the case where the proposed driveway is implemented. Traffic approaching this proposed development from the north and from the west will most likely utilize this new driveway to access the north commercial component of the project. Traffic exiting this proposed development desiring to travel east will be able to utilize this proposed new driveway as a mean of egress.

In both CASES, the signalized intersection of Montano Rd. / Coors Blvd., the unsignalized intersection of Montano Rd. / Winterhaven, and the proposed new driveway will be evaluated to determine if the implementation of the new driveway will present an adverse impact on the adjacent roadway system operation.

GENERAL AREA CHARACTERISTICS

The proposed development plan is located along the east side of Coors Blvd. south of Montano Rd. as shown on the Vicinity Map on Page A-1 of the Appendix of this report. The property is bounded on the west by Coors Blvd., on the north by Montano Rd., on the south by Learning Rd., and on the east by the Bosque Prep School. The property north of this site is primarily zoned for commercial properties. The property to the east is an existing private school. The property to the south is primarily residential. The property to the west across Coors Blvd. is mixed uses. This project is located in the midst of a relatively active development area.

AREA STREET NETWORK

The primary major streets considered in the analysis are Coors Blvd., Winterhaven Rd., and Montano Rd.

Coors Boulevard is classified as a Limited Access Principal Arterial roadway south of Alameda Blvd. on the Long Range Roadway System for the Albuquerque Urban Area. It is currently a six lane paved urban roadway with no curbs and gutters on either side of the roadway and raised medians in the center. There is a paved shoulder and a bicycle lane on each side of Coors Blvd. The intersection of Montano Rd. / Coors Blvd. is targeted for a future interchange according to the Long Range Roadway System Map for the Albuquerque Metropolitan Planning Area.

Montano Road is classified as a Limited Access Principal Arterial Roadway on the Long Range Roadway System for the Albuquerque Urban Area. It is a four lane paved urban section roadway with curbs and gutters on both side of the street and a raised median. The segment of Montano from Winterhaven to 4th St. transitions to a two lane roadway section. No permanent access is permitted on Montano Rd. from Coors Blvd. to the east of Rio Grande Blvd. Montano Rd. / Winterhaven is planned as a future grade separated structure with no access between the two streets. The Montano Rd. / Winterhaven grade separation structure construction will likely occur when the Montano Rd. / Coors Blvd. interchange is constructed. The posted speed limit on Montano Rd. from Taylor Ranch Rd. to Coors Blvd. is 40 MPH.

Winterhaven Rd. is not classified on the Long Range Roadway System Map for the Albuquerque Metropolitan Planning Area.

CURRENT ACCESS POLICY

The Mid-Region Council of Governments' Resolution (R-05-09 MTB) Adopting Roadway Access Modification Policies designates Montano Rd. between Coors Blvd. through the intersection with Rio Grande Blvd. as a Limited Access Roadway. Current approved access points along Montano Rd. between Coors Blvd. and the Rio Grande are at Winterhaven Rd. (a right-in, right-out, left-in access) and an existing right-in, right-out driveway on the north side of Montano Rd. between Coors Blvd. and Winterhaven Rd. This request is for an additional right-in, right-out driveway almost directly across from the existing one on the north side of Montano Rd. between Coors Blvd. and

PROPOSED ACCESS TO MONTANO RD.

Providing an additional right-in, right-out driveway on Montano Rd. at Driveway "A" will require modification to the access policy on Montano Rd. between Coors Blvd. and Rio Grande Blvd. Said driveway on Montano Rd. will provide much needed access to the proposed Andalucia Commercial Development located at the southeast corner of the intersection of Montano Rd. / Coors Blvd.

DISCUSSION OF PROPOSED ACCESS

Proposed access is a new right-in, right-out only unsignalized driveway located along the south side of Montano Rd. between Coors Blvd. and Winterhaven Rd. The new access would be utilized to some degree by traffic entering the commercial component of the Andalucia, Tract 6 Development at the north end of the project near Montano Rd. Entering traffic from the north (on Coors Blvd.) and from the west (on Montano Rd.) could enter the northerly commercial component of the project. Traffic entering from the south (on Coors Blvd.) would likely utilize the proposed driveway on Coors Blvd. Traffic entering from the east (on Montano Rd.) would likely execute a westbound left turn at Winterhaven Rd. No left turn access will be permitted at the proposed new driveway. Traffic exiting the commercial component of Andalucia, Tract 6 Development utilizing the new driveway will be restricted to a portion of traffic desiring to travel east on Montano Rd. from the project.

PROPOSED DEVELOPMENT

The subject area of land discussed in this report is comprised of approximately 22 acres. The proposed conceptual site development plan associated with this property defines different ITE Land Uses as summarized in the following table:

Land Use Summary Table	
Land Use Description	Size Proposed
Supermarket	44,000 S.F.
Specialty Retail Center	46,000 S.F.
Drive-In Bank	4,000 S.F.
Retail Commercial	134,000 S.F.
Fast Food Restaurant w/Drive-Thru Window #2	2,000 S.F.
Drive-In Bank	8,000 S.F.
High Turnover Sit-Down Restaurants	38,000 S.F.
Total Square Footage (Commercial)	151,500 S.F.
Apartments	500 Units

See the conceptual site development plan on Page A-2 in Appendix "A" of this report to acquire more detailed information about the proposed development.

INTERSECTION CAPACITY ANALYSIS

Intersection capacity analyses were performed in accordance with the procedures for signalized and unsignalized intersections in the Highway Capacity Manual, Special Report 209, Transportation Research Board, 2000, using Synchro version 7.0 Signalized and Unsignalized Intersection Analysis Software.

Capacity analyses were performed for the following traffic conditions.

- Case "N" - 2015 with no driveway on South side of Montano between Coors and Winterhaven
- Case "Y" - 2015 with driveway on South side of Montano between Coors and Winterhaven.
- Case "N" - 2030 with no driveway on South side of Montano between Coors and Winterhaven
- Case "Y" - 2030 with driveway on South side of Montano between Coors and Winterhaven.

All analyses utilized the 2015 BUILD Conditions volumes from the Traffic Impact Study for Andalucia, Tract 6 Commercial Development (dated October, 2004). The 2030 Base Volumes were obtained by applying the 2030 MRCOG link volume ratio to 2004 link volumes and applying them to the recent traffic count data utilized in the Traffic Impact Study (Fratar method). The MRCOG data obtain for this analysis was extracted from the 2030 data set.

The results of the 2015 and 2030 analyses are summarized in the following sections - *Results and Discussion of Intersection Capacity Analyses*.

RESULTS OF SIGNALIZED INTERSECTION CAPACITY ANALYSES

Montano Rd. / Coors Blvd.

The results of the 2015 implementation year analysis and the 2030 horizon year analysis of the signalized intersection of Montano Rd. / Coors Blvd. are summarized in the following tables:

Base Geometry (Montano Rd. / Coors Blvd.)

Approach	Left Turn Lanes	Thru/Lefts	Thru Lanes	Thru/Rights	Right Turn Lanes
EB Montano Rd.	2	0	2	0	1
WB Montano Rd.	2	0	1	1	0
NB Coors Blvd.	2	0	3	0	2
SB Coors Blvd.	2	0	3	0	1

* - Free right turns

Montano Rd. / Coors Blvd.	2015 CASE "N"		2015 CASE "Y"	
	A.M.	P.M.	A.M.	P.M.
Base Geometry	<i>F - 116</i>	<i>F - 144</i>	<i>F - 116</i>	<i>F - 144</i>

D - 39.8 – Bold Italicized LOS indicates that one or more movements are at Level-of-Service "E" or worse.

Montano Rd. / Coors Blvd.	2015 CASE "N"		2015 CASE "Y"	
	A.M.	P.M.	A.M.	P.M.
Base Geometry	<i>F - 206</i>	<i>F - 206</i>	<i>F - 212</i>	<i>F - 212</i>

D - 39.8 – Bold Italicized LOS indicates that one or more movements are at Level-of-Service "E" or worse.

There is a net zero adverse impact to the intersection of Montano Rd. / Coors Blvd. by implementing the proposed new right-in, right-out driveway on the south. In other words, the implementation of the requested right-in, right-out driveway has no adverse impact to the signalized intersection of Montano Rd. / Coors Blvd.

The following table summarizes the projected northbound queues at the signalized intersection of Montano Rd. / Coors Blvd. based on 2015 BUILD volumes:

Queueing Analysis Summary Sheet

Project: Montano Access Daskalos
 Intersection: Montano / Coors

2015												
Approach		Left Turns			Thru Movements			Right Turns				
Eastbound	# Lanes	Vol.	Length	# Lanes	Vol.	Length	# Lanes	Vol.	Length			
Existing Lane Length	2	234	300	2	1,107	Cont	1	300	250			
AM NO BUILD Queue	2	239	200	2	1,129	700	1	306	400			
AM BUILD Queue	2	239	200	2	1,235	775	1	381	475			
Existing Lane Length	2	262	300	2	271	Cont	1	357	250			
PM NO BUILD Queue	2	267	225	2	276	250	1	364	475			
PM BUILD Queue	2	267	225	2	470	375	1	506	650			
Westbound	# Lanes	Vol.	Length	# Lanes	Vol.	Length	# Lanes	Vol.	Length			
Existing Lane Length	2	230	400	2	216	Cont	0	148	0			
AM NO BUILD Queue	2	230	200	2	216	175	0	148	225			
AM BUILD Queue	2	239	200	2	216	175	0	148	225			
Existing Lane Length	2	378	400	2	1,051	Cont	0	154	0			
PM NO BUILD Queue	2	378	300	2	1,051	725	0	154	250			
PM BUILD Queue	2	407	325	2	1,051	725	0	154	250			
Northbound	# Lanes	Vol.	Length	# Lanes	Vol.	Length	# Lanes	Vol.	Length			
Existing Lane Length	2	252	625	3	1,124	Cont	2	622	450			
AM NO BUILD Queue	2	320	250	3	1,427	650	2	790	525			
AM BUILD Queue	2	487	350	3	1,551	675	2	790	525			
Existing Lane Length	2	567	625	3	1,638	Cont	2	235	450			
PM NO BUILD Queue	2	720	525	3	2,080	>1,000 *	2	298	250			
PM BUILD Queue	2	1,040	700	3	2,257	>1,000 *	2	298	250			
Southbound	# Lanes	Vol.	Length	# Lanes	Vol.	Length	# Lanes	Vol.	Length			
Existing Lane Length	2	622	475	3	1,312	Cont	1	11	300			
AM NO BUILD Queue	2	622	425	3	1,312	600	1	11	50			
AM BUILD Queue	2	667	450	3	1,366	625	1	11	50			
Existing Lane Length	2	314	475	3	1,463	Cont	1	65	300			
PM NO BUILD Queue	2	314	275	3	1,463	700	1	65	125			
PM BUILD Queue	2	396	325	3	1,586	750	1	65	125			

AM PM
 Cycle Length: 120 130

NOTE: Queue lengths are in feet.

RESULTS OF UNSIGNALIZED INTERSECTION CAPACITY ANALYSES

Montano Rd. / Winterhaven Rd.

The results of the 2015 implementation year analysis and the 2030 horizon year analysis of the unsignalized intersection of Montano Rd. / Winterhaven Rd. are summarized in the following tables:

Base Geometry (Montano Rd. / Winterhaven Rd.)

Approach	Left Turn Lanes	Thru/Lefts	Thru Lanes	Thru/Rights	Right Turn Lanes
EB Montano Rd.	1	0	2	0	1
WB Montano Rd.	1	0	1	1	0
NB Winterhaven Rd.	0	0	0	0	1
SB Winterhaven Rd.	0	0	0	0	1

NOTE: Montano Rd. / Winterhaven Rd. is a right-in, right-out, left-in only intersection.

Montano Rd. / Winterhaven Rd.	2015 CASE "N"		2015 CASE "Y"	
	A.M.	P.M.	A.M.	P.M.
Minor St. – Winterhaven Rd.				
NB Right Turn	<i>F – 69.1</i>	C – 16.1	<i>E – 37.0</i>	B – 13.2
SB Right Turn	B – 10.5	D – 26.9	B – 10.5	D – 26.9
Major St. – Montano Rd.				
EB Left Turn	A – 8.8	C – 19.9	A – 8.8	C – 19.9
WB Left Turn	<i>F – 598</i>	C – 16.4	<i>F – 496</i>	B – 14.1

D – 39.8 – Bold Italicized LOS indicates that one or more movements are at Level-of-Service "E" or worse.

Montano Rd. / Winterhaven Rd.	2030 CASE "N"		2030 CASE "Y"	
	A.M.	P.M.	A.M.	P.M.
Minor St. – Winterhaven Rd.				
NB Right Turn	<i>F – 322</i>	C – 16.9	<i>F – 149</i>	C – 13.6
SB Right Turn	B – 13.9	D – 26.9	B – 13.9	D – 26.9
Major St. – Montano Rd.				
EB Left Turn	B – 11.7	C – 22.0	B – 11.7	C – 22.0
WB Left Turn	<i>F – 999</i>	D – 25.1	<i>F – 999</i>	C – 19.7

D – 39.8 – Bold Italicized LOS indicates that one or more movements are at Level-of-Service "E" or worse.

There is a net positive benefit to the intersection of Montano Rd. / Winterhaven Rd. as a result of implementing the proposed new right-in, right-out driveway on the south.

Also, the westbound left turn queue length is shortened slightly by implementing the new right-in, right-out driveway. The calculated queue length for the 2015 AM Peak Hour is reduced from 477 (Page A-65) feet to 391 feet (Page A-66).

Montano Rd. / Proposed New Driveway

The results of the 2015 implementation year analysis and the 2030 horizon year analysis of the unsignalized intersection of Montano Rd. / Proposed New Driveway are summarized in the following tables:

Base Geometry (Montano Rd. / Proposed New Driveway)

Approach	Left Turn Lanes	Thru/Lefts	Thru Lanes	Thru/Rights	Right Turn Lanes
EB Montano Rd.	0	0	2	0	1
WB Montano Rd.	0	0	2	0	0
NB Winterhaven Rd.	0	0	0	0	1
SB Winterhaven Rd.	0	0	0	0	0

NOTE: Montano Rd. / Winterhaven Rd. is a right-in, right-out, left-in only intersection.

Montano Rd. / New Driveway	2015 CASE "N"		2015 CASE "Y"	
	A.M.	P.M.	A.M.	P.M.
Minor St. – New Driveway				
NB Right Turn	N/A	N/A	C – 18.9	B – 12.1
Major St. – Montano Rd.				
WB Left Turn	N/A	N/A	N/A	N/A

D – 39.8 – Bold Italicized LOS indicates that one or more movements are at Level-of-Service "E" or worse.

Montano Rd. / New Driveway	2030 CASE "N"		2030 CASE "Y"	
	A.M.	P.M.	A.M.	P.M.
Minor St. – New Driveway				
NB Right Turn	N/A	N/A	<i>E – 36.3</i>	B – 12.6
Major St. – Montano Rd.				
WB Left Turn	N/A	N/A	N/A	N/A

D – 39.8 – Bold Italicized LOS indicates that one or more movements are at Level-of-Service "E" or worse.

The projected operation of the new driveway is demonstrated to be acceptable through the year 2030. The 2030 AM Peak Hour projected level-of-service / delay is just 1.3 seconds in excess of level-of-service "D".

Also, the new driveway will require an eastbound right turn deceleration lane to be constructed.

CONCLUSIONS

This analysis was conducted using the following methodology: Trip Generation was established using the Institute of Transportation Engineers' (ITE's) Trip Generation Manual (8th Edition). Generated Trips were distributed proportionately based on the Population Data Analysis Subzones within a two mile radius of the proposed development for commercial properties, and based on Employment Data Citywide for residential properties; Growth rate of background traffic volumes for the implementation year (2015) was established based on the historic growth trends based on Mid-Region Council of Governments Traffic Flow data from 2005 through 2009 while horizon year forecasts were grown to be consistent with the 2030 AM and PM Peak Hour forecast volumes from the Regional Transportation Model (2030 data set); and the intersection analyses were performed in accordance with the 2000 Highway

Capacity Manual. This study showed that the addition of a new right-in, right-out driveway along the south side of Montano Rd. between Coors Blvd. and Winterhaven Rd. will provide a benefit to the adjacent transportation system, especially to the existing unsignalized intersection of Montano Rd. / Winterhaven Rd. Concurrently, the new driveway will not adversely impact the existing signalized intersection of Montano Rd. / Coors Blvd.

RECOMMENDATIONS

This study recommends that a new right-in, right-out only unsignalized driveway be approved on the south side of Montano Rd. between Coors Blvd. and Winterhaven Rd. As such, a 12 foot wide eastbound right turn deceleration lane should be constructed at the driveway to meet City of Albuquerque design criteria.

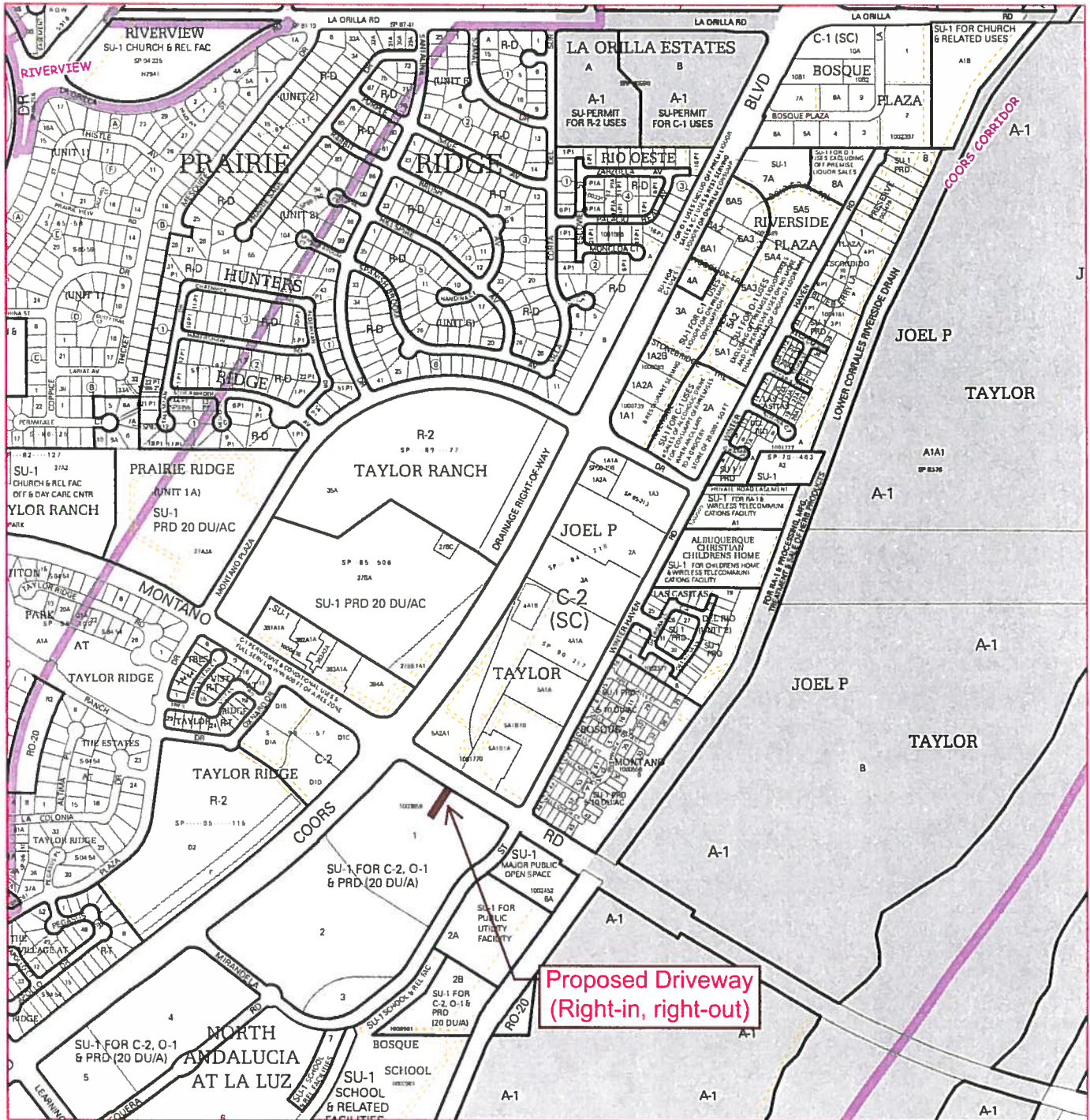
Curb returns at the new driveway should be a minimum 25 feet radius or larger as needed to accommodate delivery trucks.

Design and location of the driveway shall maintain adequate sight distances for both entering and exiting traffic.

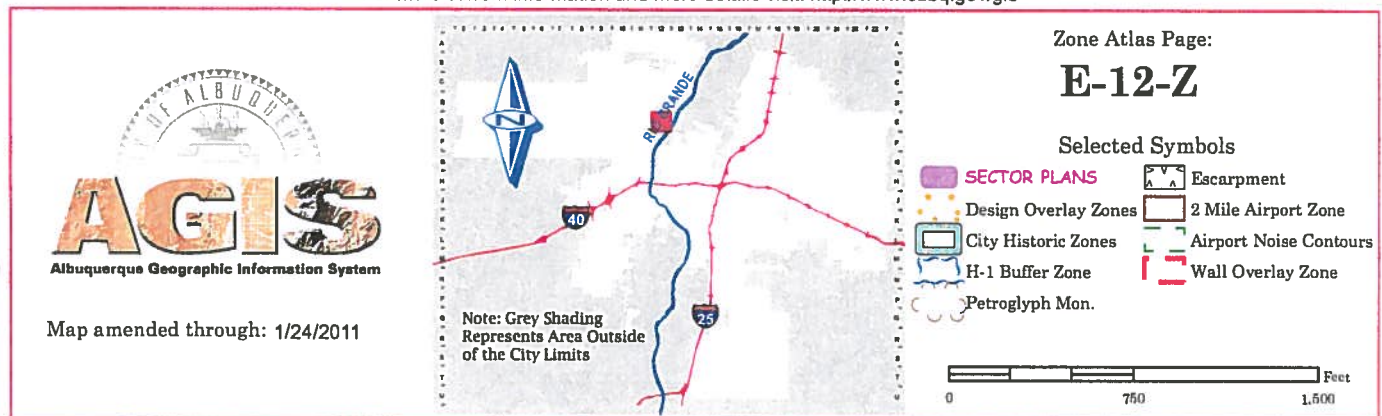
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APPENDIX



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





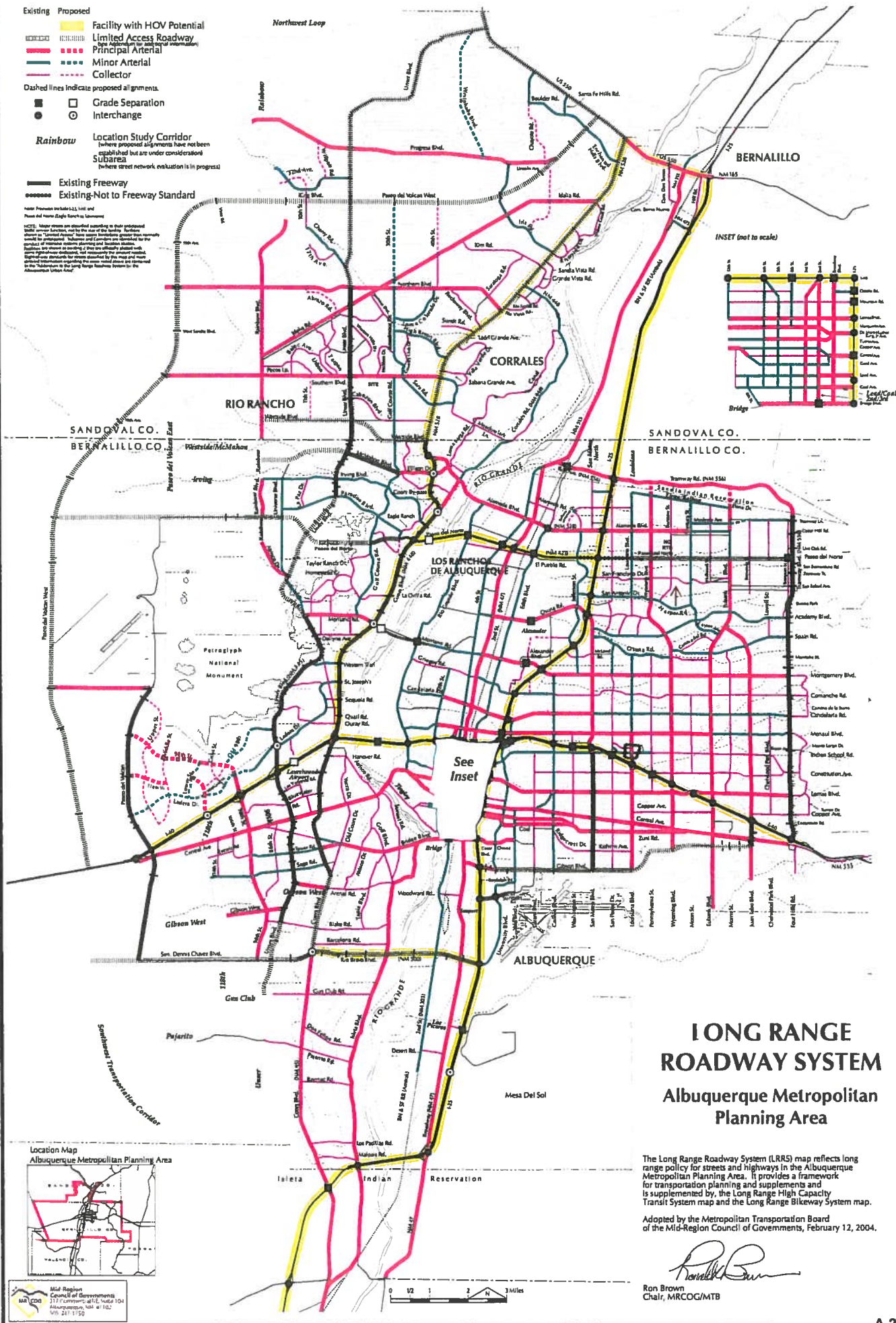
Albuquerque, New Mexico 04-0046 April 8, 2011

- Existing Proposed
- Facility with HOV Potential
 - Limited Access Roadway
 - Principal Arterial
 - Minor Arterial
 - Collector
- Dashed lines indicate proposed alignments.
- Grade Separation
 - Interchange
- Rainbow** Location Study Corridor
(where proposed alignments have not been established but are under consideration)
Subarea
(where street network evaluation is in progress)

Existing Freeway
Existing-Not to Freeway Standard

Source: Project Includes: US, NM and
Paved and Home Graph Search to Support

NOTES: Major streets are classified according to their estimated future traffic volume. The map shows the existing and proposed street network. The map also shows the existing and proposed street network. The map also shows the existing and proposed street network.



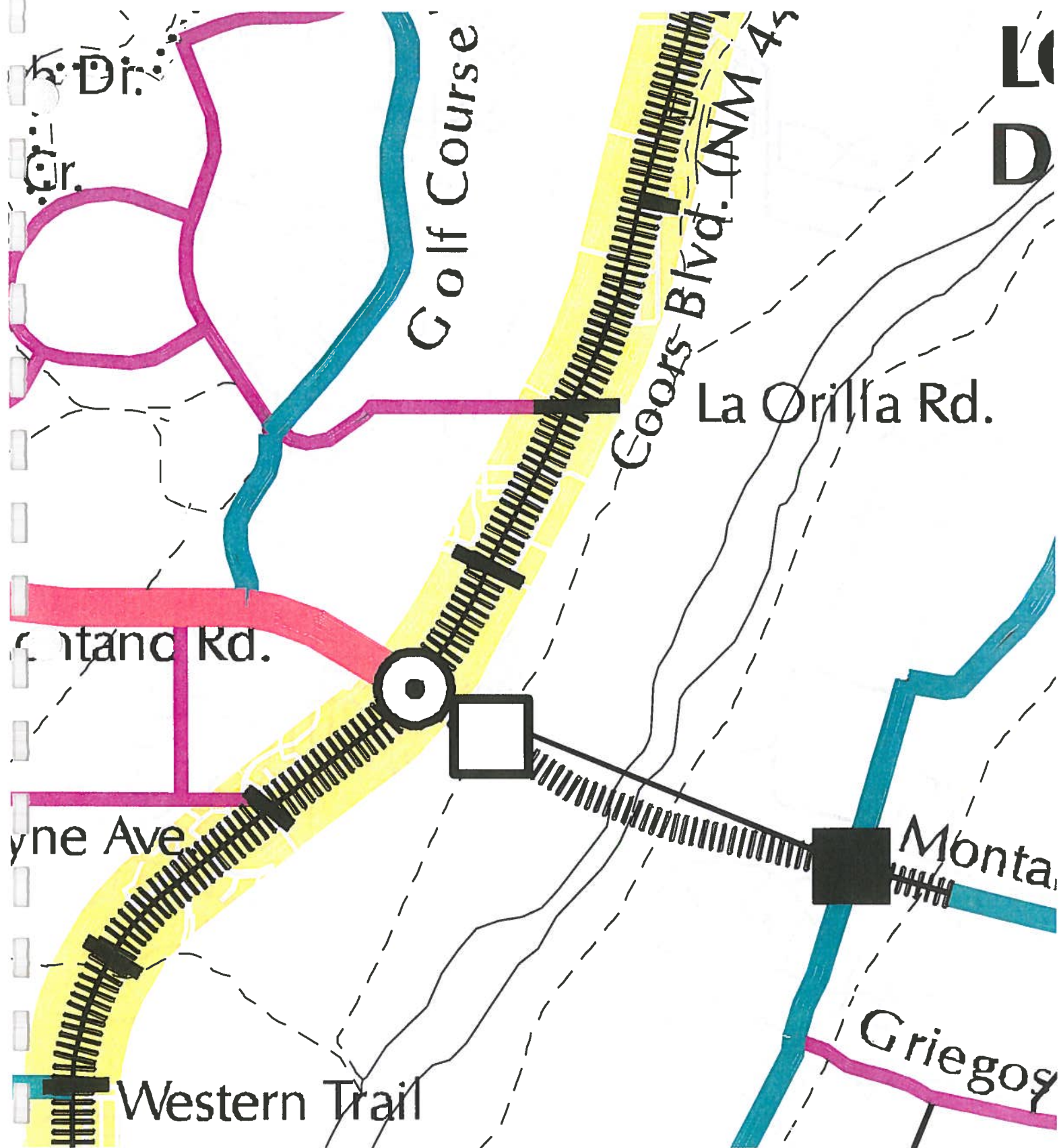
LONG RANGE ROADWAY SYSTEM

Albuquerque Metropolitan Planning Area

The Long Range Roadway System (LRRS) map reflects long range policy for streets and highways in the Albuquerque Metropolitan Planning Area. It provides a framework for transportation planning and supplements and is supplemented by the Long Range High Capacity Transit System map and the Long Range Bikeway System map.

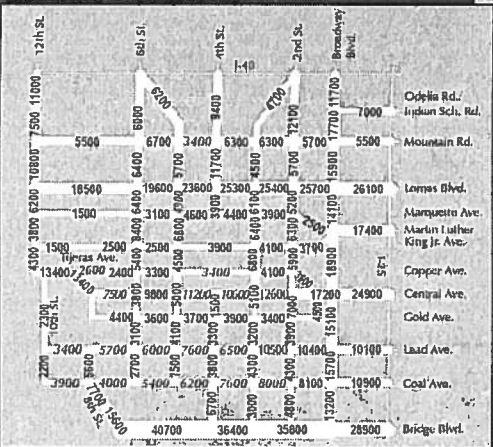
Adopted by the Metropolitan Transportation Board of the Mid-Region Council of Governments, February 12, 2004.

Ron Brown
Chair, MRCOG/MTB

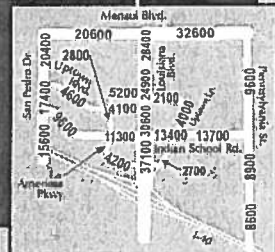


Portion of Long Range Roadway Map
for the Greater Albuquerque Metropolitan Area

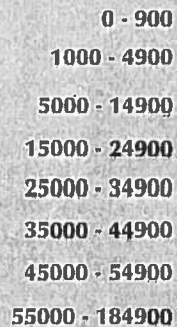
Inset for Downtown



Inset for Uptown



Average Weekday Traffic Flows



Standard Data Link Volume is based on traffic count data accepted by the NM Department of Transportation Traffic Monitoring System (TMS) as standard in accordance with the New Mexico State Traffic Monitoring Standards (NMSTMS).

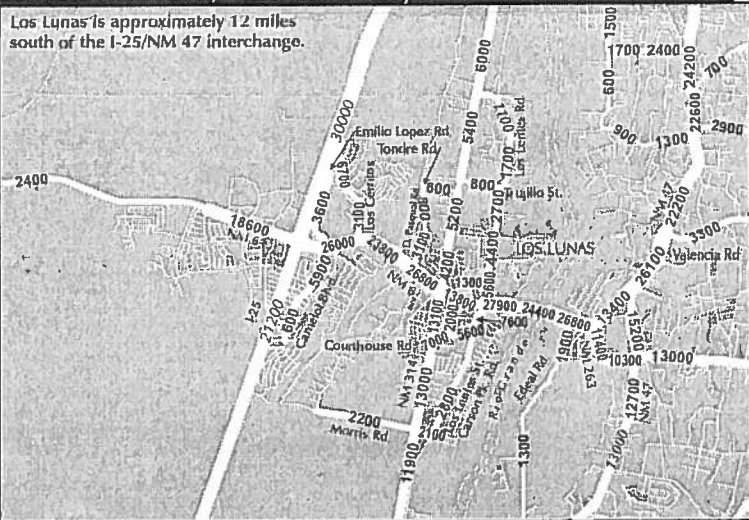
Non-Standard Data Link Volume is based either on traffic count data not in compliance with the NMSTMS or on professional judgement. NMDOT recommends that nonstandard data be used with caution.



Map prepared by the Mid-Region Council of Governments in cooperation with the New Mexico Department of Transportation, the local governments in the Albuquerque Metropolitan Planning Area, and the U.S. Department of Transportation Federal Highway Administration.

Inset for Los Lunas, Valencia County

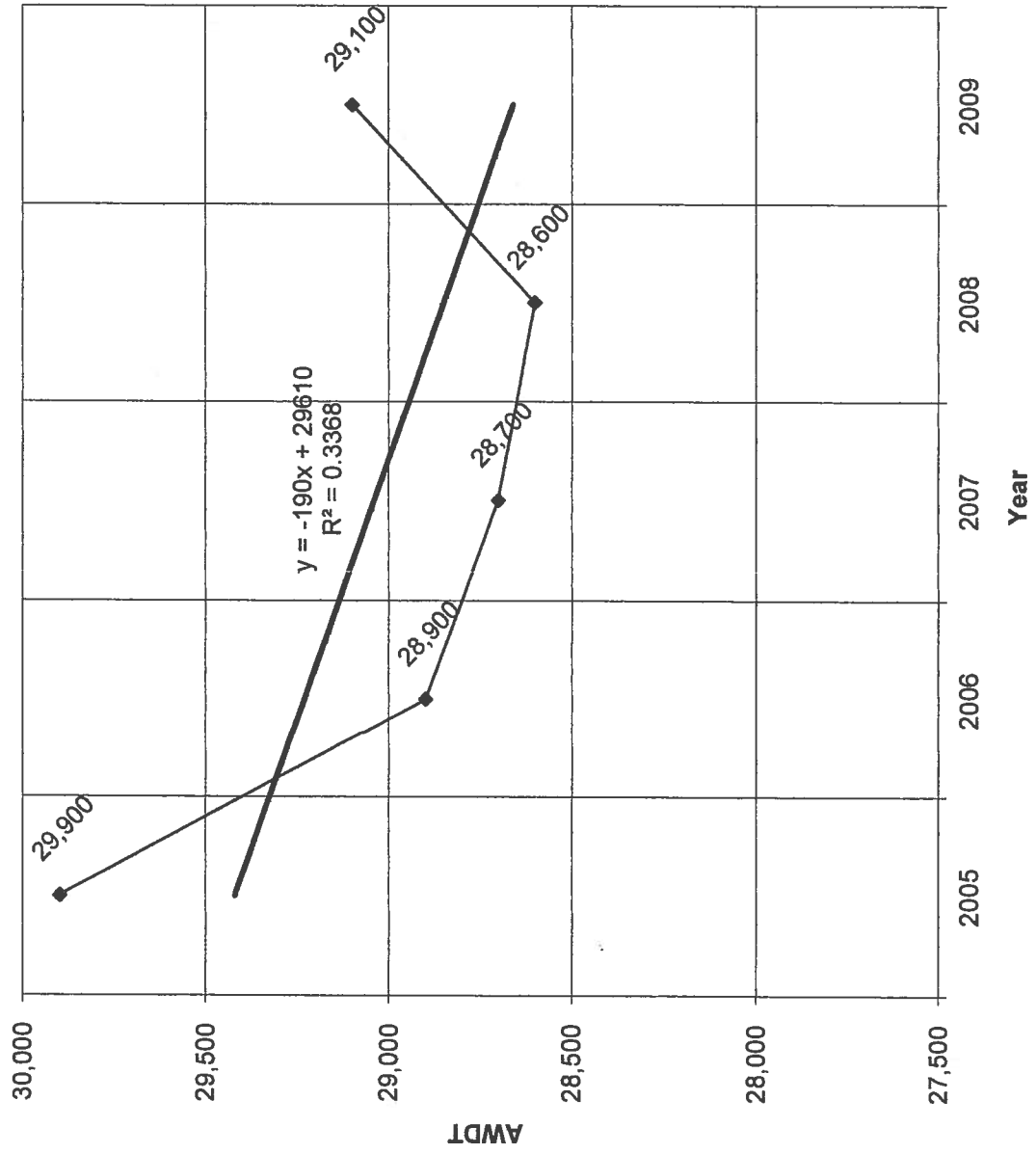
Los Lunas is approximately 12 miles south of the I-25/NM 47 interchange.



Traffic Flow Table for Montano / Coors Blvd.

	2005	2006	2007	2008	2009
Montano East Coors Blvd.	29,900	28,900	28,700	28,600	29,100
Coors Blvd. South of Montano	47,500	45,600	46,800	56,900	57,100
Montano West Coors Blvd	27,500	28,100	27,800	28,000	28,100
Coors Blvd. North of Montano	46,500	42,800	43,900	44,900	39,000

Growth Chart for Montano East Coors Blvd.



Annual Increase in Volume - -190 vehicles/day

Rate of Increase - 190 / 29,100

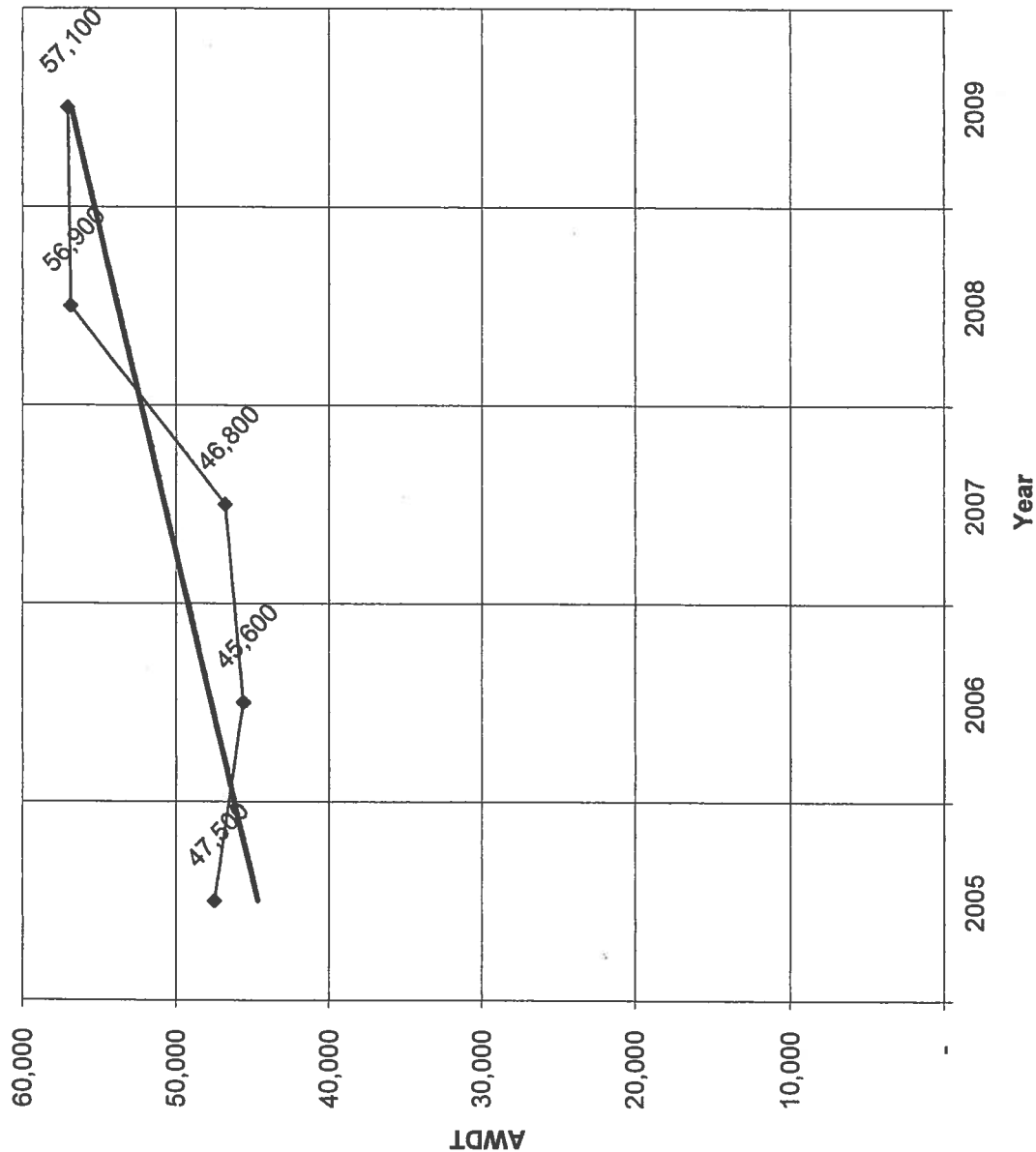
Growth Rate = -0.65%

Use 0% Growth Rate

$$y = -190x + 29610$$

$$R^2 = 0.3368$$

Growth Chart for Coors Blvd. South of Montano



◆ Coors Blvd. South of Montano
 — Linear (Coors Blvd. South of Montano)
 — Linear (Coors Blvd. South of Montano)

Annual Increase in Volume -3050 vehicles/day

Rate of Increase 3,050/ 57,100

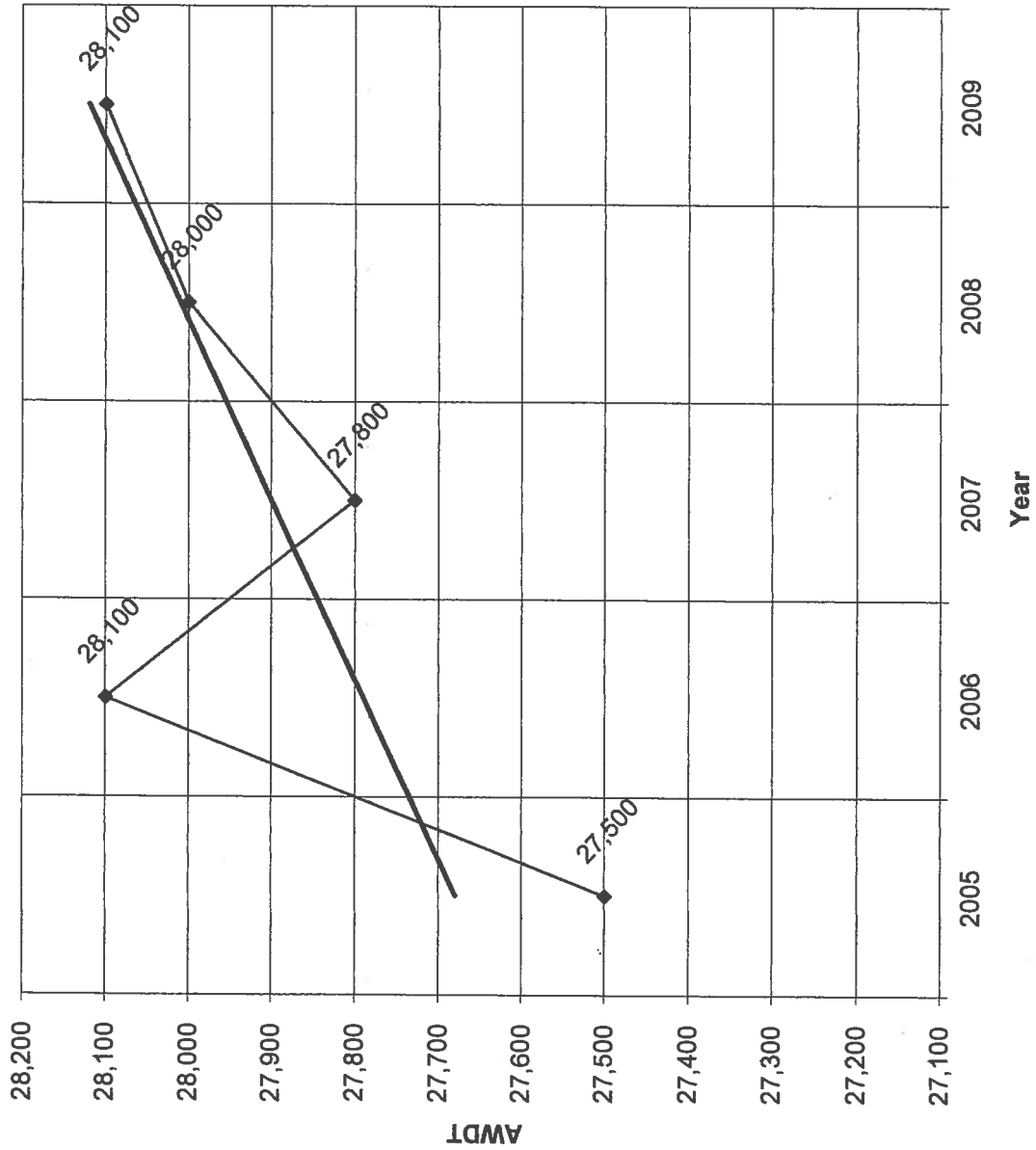
Growth Rate = 5.34%

$$y = 3050x + 41630$$

$$R^2 = 0.711$$

Use 5.4% Growth Rate

Growth Chart for Montano West Coors Blvd



- Montano West Coors Blvd
- Linear (Montano West Coors Blvd)
- Linear (Montano West Coors Blvd)

Annual Increase in Volume - 110vehicles/day

Rate of Increase 110/ 28,100

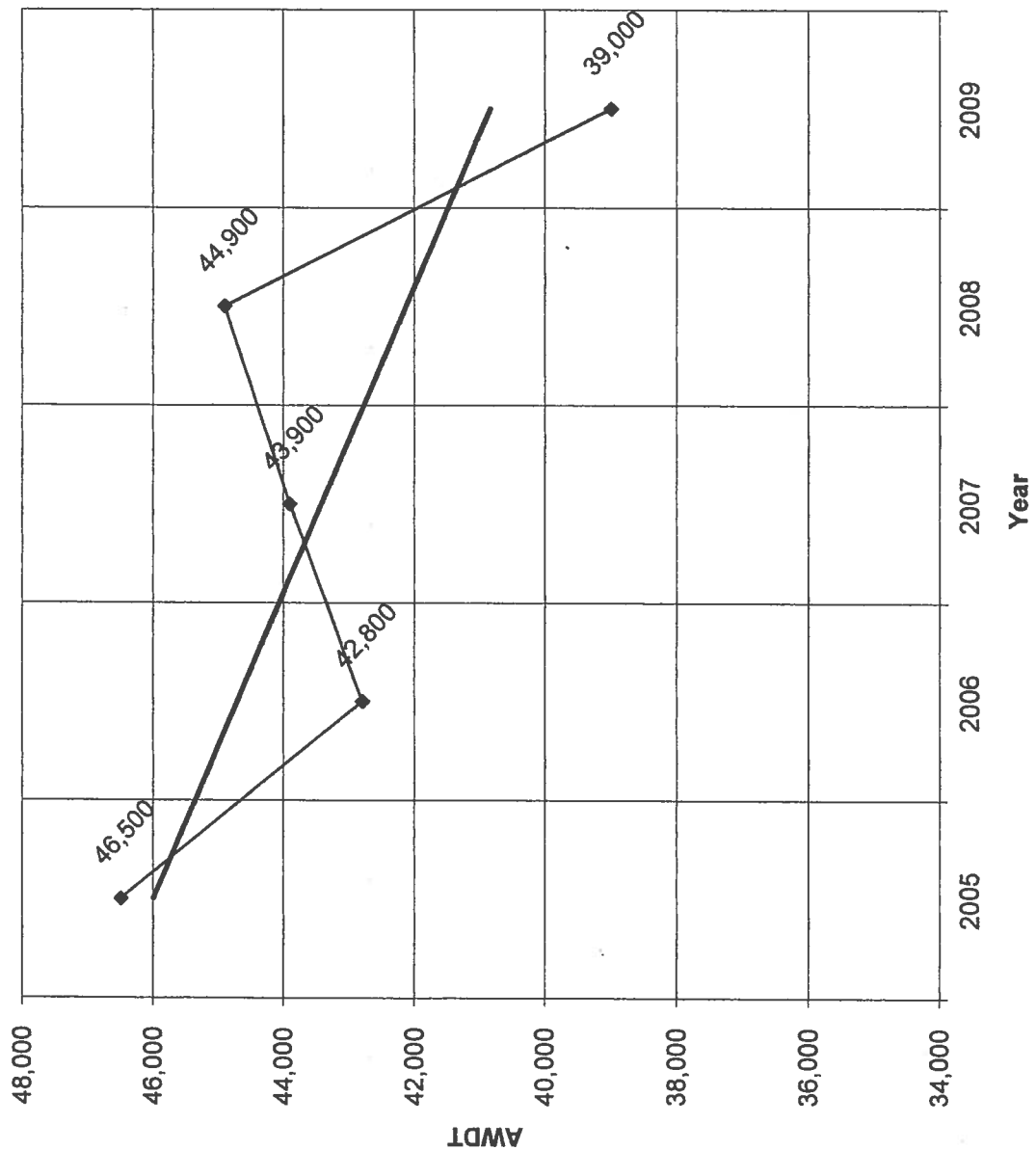
Growth Rate = 0.39%

Use 0.40 % Growth Rate

$$y = 110x + 27570$$

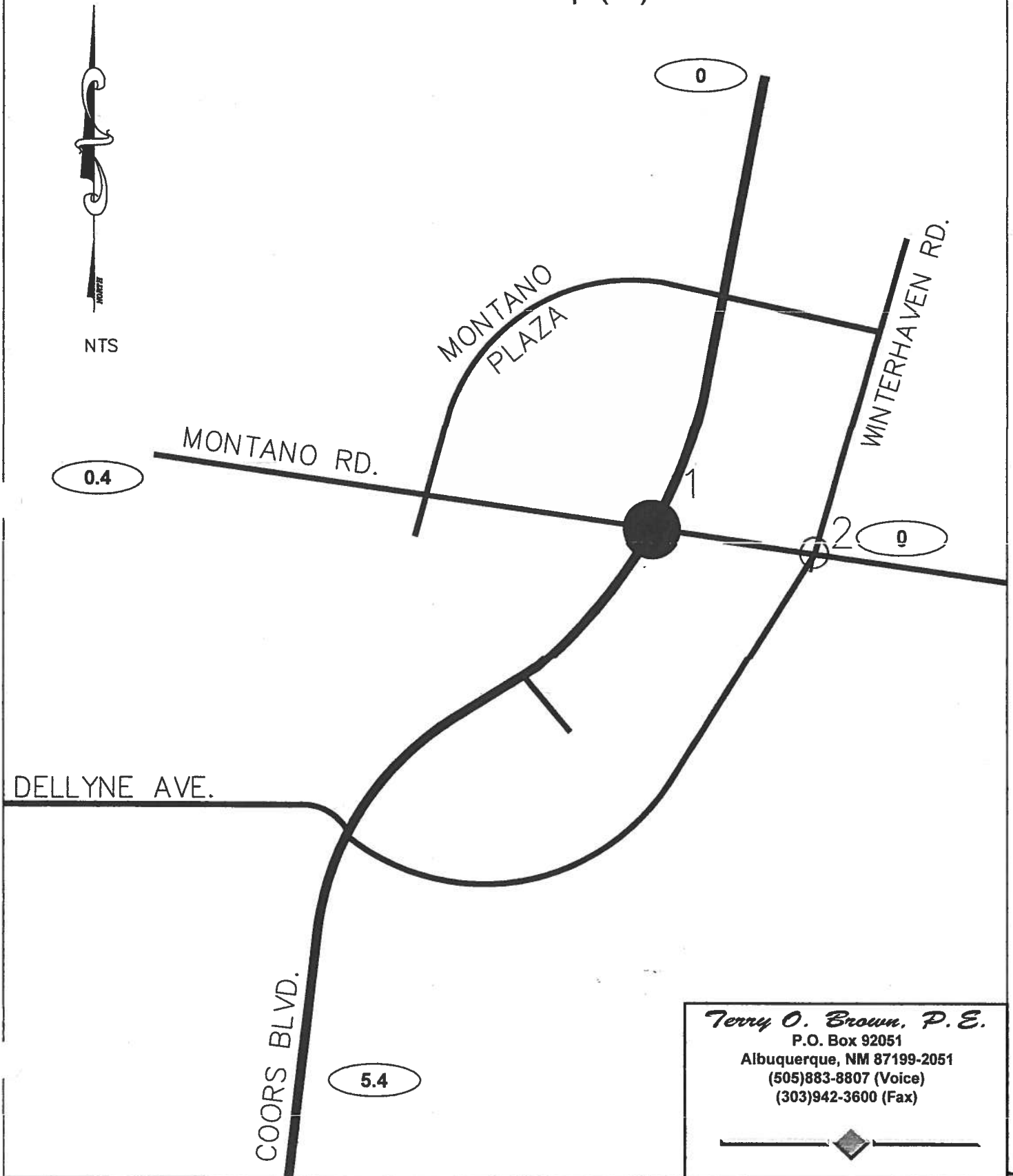
$$R^2 = 0.4654$$

Growth Chart for Coors Blvd. North of Montano



Montano Access Study

Montaño Rd / Coors Blvd Growth Map (%)



2004 AM Peak
Hour Volumes

Coors Blvd

Montano Blvd

1400

592

1392

1884

2004 PM Peak
Hour Volumes

Coors Blvd

Montano Blvd

1884

1208

1967

2300

2030 AM Peak
Hour Volumes

Coors Blvd

2759

1200

2045

2066

Montano Blvd

2030 PM Peak
Hour Volumes

Coors Blvd

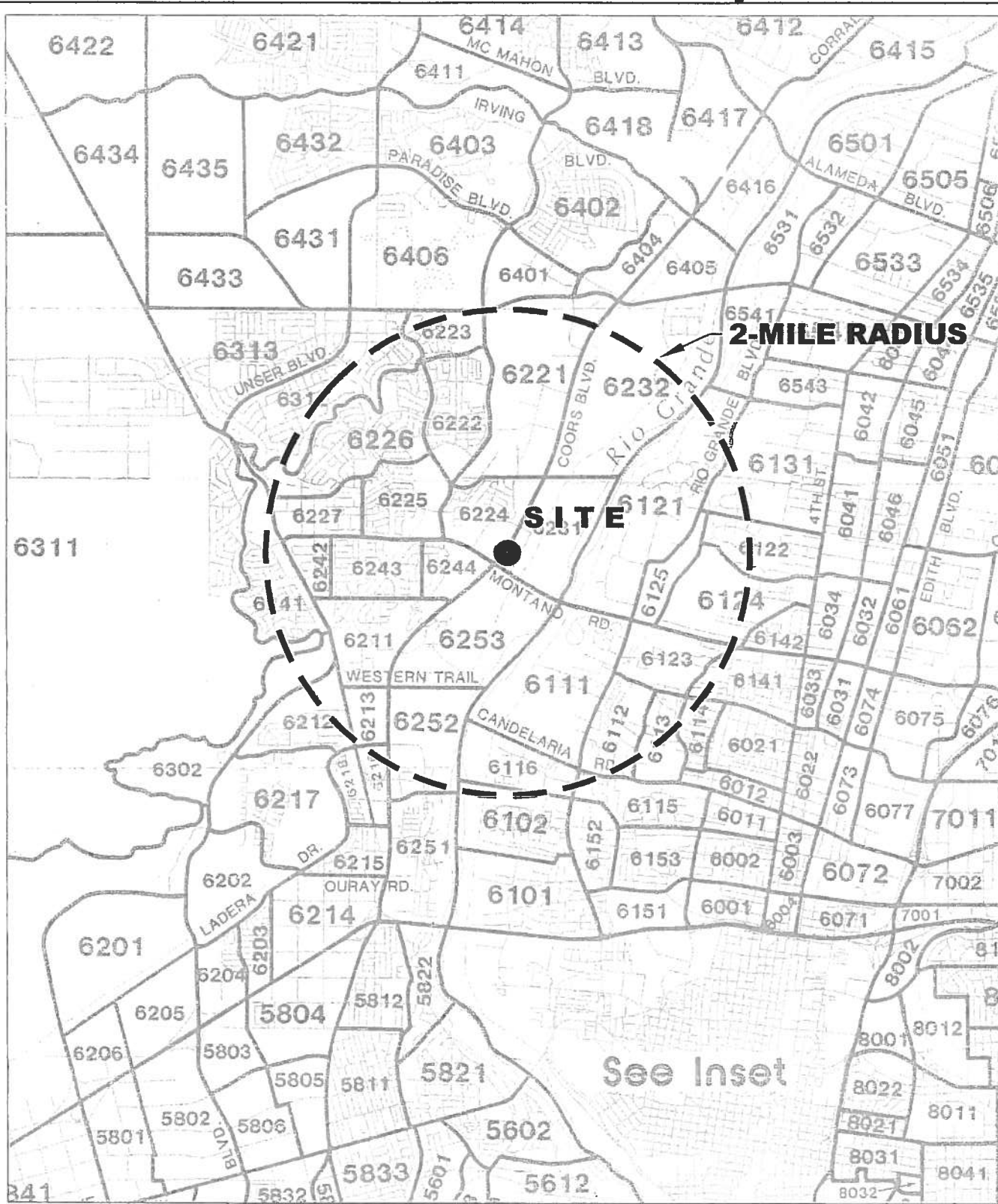
Montano Blvd

2438

1566

1363

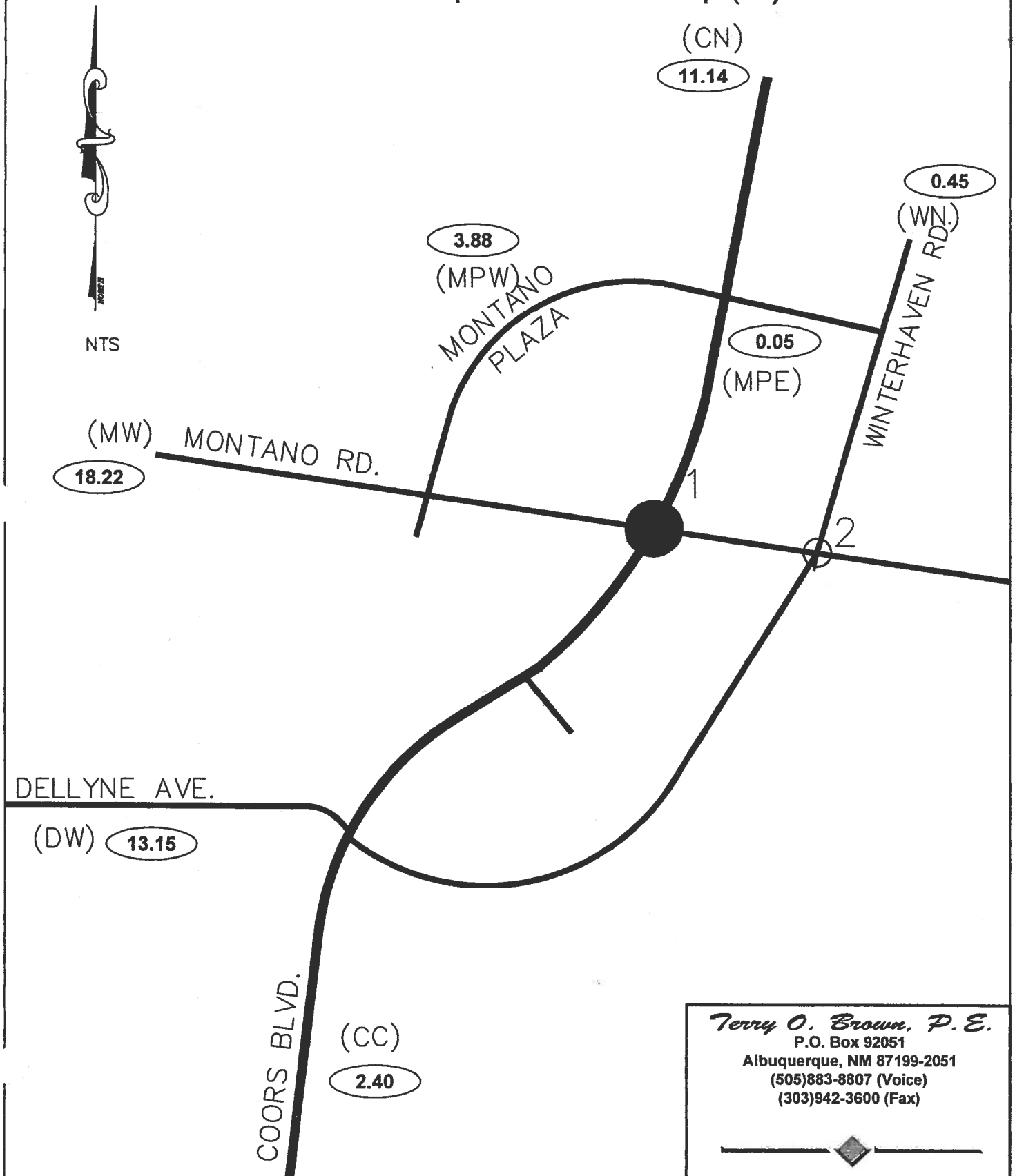
3493



DATA ANALYSIS SUBZONE (DASZ) MAP
Andalucia Tr. 6 Montano Access Study

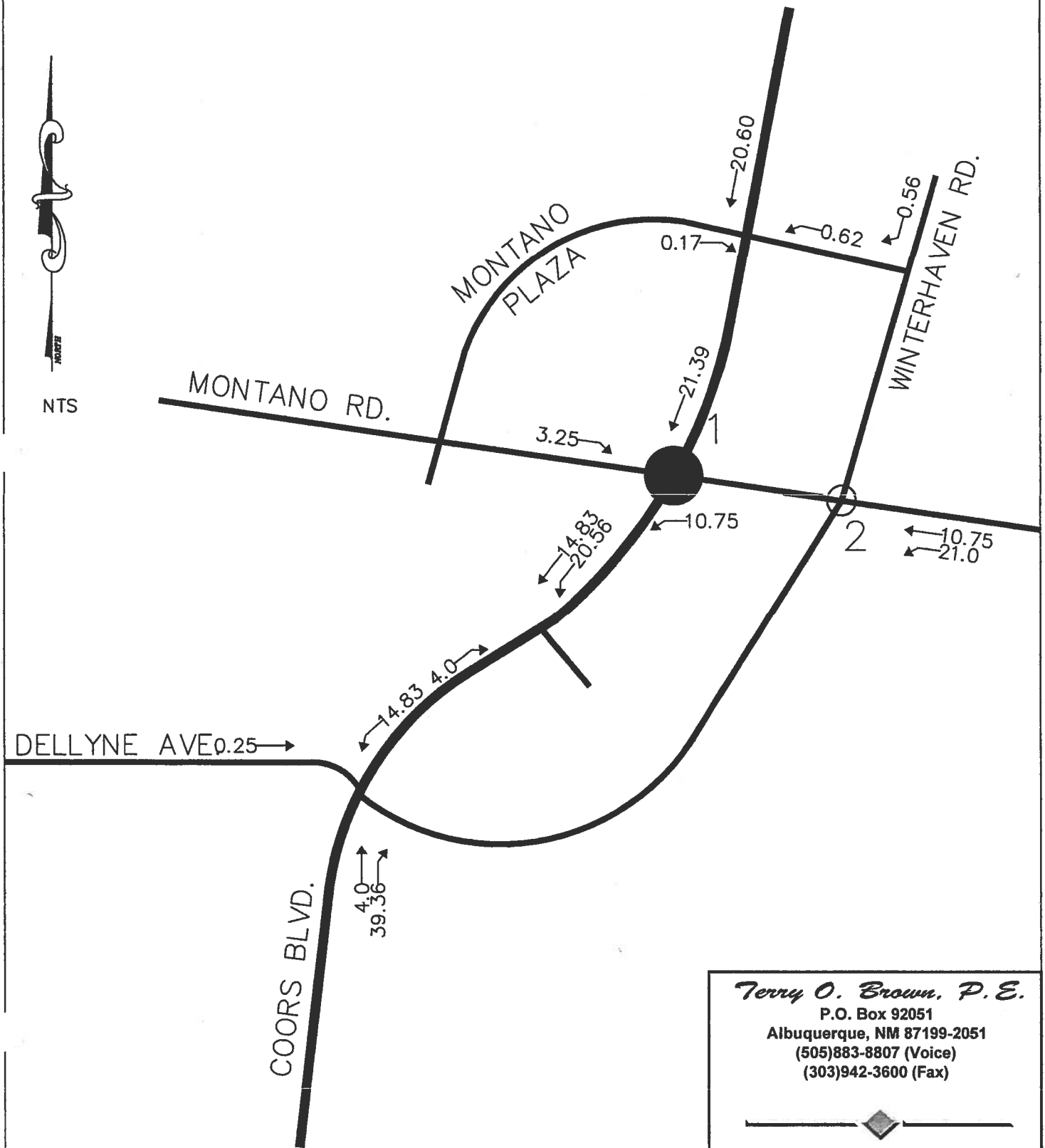
Montano Access Study

Montaño Rd / Coors Blvd Commercial Trip Distribution Map (%)



Montano Access Study

Montaño Rd / Coors Blvd Residential Trip Assignments (% Entering) CASE "N"

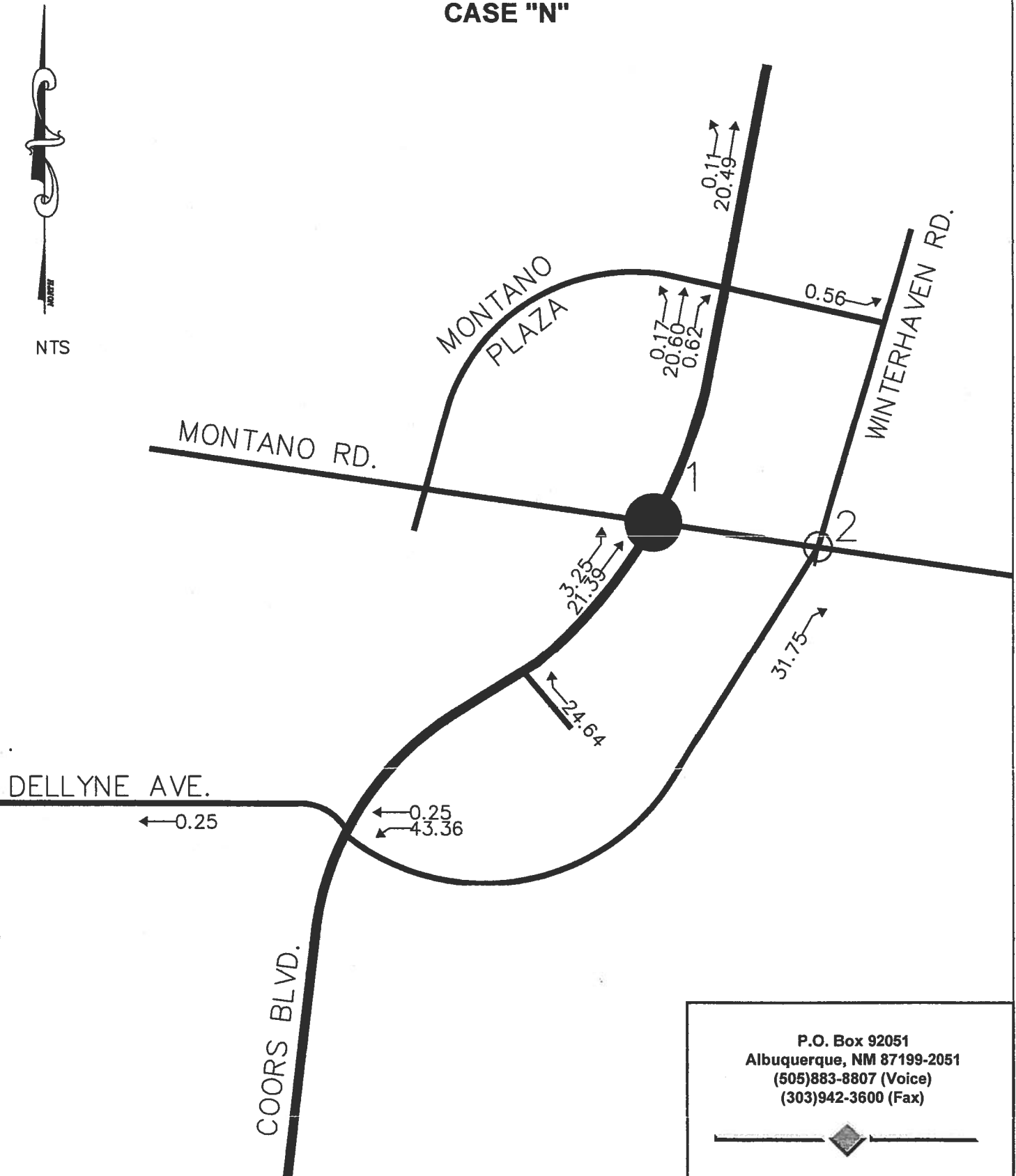


Montano Access Study

Montaño Rd / Coors Blvd

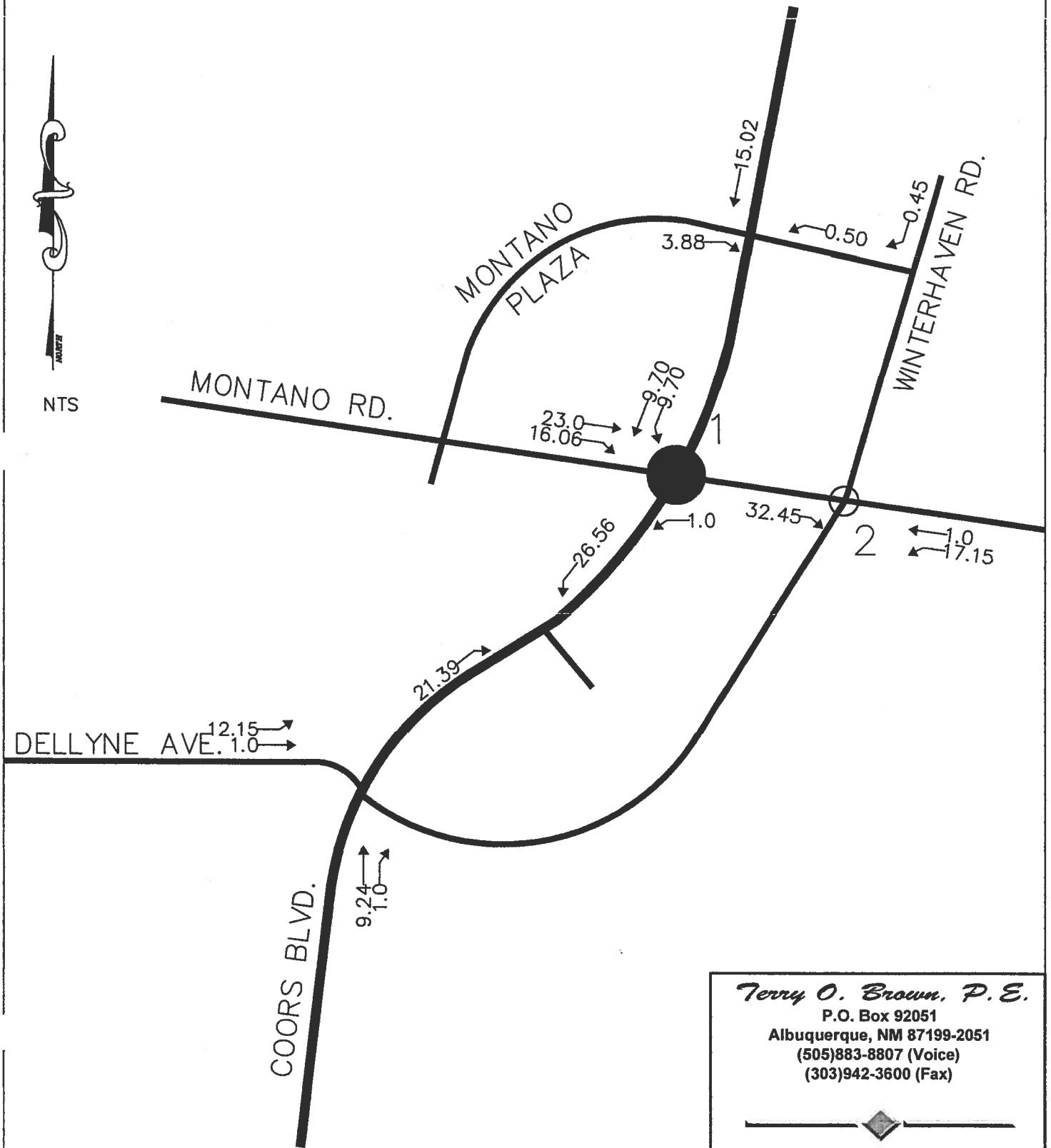
Residential Trip Assignments (% Exiting)

CASE "N"



Montano Access Study

Montaño Rd / Coors Blvd
Commercial Trip Assignments (% Entering)
CASE "N"



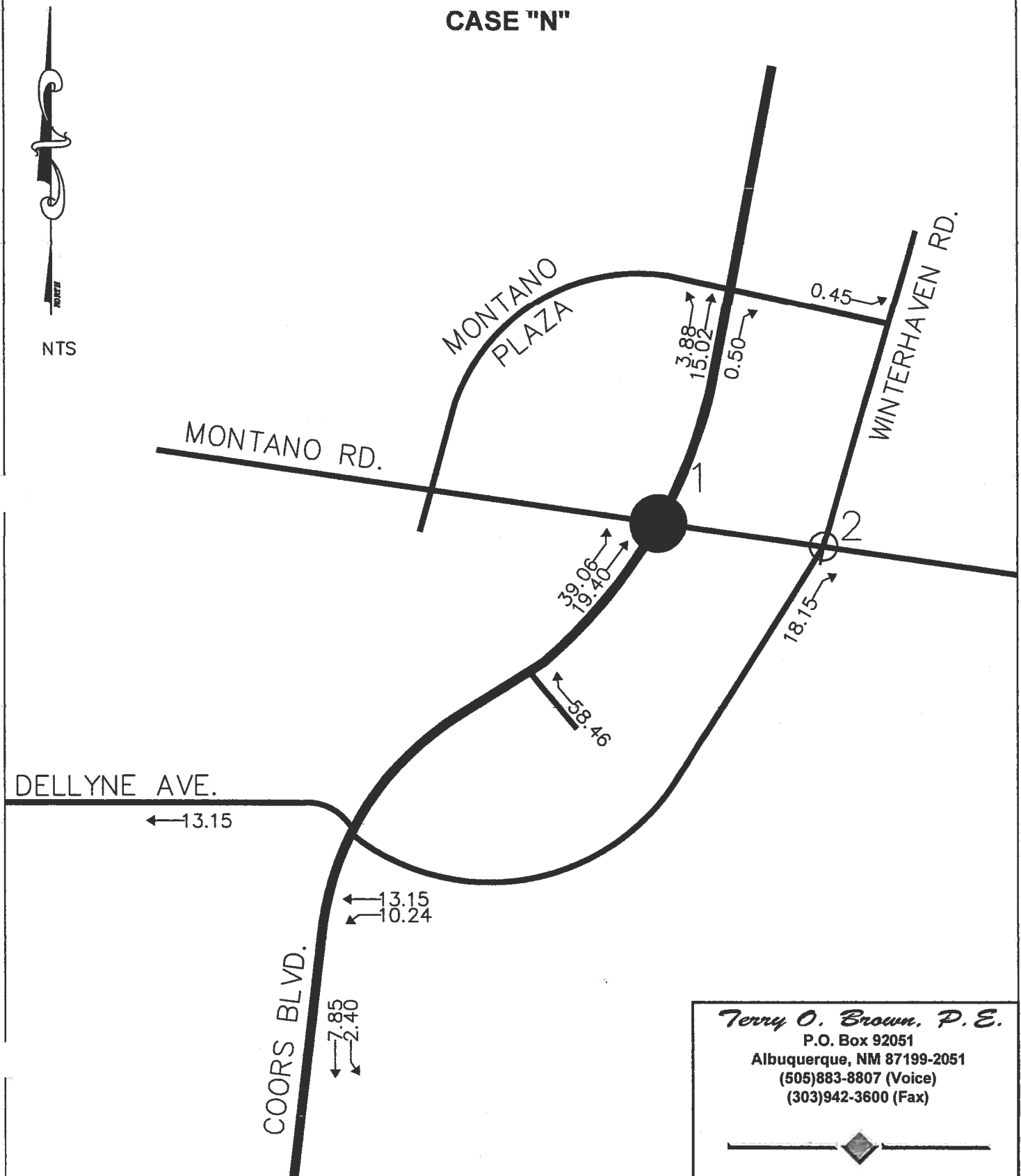
Terry O. Brown, P.E.

P.O. Box 92051
Albuquerque, NM 87199-2051
(505)883-8807 (Voice)
(303)942-3600 (Fax)

Montano Access Study

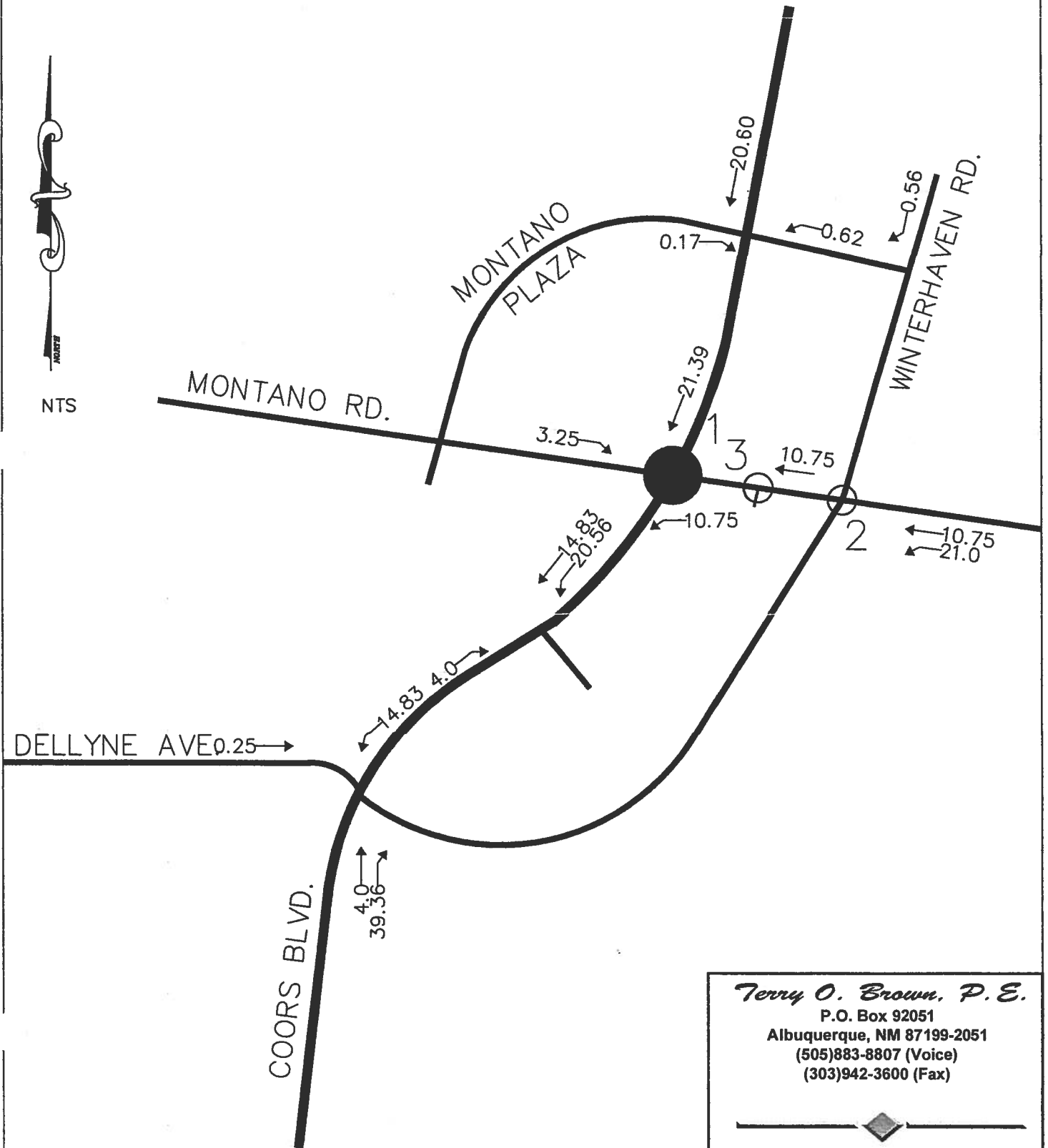
Montaño Rd / Coors Blvd
Commercial Trip Assignments (% Exiting)

CASE "N"



Montano Access Study

Montaño Rd / Coors Blvd Residential Trip Assignments (% Entering) CASE "Y"



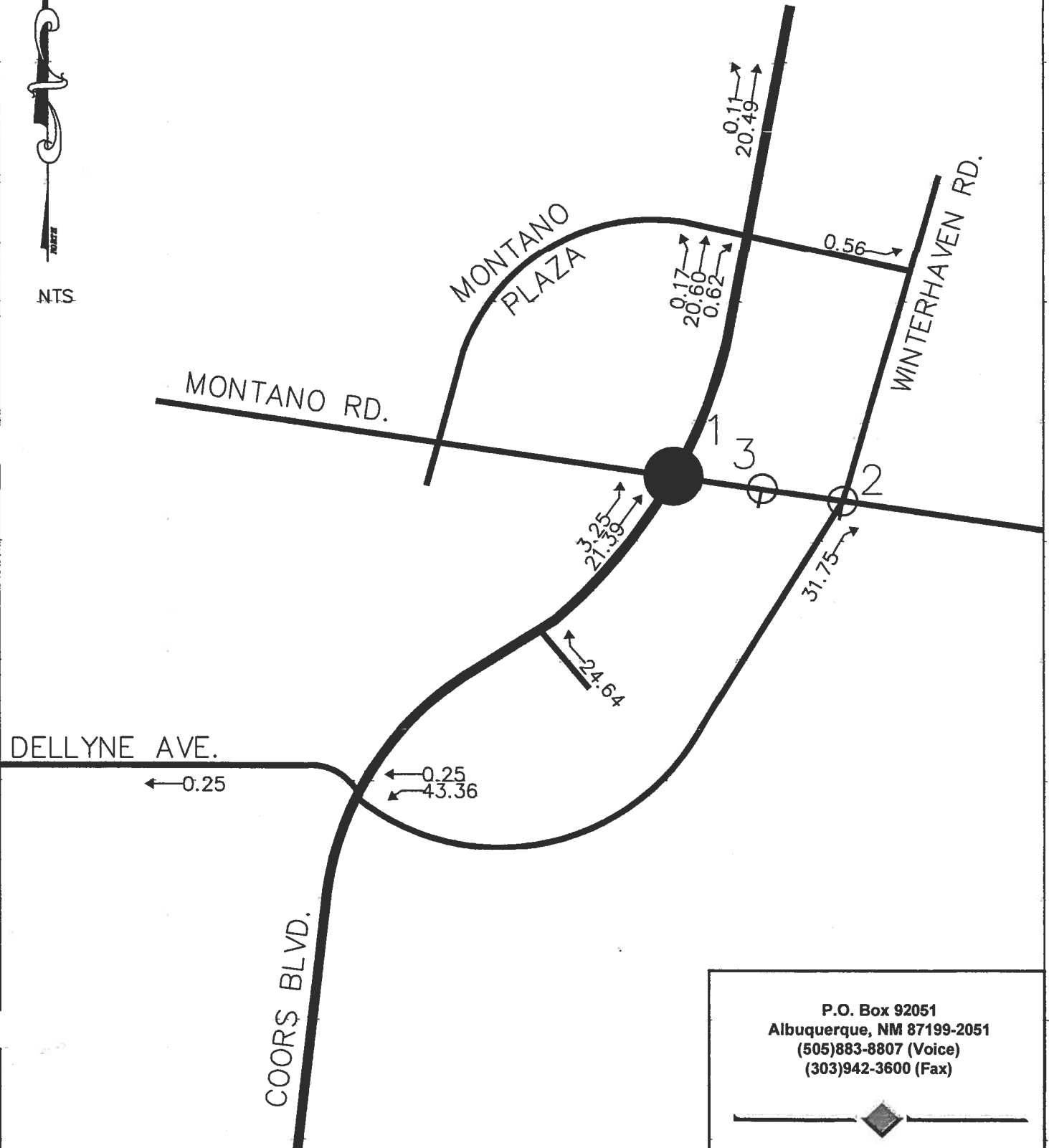
Montano Access Study

Montaño Rd / Coors Blvd
Residential Trip Assignments (% Exiting)

CASE "Y"



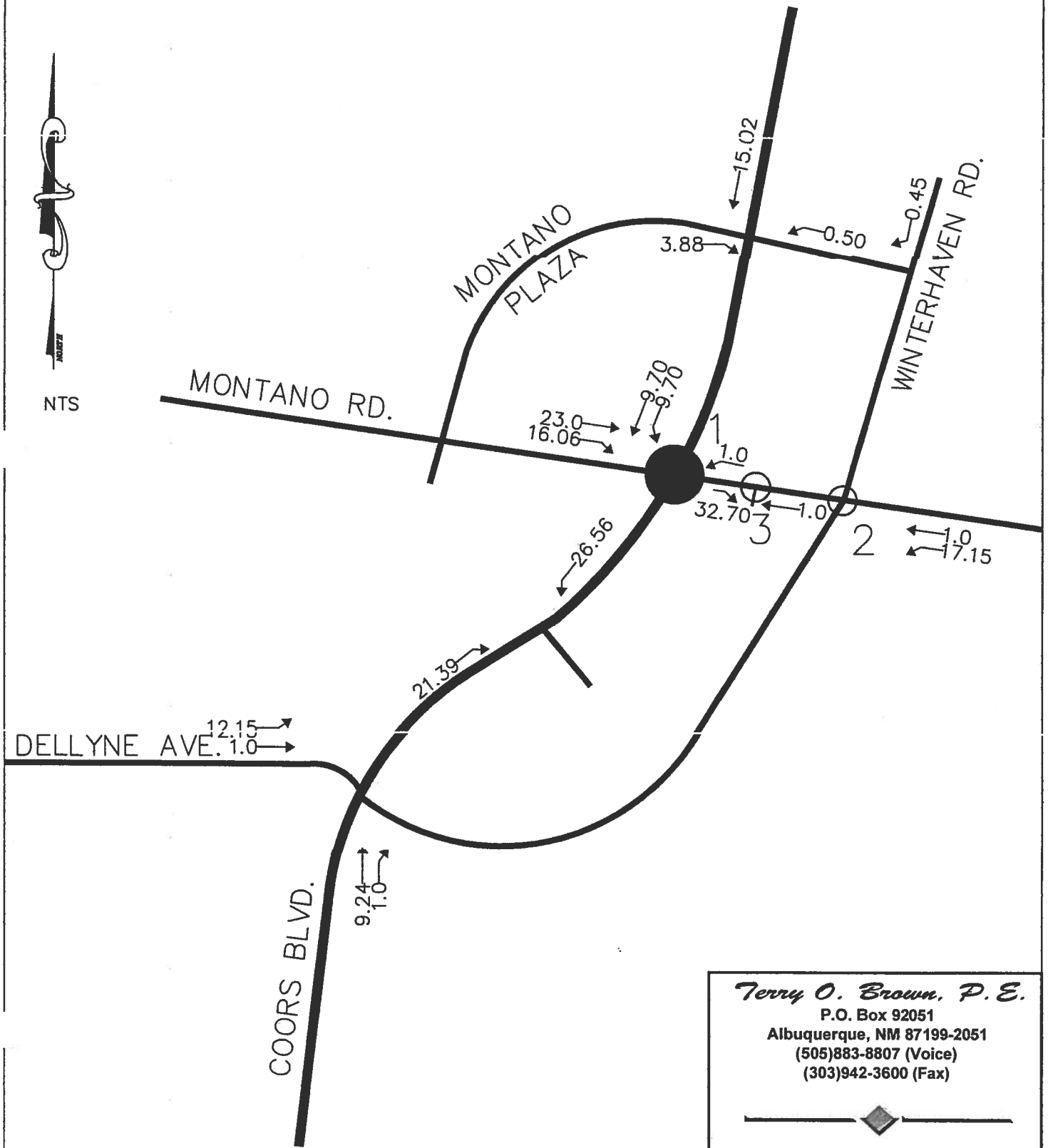
NTS



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Albuquerque, NM 87199-2051
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(303)942-3600 (Fax)

Montano Access Study

Montaño Rd / Coors Blvd Commercial Trip Assignments (% Entering) CASE "Y"



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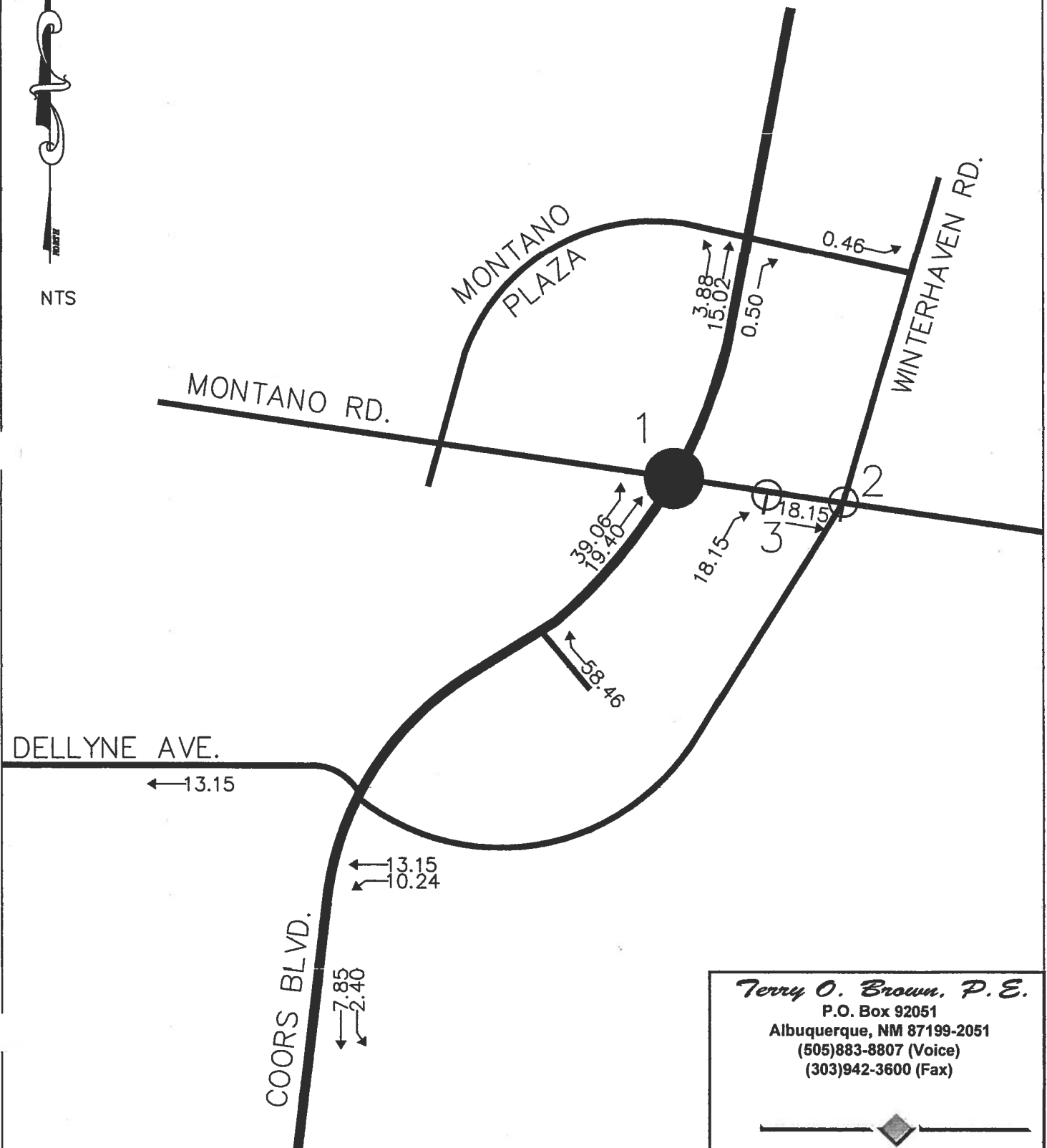
Montano Access Study

Montaño Rd / Coors Blvd Commercial Trip Assignments (% Exiting)

CASE "Y"



NTS



Terry O. Brown, P.E.

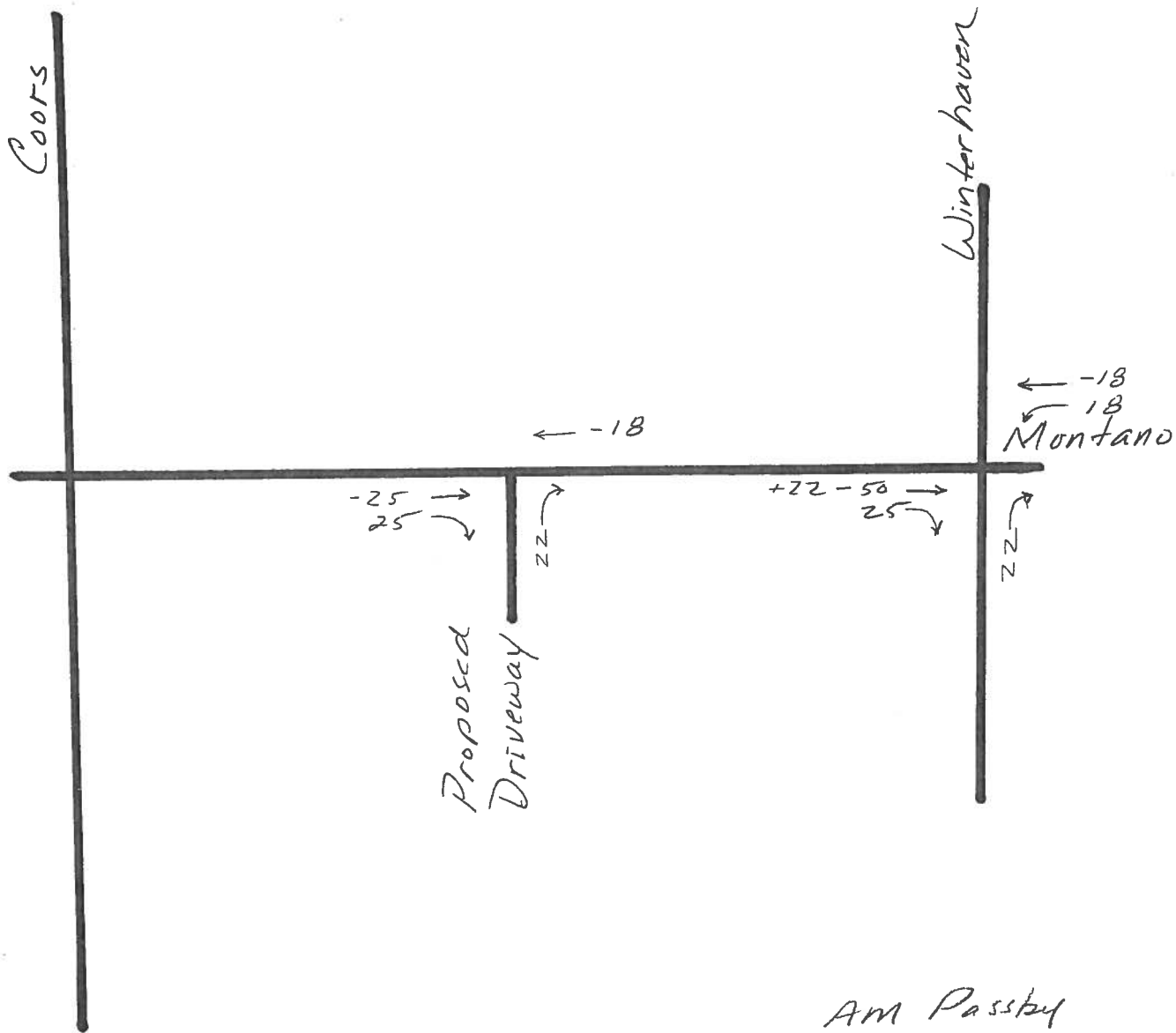
P.O. Box 92051

Albuquerque, NM 87199-2051

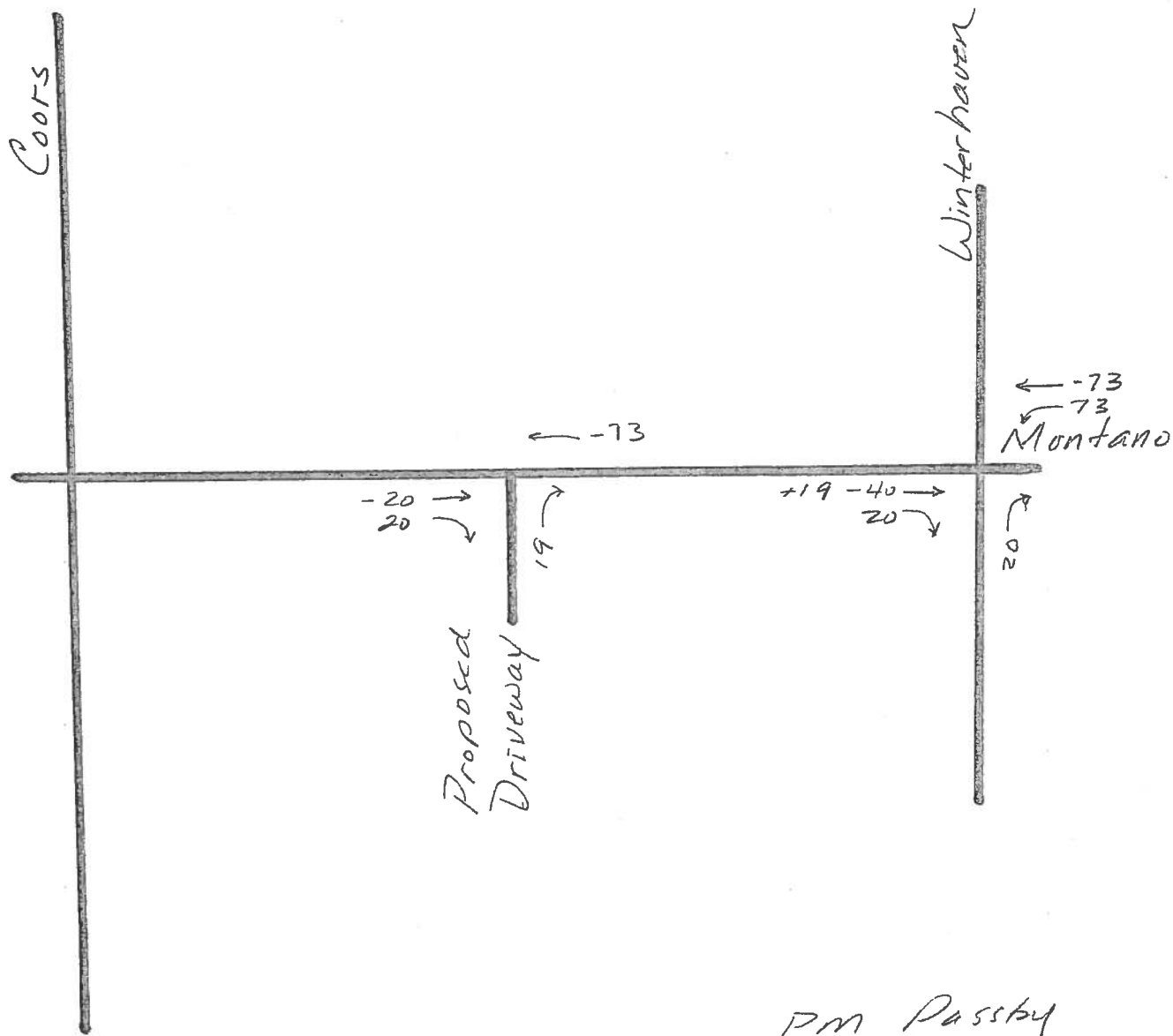
(505)883-8807 (Voice)

(303)942-3600 (Fax)





Am Passby
Trips



PM Peak
Trips

Montano Access Daskalos
Projected Turning Movements SUMMARY
PROPOSED DEVELOPMENT (2015) - 100% Development
Case "N"

INTERSECTION: Summary

Montano / Coors

(1) 3.0% Truck
Existing (2011)
 2015 (NO BUILD - A.M.)
 2015 (BUILD - A.M.)

0.88			0.76			0.88			0.90			PHF
Eastbound (Montano)			Westbound (Montano)			Northbound (Coors)			Southbound (Coors)			
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
235	1,111	301	230	216	148	266	1,185	656	622	1,312	11	
239	1,129	306	230	216	148	320	1,427	790	622	1,312	11	
239	1,235	381	239	216	148	487	1,551	790	667	1,366	11	

Existing (2011)
 2015 (NO BUILD - P.M.)
 2015 (BUILD - P.M.)

0.91			0.93			0.96			0.92			PHF
Eastbound (Montano)			Westbound (Montano)			Northbound (Coors)			Southbound (Coors)			
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
263	272	358	378	1,051	154	598	1,726	248	314	1,463	65	
267	276	364	378	1,051	154	720	2,080	298	314	1,463	65	
267	470	506	407	1,051	154	1,040	2,257	298	396	1,586	65	

Montano / Winterhaven

(2) 3.0% Truck
Existing (2011)
 2015 (NO BUILD - A.M.)
 2015 (BUILD - A.M.)

0.84			0.78			0.75			0.75			PHF
Eastbound (Montano)			Westbound (Montano)			Northbound (Winterhaven)			Southbound (Winterhaven)			
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
44	2,464	28	96	495	28	0	0	69	0	0	42	
44	2,464	28	96	495	28	0	0	69	0	0	42	
44	2,414	228	201	486	28	0	0	254	0	0	42	

Existing (2011)
 2015 (NO BUILD - P.M.)
 2015 (BUILD - P.M.)

0.93			0.94			0.75			0.75			PHF
Eastbound (Montano)			Westbound (Montano)			Northbound (Winterhaven)			Southbound (Winterhaven)			
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
71	731	14	22	1,424	377	0	0	30	0	0	91	
71	731	14	22	1,424	377	0	0	30	0	0	91	
71	691	328	281	1,380	377	0	0	246	0	0	91	

Montano Access Daskalos
Projected Turning Movements Worksheet
Montano / Coors

INTERSECTION: E-W Street: **Montano** (1)

N-S Street: **Coors**

Year of Existing Counts 2010

Horizon Year 2015

Growth Rates

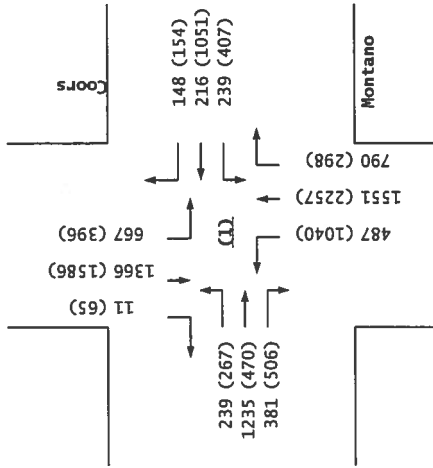
	0.40%			0.00%			5.40%			0.00%		
	Eastbound (Montano)			Westbound (Montano)			Northbound (Coors)			Southbound (Coors)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	234	1,107	300	230	216	148	252	1,124	622	622	1,312	11
Background Traffic Growth	5	22	6	0	0	0	68	303	168	0	0	0
Subtotal (NO BUILD - A.M.)	239	1,129	306	230	216	148	320	1,427	790	622	1,312	11
Percent Residential Trips Generated(Entering)	0.00%	0.00%	3.25%	10.75%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	21.39%	0.00%
Percent Residential Trips Generated(Exiting)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.25%	21.39%	0.00%	0.00%	0.00%	0.00%
Percent Commercial Trips Generated(Entering)	0.00%	23.00%	16.06%	1.00%	0.00%	0.00%	0.00%	0.00%	0.00%	9.70%	9.70%	0.00%
Percent Commercial Trips Generated(Exiting)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	39.06%	19.40%	0.00%	0.00%	0.00%	0.00%
Total Trips Generated	0	106	75	9	0	0	167	124	0	45	54	0
Total AM Peak Hour BUILD Volumes	239	1,235	381	239	216	148	487	1,551	790	667	1,366	11

	Eastbound (Montano)			Westbound (Montano)			Northbound (Coors)			Southbound (Coors)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	262	271	357	378	1,051	154	567	1,638	235	314	1,463	65
Background Traffic Growth	5	5	7	0	0	0	153	442	63	0	0	0
Subtotal (NO BUILD - P.M.)	267	276	364	378	1,051	154	720	2,080	298	314	1,463	65
Percent Residential Trips Generated(Entering)	0.00%	0.00%	3.25%	10.75%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	21.39%	0.00%
Percent Residential Trips Generated(Exiting)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.25%	21.39%	0.00%	0.00%	0.00%	0.00%
Percent Commercial Trips Generated(Entering)	0.00%	23.00%	16.06%	1.00%	0.00%	0.00%	0.00%	0.00%	0.00%	9.70%	9.70%	0.00%
Percent Commercial Trips Generated(Exiting)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	39.06%	19.40%	0.00%	0.00%	0.00%	0.00%
Total Trips Generated	0	194	142	29	0	0	320	177	0	82	123	0
Total PM Peak Hour BUILD Volumes	267	470	506	407	1,051	154	1,040	2,257	298	396	1,586	65

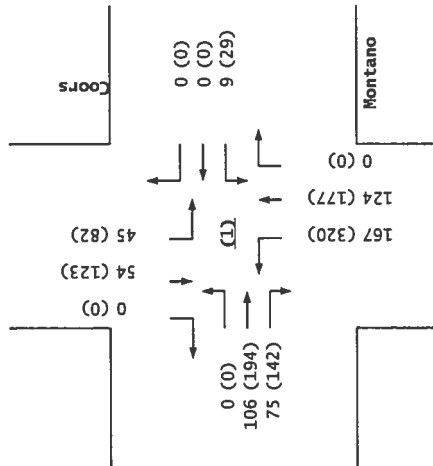
	Entering	Exiting	
Number of Residential Trips Generated	40	211	A.M. 100% Residential Development
	194	95	P.M.
Number of Commercial Trips Generated	462	409	A.M. 100% Commercial Development
	844	811	P.M.

	Eastbound (Montano)			Westbound (Montano)			Northbound (Coors)			Southbound (Coors)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2011 AM Peak Hr. Volumes	235	1,111	301	230	216	148	266	1,185	656	622	1,312	11
2011 PM Peak Hr. Volumes	263	272	358	378	1,051	154	598	1,726	248	314	1,463	65

2015
BUILD

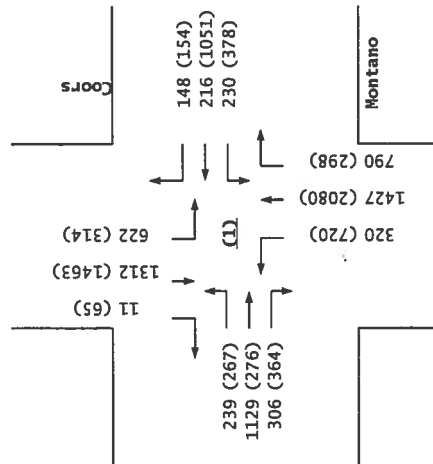


Trips



Montano / Coors

2015
NO BUILD



Montano Access Daskalos
Projected Turning Movements Worksheet
Montano / Winterhaven

INTERSECTION: E-W Street: **Montano** (2)
N-S Street: **Winterhaven**
Year of Existing Counts: **2010**
Horizon Year: **2015**
Growth Rates: **0.00%** **0.00%** **0.00%** **0.00%**

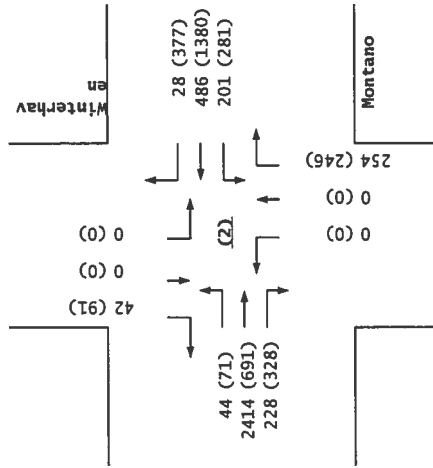
	Eastbound (Montano)			Westbound (Montano)			Northbound (Winterhaven)			Southbound (Winterhaven)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	44	2,464	28	96	495	28	0	0	69	0	0	42
Background Traffic Growth	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal (NO BUILD - A.M.)	44	2,464	28	96	495	28	0	0	69	0	0	42
Percent Residential Trips Generated(Entering)	0.00%	0.00%	0.00%	21.00%	10.75%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Percent Residential Trips Generated(Exiting)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	31.75%	0.00%	0.00%	0.00%
Percent Commercial Trips Generated(Entering)	0.00%	0.00%	32.45%	17.15%	1.00%	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%	0.00%	0.00%	0.00%	0.00%	18.15%	0.00%	0.00%	0.00%
Total Trips Generated	0	0	150	87	9	0	0	0	141	0	0	0
Subtotal AM Pk Hr. BUILD Volumes	44	2,464	178	183	504	28	0	0	210	0	0	42
Pass-by Trip Adjustments	0	-50	50	18	-18	0	0	0	44	0	0	0
Total AM Peak Hour BUILD Volumes	44	2,414	228	201	486	28	0	0	254	0	0	42

	Eastbound (Montano)			Westbound (Montano)			Northbound (Winterhaven)			Southbound (Winterhaven)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	71	731	14	22	1,424	377	0	0	30	0	0	91
Background Traffic Growth	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal (NO BUILD - P.M.)	71	731	14	22	1,424	377	0	0	30	0	0	91
Percent Residential Trips Generated(Entering)	0.00%	0.00%	0.00%	21.00%	10.75%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Percent Residential Trips Generated(Exiting)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	31.75%	0.00%	0.00%	0.00%
Percent Commercial Trips Generated(Entering)	0.00%	0.00%	32.45%	17.15%	1.00%	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%	0.00%	0.00%	0.00%	0.00%	18.15%	0.00%	0.00%	0.00%
Total Trips Generated	0	0	274	186	29	0	0	0	177	0	0	0
Subtotal PM Pk Hr. BUILD Volumes	71	731	288	208	1,453	377	0	0	207	0	0	91
Pass-by Trip Adjustments	0	-40	40	73	-73	0	0	0	39	0	0	0
Total PM Peak Hour BUILD Volumes	71	691	328	281	1,380	377	0	0	246	0	0	91

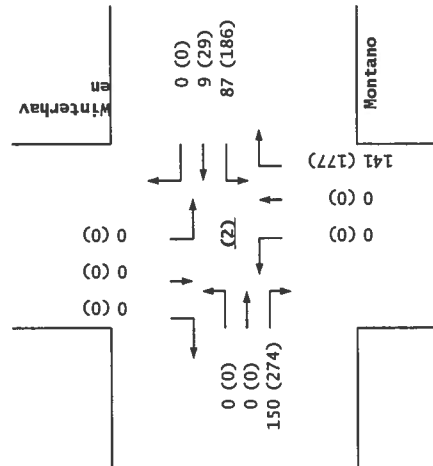
	Entering	Exiting		
Number of Residential Trips Generated	40	211	A.M.	100% Residential Development
	194	95	P.M.	
Number of Commercial Trips Generated	482	409	A.M.	100% Commercial Development
	844	811	P.M.	

	Eastbound (Montano)			Westbound (Montano)			Northbound (Winterhaven)			Southbound (Winterhaven)		
2011 AM Peak Hr. Volumes	44	2464	28	96	495	28	0	0	69	0	0	42
2011 PM Peak Hr. Volumes	71	731	14	22	1,424	377	0	0	30	0	0	91

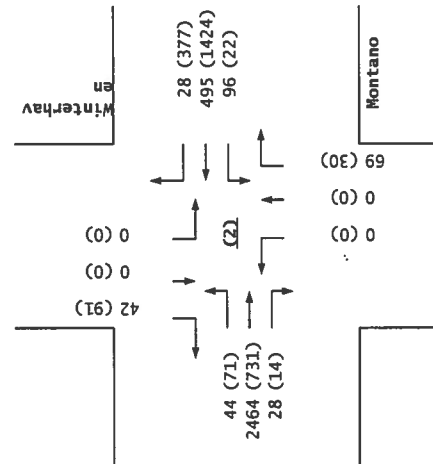
2015
BUILD



Trips



2015
NO BUILD



Montano / Winterhaven

Montano Access Daskalos
Projected Turning Movements SUMMARY
PROPOSED DEVELOPMENT (2015) - 100% Development
Case "Y"

INTERSECTION: Summary

Montano / Coors

(1)

3.0% Truck

Existing (2011)
 2015 (NO BUILD - A.M.)
 2015 (BUILD - A.M.)

0.88 Eastbound (Montano)			0.76 Westbound (Montano)			0.88 Northbound (Coors)			0.90 Southbound (Coors)			PHF
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
235	1,111	301	230	216	148	266	1,185	656	622	1,312	11	
239	1,129	306	230	216	148	320	1,427	790	622	1,312	11	
239	1,235	381	239	216	148	487	1,551	790	667	1,366	11	

Existing (2011)

2015 (NO BUILD - P.M.)
 2015 (BUILD - P.M.)

0.91 Eastbound (Montano)			0.93 Westbound (Montano)			0.96 Northbound (Coors)			0.92 Southbound (Coors)			PHF
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
263	272	358	378	1,051	154	598	1,726	248	314	1,463	65	
267	276	364	378	1,051	154	720	2,080	298	314	1,463	65	
267	470	506	407	1,051	154	1,040	2,257	298	396	1,586	65	

Montano / Winterhaven

(2)

3.0% Truck

Existing (2011)
 2015 (NO BUILD - A.M.)
 2015 (BUILD - A.M.)

0.84 Eastbound (Montano)			0.78 Westbound (Montano)			0.75 Northbound (Winterhaven)			0.75 Southbound (Winterhaven)			PHF
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
44	2,464	28	96	495	28	0	0	69	0	0	42	
44	2,464	28	96	495	28	0	0	69	0	0	42	
44	2,510	53	201	486	28	0	0	158	0	0	42	

Existing (2011)

2015 (NO BUILD - P.M.)
 2015 (BUILD - P.M.)

0.93 Eastbound (Montano)			0.94 Westbound (Montano)			0.75 Northbound (Winterhaven)			0.75 Southbound (Winterhaven)			PHF
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
71	731	14	22	1,424	377	0	0	30	0	0	91	
71	731	14	22	1,424	377	0	0	30	0	0	91	
71	857	34	281	1,380	377	0	0	80	0	0	91	

Montano / Driveway 'A'

(3)

3.0% Truck

Existing (2011)
 2015 (NO BUILD - A.M.)
 2015 (BUILD - A.M.)

0.76 Eastbound (Montano)			0.76 Westbound (Montano)			0.85 Northbound (Driveway 'A')			0.85 Southbound (Driveway 'A')			PHF
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
0	2,351	0	0	594	0	0	0	0	0	0	0	
0	2,351	0	0	594	0	0	0	0	0	0	0	
0	2,326	176	0	585	0	0	0	96	0	0	0	

Existing (2011)

2015 (NO BUILD - P.M.)
 2015 (BUILD - P.M.)

0.93 Eastbound (Montano)			0.93 Westbound (Montano)			0.85 Northbound (Driveway 'A')			0.85 Southbound (Driveway 'A')			PHF
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
0	820	0	0	1,116	0	0	0	0	0	0	0	
0	820	0	0	1,116	0	0	0	0	0	0	0	
0	800	296	0	1,072	0	0	0	166	0	0	0	

Montano Access Daskalos
Projected Turning Movements Worksheet
Montano / Coors

Case "Y"

INTERSECTION: E-W Street: Montano

(1)

N-S Street: Coors

Year of Existing Counts 2010

Horizon Year 2015

Growth Rates

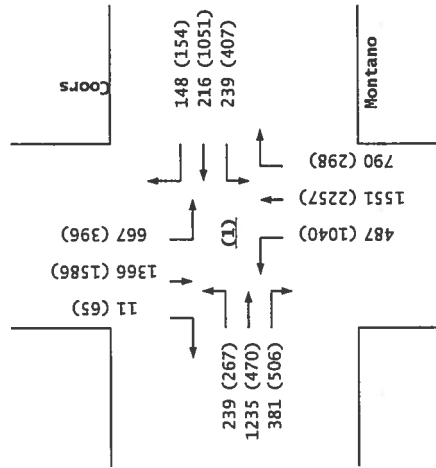
	0.40%			0.00%			5.40%			0.00%		
	Eastbound (Montano)			Westbound (Montano)			Northbound (Coors)			Southbound (Coors)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	234	1,107	300	230	216	148	252	1,124	622	622	1,312	11
Background Traffic Growth	5	22	6	0	0	0	68	303	168	0	0	0
Subtotal (NO BUILD - A.M.)	239	1,129	306	230	216	148	320	1,427	790	622	1,312	11
Percent Residential Trips Generated(Entering)	0.00%	0.00%	3.25%	10.75%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	21.39%	0.00%
Percent Residential Trips Generated(Exiting)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.25%	21.39%	0.00%	0.00%	0.00%	0.00%
Percent Commercial Trips Generated(Entering)	0.00%	23.00%	16.06%	1.00%	0.00%	0.00%	0.00%	0.00%	0.00%	9.70%	9.70%	0.00%
Percent Commercial Trips Generated(Exiting)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	39.06%	19.40%	0.00%	0.00%	0.00%	0.00%
Total Trips Generated	0	106	75	9	0	0	167	124	0	45	54	0
Total AM Peak Hour BUILD Volumes	239	1,235	381	239	216	148	487	1,551	790	667	1,366	11

	Eastbound (Montano)			Westbound (Montano)			Northbound (Coors)			Southbound (Coors)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	262	271	357	378	1,051	154	567	1,638	235	314	1,463	65
Background Traffic Growth	5	5	7	0	0	0	153	442	63	0	0	0
Subtotal (NO BUILD - P.M.)	267	276	364	378	1,051	154	720	2,080	298	314	1,463	65
Percent Residential Trips Generated(Entering)	0.00%	0.00%	3.25%	10.75%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	21.39%	0.00%
Percent Residential Trips Generated(Exiting)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.25%	21.39%	0.00%	0.00%	0.00%	0.00%
Percent Commercial Trips Generated(Entering)	0.00%	23.00%	16.06%	1.00%	0.00%	0.00%	0.00%	0.00%	0.00%	9.70%	9.70%	0.00%
Percent Commercial Trips Generated(Exiting)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	39.06%	19.40%	0.00%	0.00%	0.00%	0.00%
Total Trips Generated	0	194	142	29	0	0	320	177	0	82	123	0
Total PM Peak Hour BUILD Volumes	267	470	506	407	1,051	154	1,040	2,257	298	396	1,586	65

	Entering	Exiting	
Number of Residential Trips Generated	40	211	A.M. 100% Residential Development
	194	95	P.M.
Number of Commercial Trips Generated	462	409	A.M. 100% Commercial Development
	844	811	P.M.

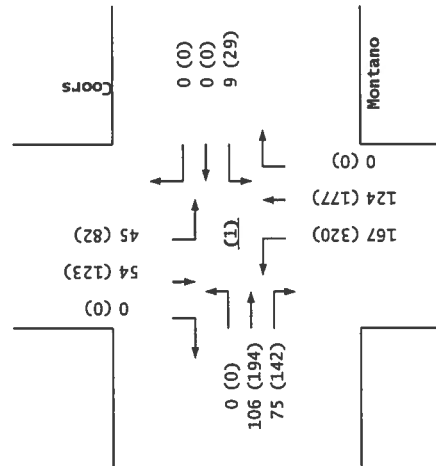
	Eastbound (Montano)			Westbound (Montano)			Northbound (Coors)			Southbound (Coors)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2011 AM Peak Hr. Volumes	235	1111	301	230	216	148	266	1,185	656	622	1,312	11
2011 PM Peak Hr. Volumes	263	272	358	378	1,051	154	598	1,726	248	314	1,463	65

2015
BUILD



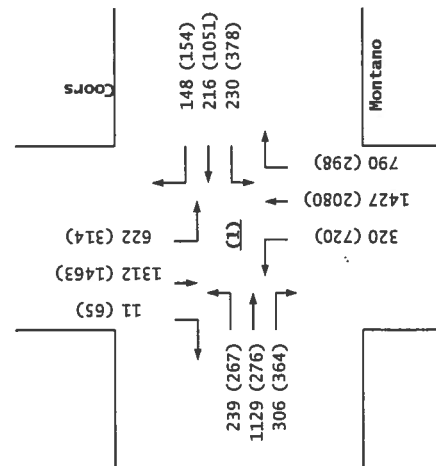
Trips

Case "Y"



Montano / Coors

2015
NO BUILD



Montano Access Daskalos
Projected Turning Movements Worksheet
Montano / Winterhaven

Case "Y"

INTERSECTION: E-W Street: Montano (2)

N-S Street: Winterhaven

Year of Existing Counts 2010

Horizon Year 2015

Growth Rates

	0.00%			0.00%			0.00%			0.00%		
	Eastbound (Montano)			Westbound (Montano)			Northbound (Winterhaven)			Southbound (Winterhaven)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	44	2,464	28	96	495	28	0	0	69	0	0	42
Background Traffic Growth	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal (NO BUILD - A.M.)	44	2,464	28	96	495	28	0	0	69	0	0	42
Percent Residential Trips Generated(Entering)	0.00%	0.00%	0.00%	21.00%	10.75%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Percent Residential Trips Generated(Exiting)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	31.75%	0.00%	0.00%	0.00%
Percent Commercial Trips Generated(Entering)	0.00%	0.00%	0.00%	17.15%	1.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Percent Commercial Trips Generated(Exiting)	0.00%	18.15%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Total Trips Generated	0	74	0	87	9	0	0	0	67	0	0	0
Subtotal AM Pk Hr. BUILD Volumes	44	2,538	28	183	504	28	0	0	136	0	0	42
Pass-by Trip Adjustments	0	-28	25	18	-18	0	0	0	22	0	0	0
Total AM Peak Hour BUILD Volumes	44	2,510	53	201	486	28	0	0	158	0	0	42

	Eastbound (Montano)			Westbound (Montano)			Northbound (Winterhaven)			Southbound (Winterhaven)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	71	731	14	22	1,424	377	0	0	30	0	0	91
Background Traffic Growth	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal (NO BUILD - P.M.)	71	731	14	22	1,424	377	0	0	30	0	0	91
Percent Residential Trips Generated(Entering)	0.00%	0.00%	0.00%	21.00%	10.75%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Percent Residential Trips Generated(Exiting)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	31.75%	0.00%	0.00%	0.00%
Percent Commercial Trips Generated(Entering)	0.00%	0.00%	0.00%	17.15%	1.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Percent Commercial Trips Generated(Exiting)	0.00%	18.15%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Total Trips Generated	0	147	0	186	29	0	0	0	30	0	0	0
Subtotal PM Pk Hr. BUILD Volumes	71	878	14	208	1,453	377	0	0	60	0	0	91
Pass-by Trip Adjustments	0	-21	20	73	-73	0	0	0	20	0	0	0
Total PM Peak Hour BUILD Volumes	71	857	34	281	1,380	377	0	0	80	0	0	91

	Entering	Exiting		
Number of Residential Trips Generated	40	211	A.M.	100% Residential Development
	194	95	P.M.	
Number of Commercial Trips Generated	462	409	A.M.	100% Commercial Development
	844	811	P.M.	

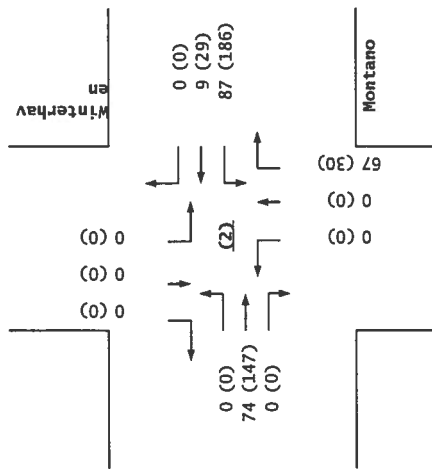
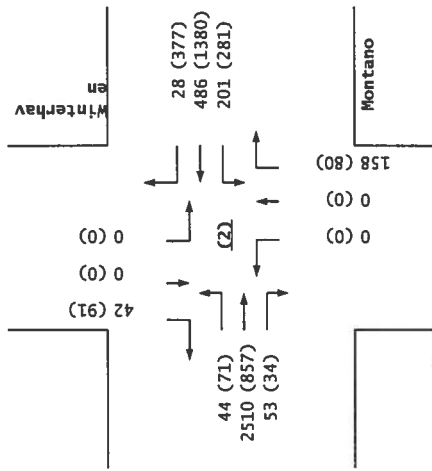
	Eastbound (Montano)			Westbound (Montano)			Northbound (Winterhaven)			Southbound (Winterhaven)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2011 AM Peak Hr. Volumes	44	2464	28	96	495	28	0	0	69	0	0	42
2011 PM Peak Hr. Volumes	71	731	14	22	1,424	377	0	0	30	0	0	91

2015
BUILD

Trips

Case "Y"

2015
NO BUILD



Montano / Winterhaven

Montano Access Daskalos
Projected Turning Movements Worksheet
Montano / Driveway 'A'

Case "Y"

INTERSECTION : E-W Street: Montano
 N-S Street: Driveway 'A'

(3)

There are no residential exiting trips for this drive

Year of Existing Counts 2010
 Horizon Year 2015

Growth Rates

	0.00%			0.00%			0.00%			0.00%		
	Eastbound (Montano)			Westbound (Montano)			Northbound (Driveway 'A')			Southbound (Driveway 'A')		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	0	2,351	0	0	594	0	0	0	0	0	0	0
Background Traffic Growth	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal (NO BUILD - A.M.)	0	2,351	0	0	594	0	0	0	0	0	0	0
Percent Residential Trips Generated(Entering)	0.00%	0.00%	0.00%	0.00%	10.75%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Percent Residential Trips Generated(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%
Percent Commercial Trips Generated(Entering)	0.00%	0.00%	32.70%	0.00%	1.00%	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%	0.00%	0.00%	0.00%	0.00%	18.15%	0.00%	0.00%	0.00%
Total Trips Generated	0	0	151	0	9	0	0	0	74	0	0	0
Subtotal AM Pk Hr. BUILD Volumes	0	2,351	151	0	603	0	0	0	74	0	0	0
Pass-by Trip Adjustments	0	-25	25	0	-18	0	0	0	22	0	0	0
Total AM Peak Hour BUILD Volumes	0	2,326	176	0	585	0	0	0	96	0	0	0

	Eastbound (Montano)			Westbound (Montano)			Northbound (Driveway 'A')			Southbound (Driveway 'A')		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	0	820	0	0	1,116	0	0	0	0	0	0	0
Background Traffic Growth	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal (NO BUILD - P.M.)	0	820	0	0	1,116	0	0	0	0	0	0	0
Percent Residential Trips Generated(Entering)	0.00%	0.00%	0.00%	0.00%	10.75%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Percent Residential Trips Generated(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%
Percent Commercial Trips Generated(Entering)	0.00%	0.00%	32.70%	0.00%	1.00%	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%	0.00%	0.00%	0.00%	0.00%	18.15%	0.00%	0.00%	0.00%
Total Trips Generated	0	0	276	0	29	0	0	0	147	0	0	0
Subtotal PM Pk Hr. BUILD Volumes	0	820	276	0	1,145	0	0	0	147	0	0	0
Pass-by Trip Adjustments	0	-20	20	0	-73	0	0	0	19	0	0	0
Total PM Peak Hour BUILD Volumes	0	800	296	0	1,072	0	0	0	166	0	0	0

	Entering	Exiting	
Number of Residential Trips Generated	40	211	A.M. 100% Residential Development
	194	95	P.M.
Number of Commercial Trips Generated	462	409	A.M. 100% Commercial Development
	844	811	P.M.

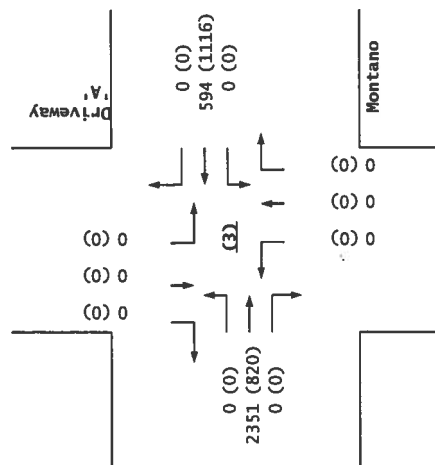
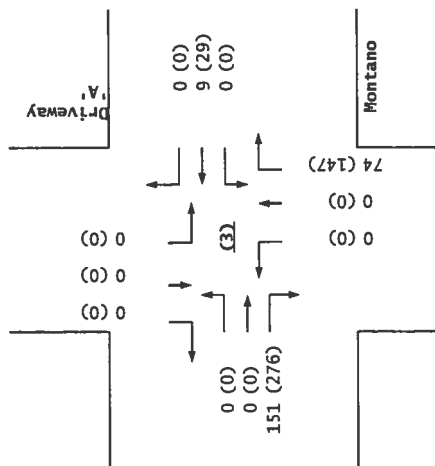
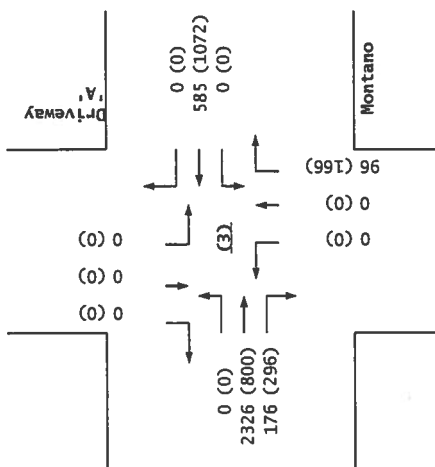
	Eastbound (Montano)			Westbound (Montano)			Northbound (Driveway 'A')			Southbound (Driveway 'A')		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2011 AM Peak Hr. Volumes	0	2351	0	0	594	0	0	0	0	0	0	0
2011 PM Peak Hr. Volumes	0	820	0	0	1,116	0	0	0	0	0	0	0

2015
BUILD

Trips

Case "Y"

2015
NO BUILD



Montano / Driveway 'A'

Montano Access Daskalos
 Projected Turning Movements SUMMARY
PROPOSED DEVELOPMENT (2030) - 100% Development
 Case "N"

INTERSECTION: Summary

Montano / Coors

(1) 3.0% Truck
 Existing (2011)
 2030 (NO BUILD - A.M.)
 2030 (BUILD - A.M.)

0.88			0.76			0.88			0.90			PHF
Eastbound (Montano)			Westbound (Montano)			Northbound (Coors)			Southbound (Coors)			
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
237	1,121	304	242	227	156	252	1,126	623	635	1,339	11	
292	1,380	374	465	436	299	261	1,162	643	882	1,861	16	
292	1,486	449	474	436	299	428	1,286	643	927	1,915	16	

Existing (2011)
 2030 (NO BUILD - P.M.)
 2030 (BUILD - P.M.)

0.91			0.93			0.96			0.92			PHF
Eastbound (Montano)			Westbound (Montano)			Northbound (Coors)			Southbound (Coors)			
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
269	278	366	378	1,051	154	579	1,673	240	319	1,487	66	
401	415	547	378	1,051	154	812	2,345	336	416	1,936	86	
401	609	689	407	1,051	154	1,132	2,522	336	498	2,059	86	

Montano / Winterhaven

(2) 3.0% Truck
 Existing (2011)
 2030 (NO BUILD - A.M.)
 2030 (BUILD - A.M.)

0.84			0.78			0.75			0.75			PHF
Eastbound (Montano)			Westbound (Montano)			Northbound (Winterhaven)			Southbound (Winterhaven)			
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
44	2,489	28	101	520	29	0	0	69	0	0	42	
53	2,957	34	194	1,000	57	0	0	69	0	0	42	
53	2,907	234	299	991	57	0	0	254	0	0	42	

Existing (2011)
 2030 (NO BUILD - P.M.)
 2030 (BUILD - P.M.)

0.93			0.94			0.75			0.75			PHF
Eastbound (Montano)			Westbound (Montano)			Northbound (Winterhaven)			Southbound (Winterhaven)			
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
72	746	14	22	1,424	377	0	0	30	0	0	91	
99	1,023	20	22	1,424	377	0	0	30	0	0	91	
99	983	334	281	1,380	377	0	0	246	0	0	91	

Montano Access Daskalos
Projected Turning Movements Worksheet
Montano / Coors

INTERSECTION : E-W Street: **Montano** (1)
 N-S Street: **Coors**
 Year of Existing Counts: **2010**
 Horizon Year: **2030**

	1.23%			5.10%			0.17%			2.09%		
	Eastbound (Montano)			Westbound (Montano)			Northbound (Coors)			Southbound (Coors)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	234	1,107	300	230	216	148	252	1,124	622	622	1,312	11
Background Traffic Growth	58	273	74	235	220	151	9	38	21	260	549	5
Subtotal (NO BUILD - A.M.)	292	1,380	374	465	436	299	261	1,162	643	882	1,861	16
Percent Residential Trips Generated(Entering)	0.00%	0.00%	3.25%	10.75%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	21.39%	0.00%
Percent Residential Trips Generated(Exiting)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.25%	21.39%	0.00%	0.00%	0.00%	0.00%
Percent Commercial Trips Generated(Entering)	0.00%	23.00%	16.06%	1.00%	0.00%	0.00%	0.00%	0.00%	0.00%	9.70%	9.70%	0.00%
Percent Commercial Trips Generated(Exiting)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	39.06%	19.40%	0.00%	0.00%	0.00%	0.00%
Total Trips Generated	0	106	75	9	0	0	167	124	0	45	54	0
Total AM Peak Hour BUILD Volumes	292	1,486	449	474	436	299	428	1,286	643	927	1,915	16

	2.66%			0.00%			2.16%			1.62%		
	Eastbound (Montano)			Westbound (Montano)			Northbound (Coors)			Southbound (Coors)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	262	271	357	378	1,051	154	567	1,638	235	314	1,463	65
Background Traffic Growth	139	144	190	0	0	0	245	707	101	102	473	21
Subtotal (NO BUILD - P.M.)	401	415	547	378	1,051	154	812	2,345	336	416	1,936	86
Percent Residential Trips Generated(Entering)	0.00%	0.00%	3.25%	10.75%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	21.39%	0.00%
Percent Residential Trips Generated(Exiting)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.25%	21.39%	0.00%	0.00%	0.00%	0.00%
Percent Commercial Trips Generated(Entering)	0.00%	23.00%	16.06%	1.00%	0.00%	0.00%	0.00%	0.00%	0.00%	9.70%	9.70%	0.00%
Percent Commercial Trips Generated(Exiting)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	39.06%	19.40%	0.00%	0.00%	0.00%	0.00%
Total Trips Generated	0	194	142	29	0	0	320	177	0	82	123	0
Total PM Peak Hour BUILD Volumes	401	609	689	407	1,051	154	1,132	2,522	336	498	2,059	86

	Entering	Exiting	
Number of Residential Trips Generated	40	211	A.M. 100% Residential Development
	194	95	P.M.
Number of Commercial Trips Generated	462	409	A.M. 100% Commercial Development
	844	811	P.M.

	Eastbound (Montano)			Westbound (Montano)			Northbound (Coors)			Southbound (Coors)		
2011 AM Peak Hr. Volumes	237	1,121	304	242	227	156	252	1,126	623	635	1,339	11
2011 PM Peak Hr. Volumes	269	278	366	378	1,051	154	579	1,673	240	319	1,487	66

MRCOG Forecast Volumes Worksheet

Based on 2010 Traffic Count

2010 AM Link Volume	1,641	594	1,998	1,945
2010 PM Link Volume	890	1,583	2,440	1,842

Based on MRCOG Model (2030 Data Set)

2004 AM Link Volume	1392	592	1884	1400
2004 PM Link Volume	1061	1208	2300	1884
2030 AM Link Volume	2045	1200	2086	2759
2030 PM Link Volume	1363	1566	3493	2438

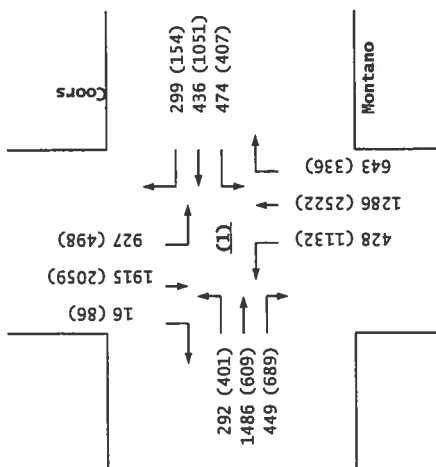
Growth Rate to Apply to Existing Counts to Match 2030 Forecasts

2010-2030 AM Growth Rates	1.23%	5.10%	0.17%	2.09%
2010-2030 PM Growth Rates	2.66%	-0.05%	2.16%	1.62%

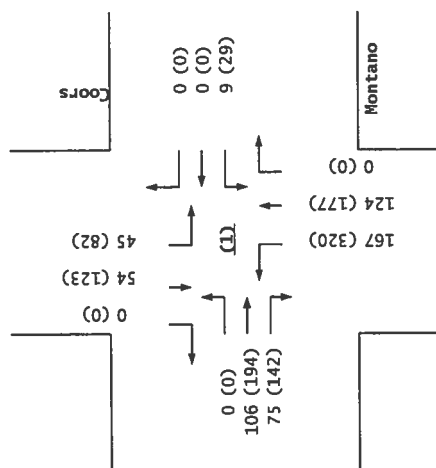
Growth Rate to Apply to 2004 Model Volumes to Match 2025 Forecasts

2004-2030 AM Growth Rates	1.80%	3.95%	0.37%	3.73%
2004-2030 PM Growth Rates	1.09%	1.14%	1.99%	1.13%

2030
BUILD

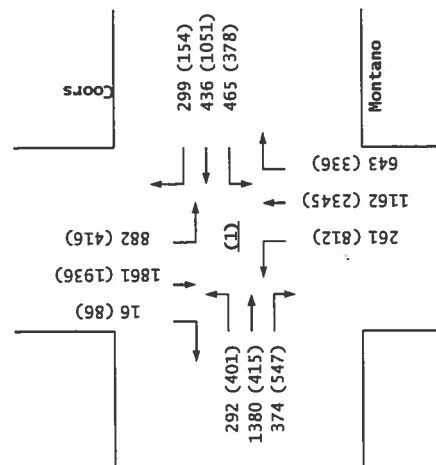


Trips



Montano / Coors

2030
NO BUILD



Montano Access Daskalos
Projected Turning Movements Worksheet
Montano / Winterhaven

INTERSECTION : E-W Street: **Montano** (2)
 N-S Street: **Winterhaven**
 Year of Existing Counts: **2010**
 Horizon Year: **2030**
 Growth Rates

	1.00%			5.10%			0.00%			0.00%		
	Eastbound (Montano)			Westbound (Montano)			Northbound (Winterhaven)			Southbound (Winterhaven)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	44	2,464	28	96	495	28	0	0	69	0	0	42
Background Traffic Growth	9	493	6	98	505	29	0	0	0	0	0	0
Subtotal (NO BUILD - A.M.)	53	2,957	34	194	1,000	57	0	0	69	0	0	42
Percent Residential Trips Generated(Entering)	0.00%	0.00%	0.00%	21.00%	10.75%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Percent Residential Trips Generated(Exiting)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	31.75%	0.00%	0.00%	0.00%
Percent Commercial Trips Generated(Entering)	0.00%	0.00%	32.45%	17.15%	1.00%	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%	0.00%	0.00%	0.00%	0.00%	18.15%	0.00%	0.00%	0.00%
Total Trips Generated	0	0	150	87	9	0	0	0	141	0	0	0
Subtotal AM Pk Hr. BUILD Volumes	53	2,957	184	281	1,009	57	0	0	210	0	0	42
Pass-by Trip Adjustments	0	-50	50	18	-18	0	0	0	44	0	0	0
Total AM Peak Hour BUILD Volumes	53	2,907	234	299	991	57	0	0	254	0	0	42

	2.00%			0.00%			0.00%			0.00%		
	Eastbound (Montano)			Westbound (Montano)			Northbound (Winterhaven)			Southbound (Winterhaven)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	71	731	14	22	1,424	377	0	0	30	0	0	91
Background Traffic Growth	28	292	6	0	0	0	0	0	0	0	0	0
Subtotal (NO BUILD - P.M.)	99	1,023	20	22	1,424	377	0	0	30	0	0	91
Percent Residential Trips Generated(Entering)	0.00%	0.00%	0.00%	21.00%	10.75%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Percent Residential Trips Generated(Exiting)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	31.75%	0.00%	0.00%	0.00%
Percent Commercial Trips Generated(Entering)	0.00%	0.00%	32.45%	17.15%	1.00%	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%	0.00%	0.00%	0.00%	0.00%	18.15%	0.00%	0.00%	0.00%
Total Trips Generated	0	0	274	186	29	0	0	0	177	0	0	0
Subtotal PM Pk Hr. BUILD Volumes	99	1,023	294	208	1,453	377	0	0	207	0	0	91
Pass-by Trip Adjustments	0	-40	40	73	-73	0	0	0	39	0	0	0
Total PM Peak Hour BUILD Volumes	99	983	334	281	1,380	377	0	0	246	0	0	91

	Entering	Exiting		
Number of Residential Trips Generated	40	211	A.M.	100% Residential Development
	194	95	P.M.	
Number of Commercial Trips Generated	462	409	A.M.	100% Commercial Development
	844	811	P.M.	

	Eastbound (Montano)			Westbound (Montano)			Northbound (Winterhaven)			Southbound (Winterhaven)		
2011 AM Peak Hr. Volumes	44	2489	28	101	520	29	0	0	69	0	0	42
2011 PM Peak Hr. Volumes	72	746	14	22	1,424	377	0	0	30	0	0	91

MRCOG Forecast Volumes Worksheet

Based on 2010 Traffic Count

2010 AM Link Volume	2,536	619	69	42
2010 PM Link Volume	816	1,823	30	91

Based on MRCOG Model (2030 Data Set)

2004 AM Link Volume	370	327	1248	1049
2004 PM Link Volume	313	1024	1058	1246
2030 AM Link Volume	1468	848	1609	777
2030 PM Link Volume	923	1753	1389	1534

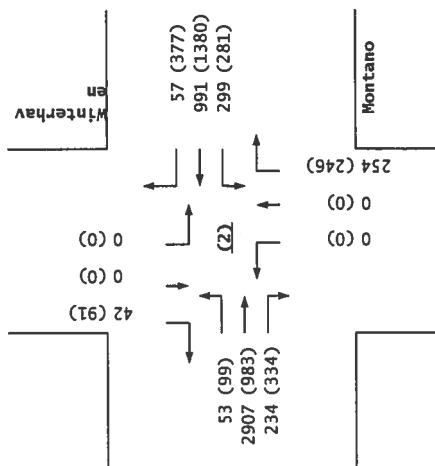
Growth Rate to Apply to Existing Counts to Match 2030 Forecasts

2010-2030 AM Growth Rates	-2.11%	1.85%	111.59%	87.50%
2010-2030 PM Growth Rates	0.66%	-0.19%	226.50%	79.29%

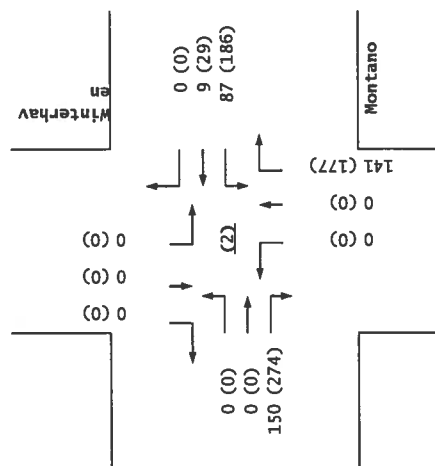
Growth Rate to Apply to 2004 Model Volumes to Match 2025 Forecasts

2004-2030 AM Growth Rates	11.41%	6.13%	1.11%	-1.00%
2004-2030 PM Growth Rates	7.50%	2.74%	1.20%	0.89%

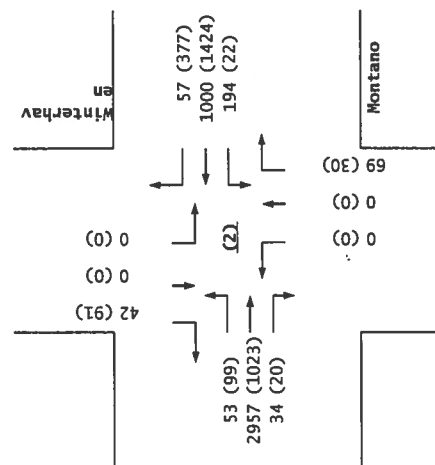
2030
BUILD



Trips



2030
NO BUILD



Montano / Winterhaven

Montano Access Daskalos
 Projected Turning Movements SUMMARY
PROPOSED DEVELOPMENT (2030) - 100% Development

Case "Y"

INTERSECTION: Summary

Montano / Coors

(1)
 3.0% Truck
 Existing (2011)
 2030 (NO BUILD - A.M.)
 2030 (BUILD - A.M.)

0.88			0.76			0.88			0.90			PHF
Eastbound (Montano)			Westbound (Montano)			Northbound (Coors)			Southbound (Coors)			
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
237	1,121	304	242	227	156	252	1,126	623	635	1,339	11	
292	1,380	374	465	436	299	261	1,162	643	882	1,861	16	
292	1,486	449	474	436	299	428	1,286	643	927	1,915	16	

Existing (2011)
 2030 (NO BUILD - P.M.)
 2030 (BUILD - P.M.)

0.91			0.93			0.96			0.92			PHF
Eastbound (Montano)			Westbound (Montano)			Northbound (Coors)			Southbound (Coors)			
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
269	278	366	378	1,051	154	579	1,673	240	319	1,487	66	
401	415	547	378	1,051	154	812	2,345	336	416	1,936	86	
401	609	689	407	1,051	154	1,132	2,522	336	498	2,059	86	

Montano / Winterhaven

(2)
 3.0% Truck
 Existing (2011)
 2030 (NO BUILD - A.M.)
 2030 (BUILD - A.M.)

0.84			0.78			0.75			0.75			PHF
Eastbound (Montano)			Westbound (Montano)			Northbound (Winterhaven)			Southbound (Winterhaven)			
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
44	2,489	28	101	520	29	0	0	69	0	0	42	
53	2,957	34	194	1,000	57	0	0	69	0	0	42	
53	3,003	59	299	991	57	0	0	158	0	0	42	

Existing (2011)
 2030 (NO BUILD - P.M.)
 2030 (BUILD - P.M.)

0.93			0.94			0.75			0.75			PHF
Eastbound (Montano)			Westbound (Montano)			Northbound (Winterhaven)			Southbound (Winterhaven)			
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
72	746	14	22	1,424	377	0	0	30	0	0	91	
99	1,023	20	22	1,424	377	0	0	30	0	0	91	
99	1,149	40	281	1,380	377	0	0	80	0	0	91	

Montano / Driveway 'A'

(3)
 3.0% Truck
 Existing (2011)
 2030 (NO BUILD - A.M.)
 2030 (BUILD - A.M.)

0.76			0.76			0.85			0.85			PHF
Eastbound (Montano)			Westbound (Montano)			Northbound (Driveway 'A')			Southbound (Driveway 'A')			
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
0	2,375	0	0	624	0	0	0	0	0	0	0	
0	2,821	0	0	1,200	0	0	0	0	0	0	0	
0	2,796	176	0	1,191	0	0	0	96	0	0	0	

Existing (2011)
 2030 (NO BUILD - P.M.)
 2030 (BUILD - P.M.)

0.93			0.93			0.85			0.85			PHF
Eastbound (Montano)			Westbound (Montano)			Northbound (Driveway 'A')			Southbound (Driveway 'A')			
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
0	836	0	0	1,116	0	0	0	0	0	0	0	
0	1,148	0	0	1,116	0	0	0	0	0	0	0	
0	1,128	296	0	1,072	0	0	0	166	0	0	0	

Montano Access Daskalos
Projected Turning Movements Worksheet
Montano / Coors

INTERSECTION: E-W Street: Montano
N-S Street: Coors

(1)

Year of Existing Counts 2010
Horizon Year 2030

Growth Rates

	1.23%			5.10%			0.17%			2.09%		
	Eastbound (Montano)			Westbound (Montano)			Northbound (Coors)			Southbound (Coors)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	234	1,107	300	230	216	148	252	1,124	622	622	1,312	11
Background Traffic Growth	58	273	74	235	220	151	9	38	21	260	549	5
Subtotal (NO BUILD - A.M.)	292	1,380	374	465	436	299	261	1,162	643	882	1,861	16
Percent Residential Trips Generated(Entering)	0.00%	0.00%	3.25%	10.75%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	21.39%	0.00%
Percent Residential Trips Generated(Exiting)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.25%	21.39%	0.00%	0.00%	0.00%	0.00%
Percent Commercial Trips Generated(Entering)	0.00%	23.00%	16.06%	1.00%	0.00%	0.00%	0.00%	0.00%	0.00%	9.70%	9.70%	0.00%
Percent Commercial Trips Generated(Exiting)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	39.06%	19.40%	0.00%	0.00%	0.00%	0.00%
Total Trips Generated	0	106	75	9	0	0	167	124	0	45	54	0
Total AM Peak Hour BUILD Volumes	292	1,486	449	474	436	299	428	1,286	643	927	1,915	16

	2.66%			0.00%			2.16%			1.62%		
	Eastbound (Montano)			Westbound (Montano)			Northbound (Coors)			Southbound (Coors)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	262	271	357	378	1,051	154	567	1,638	235	314	1,463	65
Background Traffic Growth	139	144	190	0	0	0	245	707	101	102	473	21
Subtotal (NO BUILD - P.M.)	401	415	547	378	1,051	154	812	2,345	336	416	1,936	86
Percent Residential Trips Generated(Entering)	0.00%	0.00%	3.25%	10.75%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	21.39%	0.00%
Percent Residential Trips Generated(Exiting)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.25%	21.39%	0.00%	0.00%	0.00%	0.00%
Percent Commercial Trips Generated(Entering)	0.00%	23.00%	16.06%	1.00%	0.00%	0.00%	0.00%	0.00%	0.00%	9.70%	9.70%	0.00%
Percent Commercial Trips Generated(Exiting)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	39.06%	19.40%	0.00%	0.00%	0.00%	0.00%
Total Trips Generated	0	194	142	29	0	0	320	177	0	82	123	0
Total PM Peak Hour BUILD Volumes	401	609	689	407	1,051	154	1,132	2,522	336	498	2,059	86

	Entering	Exiting	
Number of Residential Trips Generated	40	211	A.M. 100% Residential Development
	194	95	P.M.
Number of Commercial Trips Generated	462	409	A.M. 100% Commercial Development
	844	811	P.M.

	Eastbound (Montano)			Westbound (Montano)			Northbound (Coors)			Southbound (Coors)		
2011 AM Peak Hr. Volumes	237	1121	304	242	227	156	252	1,126	623	635	1,339	11
2011 PM Peak Hr. Volumes	269	278	366	378	1,051	154	579	1,673	240	319	1,487	66

MRCOG Forecast Volumes Worksheet**Based on 2010 Traffic Count**

2010 AM Link Volume	1,841	594	1,998	1,945
2010 PM Link Volume	890	1,583	2,440	1,842

Based on MRCOG Model (2030 Data Set)

2004 AM Link Volume	1392	592	1884	1400
2004 PM Link Volume	1061	1208	2300	1884
2030 AM Link Volume	2045	1200	2066	2759
2030 PM Link Volume	1363	1566	3493	2438

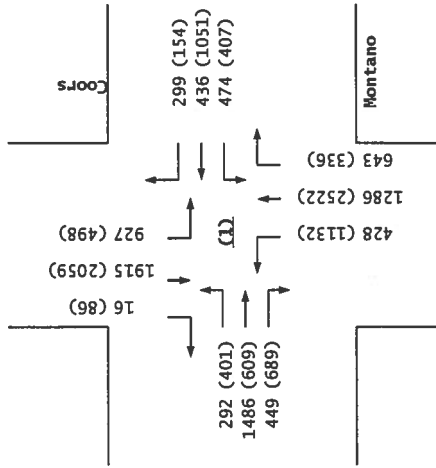
Growth Rate to Apply to Existing Counts to Match 2030 Forecasts

2010-2030 AM Growth Rates	1.23%	5.10%	0.17%	2.09%
2010-2030 PM Growth Rates	2.66%	-0.05%	2.16%	1.62%

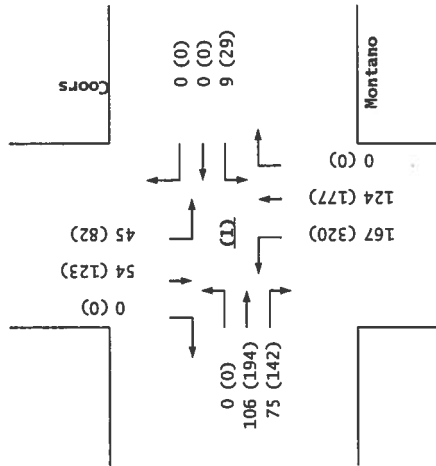
Growth Rate to Apply to 2004 Model Volumes to Match 2030 Forecasts

2004-2030 AM Growth Rates	1.80%	3.95%	0.37%	3.73%
2004-2030 PM Growth Rates	1.09%	1.14%	1.99%	1.13%

2030
BUILD

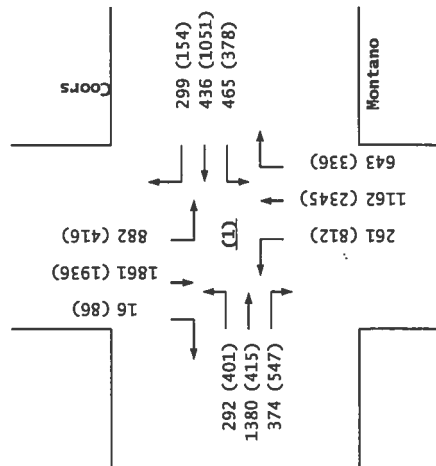


Trips



Montano / Coors

2030
NO BUILD



Montano Access Daskalos
Projected Turning Movements Worksheet
Montano / Winterhaven

INTERSECTION : E-W Street: Montano (2)
N-S Street: Winterhaven
Year of Existing Counts: 2010
Horizon Year: 2030
Growth Rates:

	1.00%			5.10%			0.00%			0.00%		
	Eastbound (Montano)			Westbound (Montano)			Northbound (Winterhaven)			Southbound (Winterhaven)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	44	2,484	28	96	495	28	0	0	69	0	0	42
Background Traffic Growth	9	493	6	98	505	29	0	0	0	0	0	0
Subtotal (NO BUILD - A.M.)	53	2,957	34	194	1,000	57	0	0	69	0	0	42
Percent Residential Trips Generated(Entering)	0.00%	0.00%	0.00%	21.00%	10.75%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Percent Residential Trips Generated(Exiting)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	31.75%	0.00%	0.00%	0.00%
Percent Commercial Trips Generated(Entering)	0.00%	0.00%	0.00%	17.15%	1.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Percent Commercial Trips Generated(Exiting)	0.00%	18.15%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Total Trips Generated	0	74	0	87	9	0	0	0	67	0	0	0
Subtotal AM Pk Hr. BUILD Volumes	53	3,031	34	281	1,009	57	0	0	136	0	0	42
Pass-by Trip Adjustments	0	-28	25	18	-18	0	0	0	22	0	0	0
Total AM Peak Hour BUILD Volumes	53	3,003	59	299	991	57	0	0	158	0	0	42

	2.00%			0.00%			0.00%			0.00%		
	Eastbound (Montano)			Westbound (Montano)			Northbound (Winterhaven)			Southbound (Winterhaven)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	71	731	14	22	1,424	377	0	0	30	0	0	91
Background Traffic Growth	28	292	6	0	0	0	0	0	0	0	0	0
Subtotal (NO BUILD - P.M.)	99	1,023	20	22	1,424	377	0	0	30	0	0	91
Percent Residential Trips Generated(Entering)	0.00%	0.00%	0.00%	21.00%	10.75%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Percent Residential Trips Generated(Exiting)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	31.75%	0.00%	0.00%	0.00%
Percent Commercial Trips Generated(Entering)	0.00%	0.00%	0.00%	17.15%	1.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Percent Commercial Trips Generated(Exiting)	0.00%	18.15%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Total Trips Generated	0	147	0	186	29	0	0	0	30	0	0	0
Subtotal PM Pk Hr. BUILD Volumes	99	1,170	20	208	1,453	377	0	0	60	0	0	91
Pass-by Trip Adjustments	0	-21	20	73	-73	0	0	0	20	0	0	0
Total PM Peak Hour BUILD Volumes	99	1,149	40	281	1,380	377	0	0	80	0	0	91

Number of Residential Trips Generated: 40 Entering, 211 Exiting A.M. 100% Residential Development
194 Entering, 95 Exiting P.M.
Number of Commercial Trips Generated: 462 Entering, 409 Exiting A.M. 100% Commercial Development
844 Entering, 811 Exiting P.M.

	Eastbound (Montano)			Westbound (Montano)			Northbound (Winterhaven)			Southbound (Winterhaven)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2011 AM Peak Hr. Volumes	44	2,489	28	101	520	29	0	0	69	0	0	42
2011 PM Peak Hr. Volumes	72	746	14	22	1,424	377	0	0	30	0	0	91

MRCOG Forecast Volumes Worksheet

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Growth Rate to Apply to Existing Counts to Match 2030 Forecasts

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Growth Rate to Apply to 2004 Model Volumes to Match 2025 Forecasts

2004-2030 AM Growth Rates	11.41%	8.13%	1.11%	-1.00%
2004-2030 PM Growth Rates	7.50%	2.74%	1.20%	0.89%

Pass-by Trip Calculations:

AM Pass-by Trips

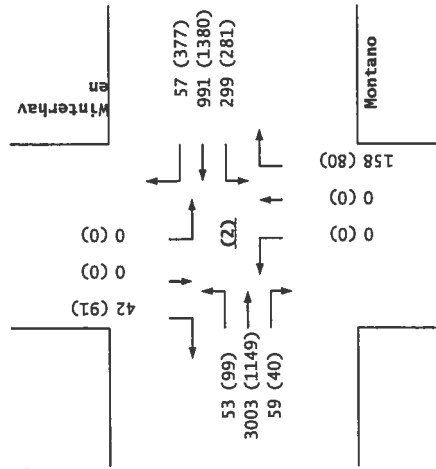
	Eastbound (Montano)			Westbound (Montano)			Northbound (Winterhaven)			Southbound (Winterhaven)		
	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Percent Entering	0	0	0	0	0	0	0	0	0	0	0	0
Volume Entering	0	0	0	0	0	0	0	0	0	0	0	0
Percent Exiting	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	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

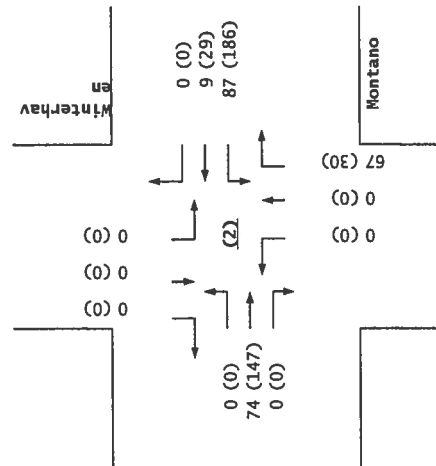
	Eastbound (Montano)			Westbound (Montano)			Northbound (Winterhaven)			Southbound (Winterhaven)		
	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Percent Entering	0	0	0	0	0	0	0	0	0	0	0	0
Volume Entering	0	0	0	0	0	0	0	0	0	0	0	0
Percent Exiting	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	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 PM Passby Trips	0	0	0	0	0	0	0	0	0	0	0	0

Pass-by Trips: Entering 0, Exiting 0 AM, 0 PM

2030
BUILD

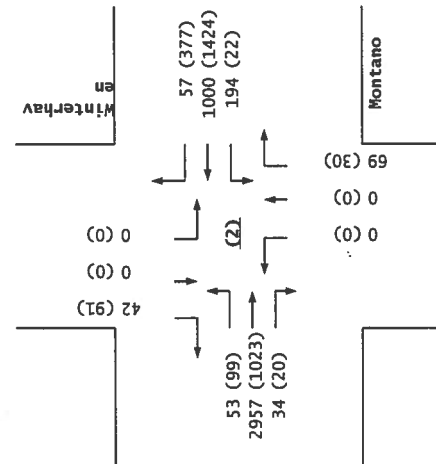


Trips



Montano / Winterhaven

2030
NO BUILD



Montano Access Daskalos
Projected Turning Movements Worksheet
Montano / Driveway 'A'

INTERSECTION : E-W Street: Montano
 N-S Street: Driveway 'A'

(3)

There are no residential exiting trips for this drive

Year of Existing Counts 2010
 Horizon Year 2030

	1.00%			5.10%			0.00%			0.00%		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	0	2,351	0	0	594	0	0	0	0	0	0	0
Background Traffic Growth	0	470	0	0	606	0	0	0	0	0	0	0
Subtotal (NO BUILD - A.M.)	0	2,821	0	0	1,200	0	0	0	0	0	0	0
Percent Residential Trips Generated(Entering)	0.00%	0.00%	0.00%	0.00%	10.75%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Percent Residential Trips Generated(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%
Percent Commercial Trips Generated(Entering)	0.00%	0.00%	32.70%	0.00%	1.00%	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%	0.00%	0.00%	0.00%	0.00%	18.15%	0.00%	0.00%	0.00%
Total Trips Generated	0	0	151	0	9	0	0	0	74	0	0	0
Subtotal AM Pk Hr. BUILD Volumes	0	2,821	151	0	1,209	0	0	0	74	0	0	0
Pass-by Trip Adjustments	0	-25	25	0	-18	0	0	0	22	0	0	0
Total AM Peak Hour BUILD Volumes	0	2,796	176	0	1,191	0	0	0	96	0	0	0

	2.00%			0.00%			0.00%			0.00%		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	0	820	0	0	1,116	0	0	0	0	0	0	0
Background Traffic Growth	0	328	0	0	0	0	0	0	0	0	0	0
Subtotal (NO BUILD - P.M.)	0	1,148	0	0	1,116	0	0	0	0	0	0	0
Percent Residential Trips Generated(Entering)	0.00%	0.00%	0.00%	0.00%	10.75%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Percent Residential Trips Generated(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%
Percent Commercial Trips Generated(Entering)	0.00%	0.00%	32.70%	0.00%	1.00%	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%	0.00%	0.00%	0.00%	0.00%	18.15%	0.00%	0.00%	0.00%
Total Trips Generated	0	0	276	0	29	0	0	0	147	0	0	0
Subtotal PM Pk Hr. BUILD Volumes	0	1,148	276	0	1,145	0	0	0	147	0	0	0
Pass-by Trip Adjustments	0	-20	20	0	-73	0	0	0	19	0	0	0
Total PM Peak Hour BUILD Volumes	0	1,128	296	0	1,072	0	0	0	166	0	0	0

Number of Residential Trips Generated	40	211	A.M.	100% Residential Development
	194	95	P.M.	
Number of Commercial Trips Generated	462	409	A.M.	100% Commercial Development
	844	811	P.M.	

	Eastbound (Montano)			Westbound (Montano)			Northbound (Driveway 'A')			Southbound (Driveway 'A')		
2011 AM Peak Hr. Volumes	0	2375	0	0	624	0	0	0	0	0	0	0
2011 PM Peak Hr. Volumes	0	836	0	0	1,116	0	0	0	0	0	0	0

MRCOG Forecast Volumes Worksheet**Based on 2010 Traffic Count**

2010 AM Link Volume	2,351	594	0	0
2010 PM Link Volume	820	1,116	0	0
Based on MRCOG Model (2030 Data Set)				
2004 AM Link Volume	370	327	1248	1049
2004 PM Link Volume	313	1024	1058	1246
2030 AM Link Volume	1468	848	1609	777
2030 PM Link Volume	923	1753	1389	1534

Growth Rate to Apply to Existing Counts to Match 2030 Forecasts

2010-2030 AM Growth Rates	-1.88%	2.14%	#DIV/0!	#DIV/0!
2010-2030 PM Growth Rates	0.63%	2.85%	#DIV/0!	#DIV/0!

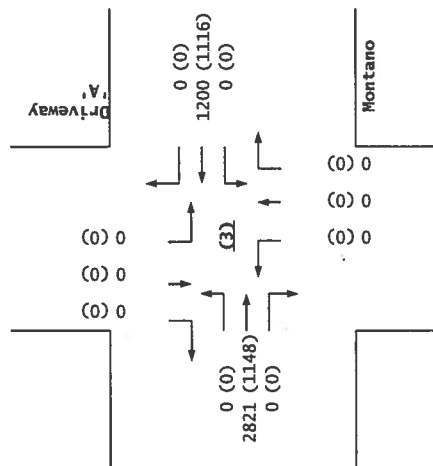
Growth Rate to Apply to 2004 Model Volumes to Match 2025 Forecasts

2004-2030 AM Growth Rates	11.41%	8.13%	1.11%	-1.00%
2004-2030 PM Growth Rates	7.50%	2.74%	1.20%	0.89%

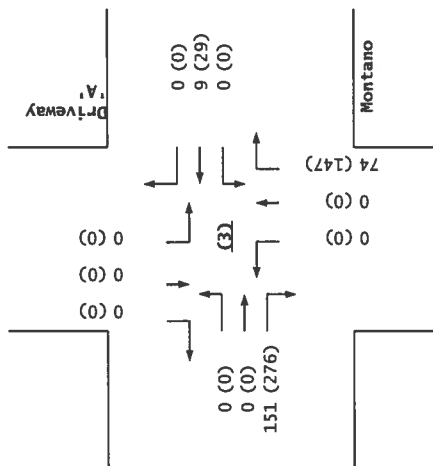
Pass-by Trip Calculations:

	Eastbound (Montano)			Westbound (Montano)			Northbound (Driveway 'A')			Southbound (Driveway 'A')		
	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AM Pass-by Trips	0	0	0	0	0	0	0	0	0	0	0	0
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	0	0	0	0	0	0	0	0	0	0	0	0
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 PM Passby Trips	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

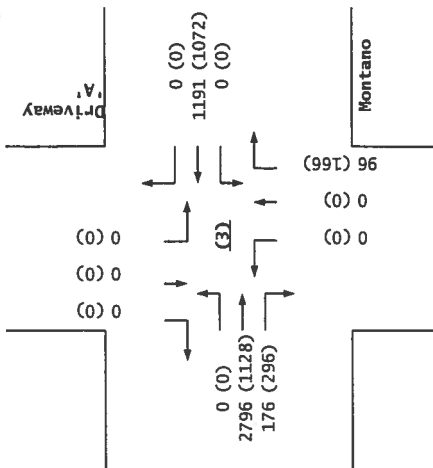
2030
NO BUILD



Trips



2030
BUILD



Montano / Driveway 'A'

Timings
1: Montano Rd & Coors Blvd

Terry O. Brown, PE
4/7/2011

												
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations												
Volume (vph)	239	1235	381	239	216	487	1551	790	667	1366	11	
Turn Type	Prot		pt+ov	Prot		Prot		pt+ov	Prot		pt+ov	
Protected Phases	7	4	4.5	3	8	5	2	2.3	1	6	6.7	
Permitted Phases												
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)	20.0	42.0	65.0	14.0	36.0	23.0	40.0	54.0	24.0	41.0	61.0	
Total Split (%)	16.7%	35.0%	54.2%	11.7%	30.0%	19.2%	33.3%	45.0%	20.0%	34.2%	50.8%	
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	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	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lag		Lead	Lag		
Lead-Lag Optimize?												
Recall Mode	Min	Min		Min	Min	Min	Max		Min	Max		
Act Effect Green (s)	13.8	37.0	60.0	9.0	32.2	18.0	35.0	49.0	19.0	36.0	54.8	
Actuated g/C Ratio	0.12	0.31	0.50	0.08	0.27	0.15	0.29	0.41	0.16	0.30	0.46	
v/c Ratio	0.70	1.30	0.55	1.23	0.49	1.08	1.20	0.80	1.38	1.00	0.02	
Control Delay	61.0	176.2	24.0	179.2	27.9	112.4	134.5	37.4	219.8	66.3	8.2	
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	61.0	176.2	24.0	179.2	27.9	112.4	134.5	37.4	219.8	66.3	8.2	
LOS	E	F	C	F	C	F	F	D	F	E	A	
Approach Delay		130.1			87.8		103.5			116.1		
Approach LOS		F			F		F			F		

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Natural Cycle: 130

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.38

Intersection Signal Delay: 112.1

Intersection LOS: F

Intersection Capacity Utilization 106.6%

ICU Level of Service G

Analysis Period (min) 15

Splits and Phases: 1: Montano Rd & Coors Blvd

			
24 s	40 s	14 s	42 s
			
23 s	41 s	20 s	36 s

2015 AM Peak BUILD Conditions - Case "N"

Existing Geometry
D:\ATOB\PROJECTS\Montano_Access_Daskalos\Synchro\2015ABXCaseN.syn

HCM Signalized Intersection Capacity Analysis 1: Montano Rd & Coors Blvd

Terry O. Brown, PE
4/7/2011

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	239	1235	381	239	216	148	487	1551	790	667	1366	11
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	0.97	0.95	1.00	0.97	0.95		0.97	0.91	0.88	0.97	0.91	1.00
Flt	1.00	1.00	0.85	1.00	0.94		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)	3400	3505	1568	3400	3291		3400	5036	2760	3400	5036	1568
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3400	3505	1568	3400	3291		3400	5036	2760	3400	5036	1568
Peak-hour factor, PHF	0.88	0.88	0.88	0.76	0.76	0.76	0.88	0.88	0.88	0.90	0.90	0.90
Adj. Flow (vph)	272	1403	433	314	284	195	553	1762	898	741	1518	12
RTOR Reduction (vph)	0	0	1	0	101	0	0	0	2	0	0	7
Lane Group Flow (vph)	272	1403	433	314	378	0	553	1762	896	741	1518	5
Turn Type	Prot		pt+ov	Prot			Prot		pt+ov	Prot		pt+ov
Protected Phases	7	4	4 5	3	8		5	2	2 3	1	6	6 7
Permitted Phases												
Actuated Green, G (s)	13.8	37.0	60.0	9.0	32.2		18.0	35.0	49.0	19.0	36.0	54.8
Effective Green, g (s)	13.8	37.0	60.0	9.0	32.2		18.0	35.0	49.0	19.0	36.0	54.8
Actuated g/C Ratio	0.12	0.31	0.50	0.08	0.27		0.15	0.29	0.41	0.16	0.30	0.46
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)	391	1081	784	255	883		510	1469	1127	538	1511	716
v/s Ratio Prot	0.08	c0.40	0.28	c0.09	0.11		0.16	c0.35	0.32	c0.22	0.30	0.00
v/s Ratio Perm												
v/c Ratio	0.70	1.30	0.55	1.23	0.43		1.08	1.20	0.80	1.38	1.00	0.01
Uniform Delay, d1	51.1	41.5	20.7	55.5	36.3		51.0	42.5	31.1	50.5	42.0	17.8
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	5.3	140.9	0.8	133.4	0.3		64.6	96.6	4.0	181.2	24.3	0.0
Delay (s)	56.4	182.4	21.6	188.9	36.6		115.6	139.1	35.1	231.7	66.3	17.8
Level of Service	E	F	C	F	D		F	F	D	F	E	B
Approach Delay (s)		133.1			96.9			106.0			120.0	
Approach LOS		F			F			F			F	
Intersection Summary												
HCM Average Control Delay			115.7			HCM Level of Service			F			
HCM Volume to Capacity ratio			1.27									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			20.0			
Intersection Capacity Utilization			106.6%			ICU Level of Service			G			
Analysis Period (min)			15									
c Critical Lane Group												

2015 AM Peak BUILD Conditions - Case "N"

Existing Geometry
D:\ATOB\PROJECTS\Montano_Access_Daskalos\Synchro\2015ABXCaseN.syn

Timings
1: Montano Rd & Coors Blvd

Terry O. Brown, PE
4/7/2011

												
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations												
Volume (vph)	239	1235	381	239	216	487	1551	790	667	1366	11	
Turn Type	Prot		pt+ov	Prot		Prot		pt+ov	Prot		pt+ov	
Protected Phases	7	4	4 5	3	8	5	2	2 3	1	6	6 7	
Permitted Phases												
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)	20.0	42.0	65.0	14.0	36.0	23.0	40.0	54.0	24.0	41.0	61.0	
Total Split (%)	16.7%	35.0%	54.2%	11.7%	30.0%	19.2%	33.3%	45.0%	20.0%	34.2%	50.8%	
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	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	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lag		Lead	Lag		
Lead-Lag Optimize?												
Recall Mode	Min	Min		Min	Min	Min	Max		Min	Max		
Act Effct Green (s)	13.8	37.0	60.0	9.0	32.2	18.0	35.0	49.0	19.0	36.0	54.8	
Actuated g/C Ratio	0.12	0.31	0.50	0.08	0.27	0.15	0.29	0.41	0.16	0.30	0.46	
v/c Ratio	0.70	1.30	0.55	1.23	0.49	1.08	1.20	0.80	1.38	1.00	0.02	
Control Delay	61.0	176.2	24.0	179.2	27.9	112.4	134.5	37.4	219.8	66.3	8.2	
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	61.0	176.2	24.0	179.2	27.9	112.4	134.5	37.4	219.8	66.3	8.2	
LOS	E	F	C	F	C	F	F	D	F	E	A	
Approach Delay		130.1			87.8		103.5			116.1		
Approach LOS		F			F		F			F		

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Natural Cycle: 130

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.38

Intersection Signal Delay: 112.1

Intersection LOS: F

Intersection Capacity Utilization 106.6%

ICU Level of Service G

Analysis Period (min) 15

Splits and Phases: 1: Montano Rd & Coors Blvd

			
24 s	40 s	14 s	42 s
			
23 s	41 s	20 s	36 s

HCM Signalized Intersection Capacity Analysis 1: Montano Rd & Coors Blvd

Terry O. Brown, PE
4/7/2011

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	239	1235	381	239	216	148	487	1551	790	667	1366	11
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	0.97	0.95	1.00	0.97	0.95		0.97	0.91	0.88	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	0.94		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)	3400	3505	1568	3400	3291		3400	5036	2760	3400	5036	1568
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3400	3505	1568	3400	3291		3400	5036	2760	3400	5036	1568
Peak-hour factor, PHF	0.88	0.88	0.88	0.76	0.76	0.76	0.88	0.88	0.88	0.90	0.90	0.90
Adj. Flow (vph)	272	1403	433	314	284	195	553	1762	898	741	1518	12
RTOR Reduction (vph)	0	0	1	0	101	0	0	0	2	0	0	7
Lane Group Flow (vph)	272	1403	433	314	378	0	553	1762	896	741	1518	5
Turn Type	Prot		pt+ov	Prot			Prot		pt+ov	Prot		pt+ov
Protected Phases	7	4	4 5	3	8		5	2	2 3	1	6	6 7
Permitted Phases												
Actuated Green, G (s)	13.8	37.0	60.0	9.0	32.2		18.0	35.0	49.0	19.0	36.0	54.8
Effective Green, g (s)	13.8	37.0	60.0	9.0	32.2		18.0	35.0	49.0	19.0	36.0	54.8
Actuated g/C Ratio	0.12	0.31	0.50	0.08	0.27		0.15	0.29	0.41	0.16	0.30	0.46
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)	391	1081	784	255	883		510	1469	1127	538	1511	716
v/s Ratio Prot	0.08	c0.40	0.28	c0.09	0.11		0.16	c0.35	0.32	c0.22	0.30	0.00
v/s Ratio Perm												
v/c Ratio	0.70	1.30	0.55	1.23	0.43		1.08	1.20	0.80	1.38	1.00	0.01
Uniform Delay, d1	51.1	41.5	20.7	55.5	36.3		51.0	42.5	31.1	50.5	42.0	17.8
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	5.3	140.9	0.8	133.4	0.3		64.6	96.6	4.0	181.2	24.3	0.0
Delay (s)	56.4	182.4	21.6	188.9	36.6		115.6	139.1	35.1	231.7	66.3	17.8
Level of Service	E	F	C	F	D		F	F	D	F	E	B
Approach Delay (s)		133.1			96.9			106.0			120.0	
Approach LOS		F			F			F			F	
Intersection Summary												
HCM Average Control Delay			115.7			HCM Level of Service				F		
HCM Volume to Capacity ratio			1.27									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			20.0			
Intersection Capacity Utilization			106.6%			ICU Level of Service			G			
Analysis Period (min)			15									
c Critical Lane Group												

2015 AM Peak BUILD Conditions - Case "N"

Existing Geometry
D:\ATOB\PROJECTS\Montano_Access_Daskalos\Synchro\2015ABXCaseY.syn

Timings
1: Montano Rd & Coors Blvd

Terry O. Brown, PE
4/7/2011

											
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	267	470	506	407	1051	1040	2257	298	396	1586	65
Turn Type	Prot		pt+ov	Prot		Prot		pt+ov	Prot		pt+ov
Protected Phases	7	4	4 5	3	8	5	2	2 3	1	6	6 7
Permitted Phases											
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	30.0	64.0	24.0	40.0	34.0	60.0	84.0	16.0	42.0	56.0
Total Split (%)	10.8%	23.1%	49.2%	18.5%	30.8%	26.2%	46.2%	64.6%	12.3%	32.3%	43.1%
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	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	5.0
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?											
Recall Mode	Min	Min		Min	Min	Min	C-Max		Min	C-Max	
Act Effct Green (s)	9.0	25.3	59.3	18.7	35.0	29.0	55.0	78.7	11.0	37.0	51.0
Actuated g/C Ratio	0.07	0.19	0.46	0.14	0.27	0.22	0.42	0.61	0.08	0.28	0.39
v/c Ratio	1.25	0.76	0.78	0.89	1.39	1.43	1.10	0.18	1.49	1.20	0.12
Control Delay	189.7	57.6	38.5	76.2	217.5	237.9	90.1	10.2	279.4	138.8	25.2
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	189.7	57.6	38.5	76.2	217.5	237.9	90.1	10.2	279.4	138.8	25.2
LOS	F	E	D	E	F	F	F	B	F	F	C
Approach Delay		78.2			181.8		126.2			162.4	
Approach LOS		E			F		F			F	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 130

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.49

Intersection Signal Delay: 138.5

Intersection LOS: F

Intersection Capacity Utilization 118.6%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 1: Montano Rd & Coors Blvd

			
16 s	60 s	24 s	30 s
			
34 s	42 s	14 s	40 s

2015 PM Peak BUILD Conditions - Case "N"

Existing Geometry
D:\ATOB\PROJECTS\Montano_Access_Daskalos\Synchro\2015PBXCaseN.syn

HCM Signalized Intersection Capacity Analysis 1: Montano Rd & Coors Blvd

Terry O. Brown, PE
4/7/2011

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	267	470	506	407	1051	154	1040	2257	298	396	1586	65
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	0.97	0.95	1.00	0.97	0.95		0.97	0.91	0.88	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	0.98		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)	3400	3505	1568	3400	3438		3400	5036	2760	3400	5036	1568
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3400	3505	1568	3400	3438		3400	5036	2760	3400	5036	1568
Peak-hour factor, PHF	0.91	0.91	0.91	0.93	0.93	0.93	0.96	0.96	0.96	0.92	0.92	0.92
Adj. Flow (vph)	293	516	556	438	1130	166	1083	2351	310	430	1724	71
RTOR Reduction (vph)	0	0	3	0	9	0	0	0	14	0	0	1
Lane Group Flow (vph)	293	516	553	438	1287	0	1083	2351	296	430	1724	70
Turn Type	Prot		pt+ov	Prot			Prot		pt+ov	Prot		pt+ov
Protected Phases	7	4	4 5	3	8		5	2	2 3	1	6	6 7
Permitted Phases												
Actuated Green, G (s)	9.0	25.3	59.3	18.7	35.0		29.0	55.0	78.7	11.0	37.0	51.0
Effective Green, g (s)	9.0	25.3	59.3	18.7	35.0		29.0	55.0	78.7	11.0	37.0	51.0
Actuated g/C Ratio	0.07	0.19	0.46	0.14	0.27		0.22	0.42	0.61	0.08	0.28	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)	235	682	715	489	926		758	2131	1671	288	1433	615
v/s Ratio Prot	c0.09	0.15	0.35	0.13	c0.37		c0.32	0.47	0.11	0.13	c0.34	0.04
v/s Ratio Perm												
v/c Ratio	1.25	0.76	0.77	0.90	1.39		1.43	1.10	0.18	1.49	1.20	0.11
Uniform Delay, d1	60.5	49.4	29.7	54.7	47.5		50.5	37.5	11.3	59.5	46.5	25.1
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	141.4	4.8	5.2	18.6	182.2		200.6	54.2	0.1	239.4	98.3	0.1
Delay (s)	201.9	54.2	34.9	73.3	229.7		251.1	91.7	11.4	298.9	144.8	25.2
Level of Service	F	D	C	E	F		F	F	B	F	F	C
Approach Delay (s)		78.1			190.2			131.1			170.8	
Approach LOS		E			F			F			F	
Intersection Summary												
HCM Average Control Delay			144.2			HCM Level of Service			F			
HCM Volume to Capacity ratio			1.33									
Actuated Cycle Length (s)			130.0			Sum of lost time (s)			20.0			
Intersection Capacity Utilization			118.6%			ICU Level of Service			H			
Analysis Period (min)			15									
c Critical Lane Group												

2015 PM Peak BUILD Conditions - Case "N"

Existing Geometry
D:\ATOB\PROJECTS\Montano_Access_Daskalos\Synchro\2015PBXCaseN.syn

Timings
1: Montano Rd & Coors Blvd

Terry O. Brown, PE
4/7/2011

												
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations												
Volume (vph)	267	470	506	407	1051	1040	2257	298	396	1586	65	
Turn Type	Prot		pt+ov	Prot		Prot		pt+ov	Prot		pt+ov	
Protected Phases	7	4	4 5	3	8	5	2	2 3	1	6	6 7	
Permitted Phases												
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	30.0	64.0	24.0	40.0	34.0	60.0	84.0	16.0	42.0	56.0	
Total Split (%)	10.8%	23.1%	49.2%	18.5%	30.8%	26.2%	46.2%	64.6%	12.3%	32.3%	43.1%	
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	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	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lag		Lead	Lag		
Lead-Lag Optimize?												
Recall Mode	Min	Min		Min	Min	Min	C-Max		Min	C-Max		
Act Effct Green (s)	9.0	25.3	59.3	18.7	35.0	29.0	55.0	78.7	11.0	37.0	51.0	
Actuated g/C Ratio	0.07	0.19	0.46	0.14	0.27	0.22	0.42	0.61	0.08	0.28	0.39	
v/c Ratio	1.25	0.76	0.78	0.89	1.39	1.43	1.10	0.18	1.49	1.20	0.12	
Control Delay	189.7	57.6	38.5	76.2	217.5	237.9	90.1	10.2	279.4	138.8	25.2	
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	189.7	57.6	38.5	76.2	217.5	237.9	90.1	10.2	279.4	138.8	25.2	
LOS	F	E	D	E	F	F	F	B	F	F	C	
Approach Delay		78.2			181.8		126.2			162.4		
Approach LOS		E			F		F			F		

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 130
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.49
 Intersection Signal Delay: 138.5
 Intersection Capacity Utilization 118.6%
 Analysis Period (min) 15

Intersection LOS: F
 ICU Level of Service H

Splits and Phases: 1: Montano Rd & Coors Blvd

			
ø1	ø2	ø3	ø4
16 s	60 s	24 s	30 s
			
ø5	ø6	ø7	ø8
34 s	42 s	14 s	40 s

HCM Signalized Intersection Capacity Analysis 1: Montano Rd & Coors Blvd

Terry O. Brown, PE
4/7/2011

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	267	470	506	407	1051	154	1040	2257	298	396	1586	65
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	0.97	0.95	1.00	0.97	0.95		0.97	0.91	0.88	0.97	0.91	1.00
Flt	1.00	1.00	0.85	1.00	0.98		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)	3400	3505	1568	3400	3438		3400	5036	2760	3400	5036	1568
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3400	3505	1568	3400	3438		3400	5036	2760	3400	5036	1568
Peak-hour factor, PHF	0.91	0.91	0.91	0.93	0.93	0.93	0.96	0.96	0.96	0.92	0.92	0.92
Adj. Flow (vph)	293	516	556	438	1130	166	1083	2351	310	430	1724	71
RTOR Reduction (vph)	0	0	3	0	9	0	0	0	14	0	0	1
Lane Group Flow (vph)	293	516	553	438	1287	0	1083	2351	296	430	1724	70
Turn Type	Prot		pt+ov	Prot			Prot		pt+ov	Prot		pt+ov
Protected Phases	7	4	4 5	3	8		5	2	2 3	1	6	6 7
Permitted Phases												
Actuated Green, G (s)	9.0	25.3	59.3	18.7	35.0		29.0	55.0	78.7	11.0	37.0	51.0
Effective Green, g (s)	9.0	25.3	59.3	18.7	35.0		29.0	55.0	78.7	11.0	37.0	51.0
Actuated g/C Ratio	0.07	0.19	0.46	0.14	0.27		0.22	0.42	0.61	0.08	0.28	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)	235	682	715	489	926		758	2131	1671	288	1433	615
v/s Ratio Prot	c0.09	0.15	0.35	0.13	c0.37		c0.32	0.47	0.11	0.13	c0.34	0.04
v/s Ratio Perm												
v/c Ratio	1.25	0.76	0.77	0.90	1.39		1.43	1.10	0.18	1.49	1.20	0.11
Uniform Delay, d1	60.5	49.4	29.7	54.7	47.5		50.5	37.5	11.3	59.5	46.5	25.1
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	141.4	4.8	5.2	18.6	182.2		200.6	54.2	0.1	239.4	98.3	0.1
Delay (s)	201.9	54.2	34.9	73.3	229.7		251.1	91.7	11.4	298.9	144.8	25.2
Level of Service	F	D	C	E	F		F	F	B	F	F	C
Approach Delay (s)		78.1			190.2			131.1			170.8	
Approach LOS		E			F			F			F	
Intersection Summary												
HCM Average Control Delay			144.2			HCM Level of Service			F			
HCM Volume to Capacity ratio			1.33									
Actuated Cycle Length (s)			130.0			Sum of lost time (s)			20.0			
Intersection Capacity Utilization			118.6%			ICU Level of Service			H			
Analysis Period (min)			15									
c Critical Lane Group												

2015 PM Peak BUILD Conditions - Case "N"

Existing Geometry
D:\ATOB\PROJECTS\Montano_Access_Daskalos\Synchro\2015PBXCaseY.syn

Timings
1: Montano Rd & Coors Blvd

Terry O. Brown, PE
4/7/2011

											
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	292	1486	449	474	436	428	1286	643	927	1915	16
Turn Type	Prot		pt+ov	Prot		Prot		pt+ov	Prot		pt+ov
Protected Phases	7	4	4 5	3	8	5	2	2 3	1	6	6 7
Permitted Phases											
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)	19.0	43.0	59.0	19.0	43.0	16.0	32.0	51.0	26.0	42.0	61.0
Total Split (%)	15.8%	35.8%	49.2%	15.8%	35.8%	13.3%	26.7%	42.5%	21.7%	35.0%	50.8%
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	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	5.0
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?											
Recall Mode	Min	Min		Min	Min	Min	C-Max		Min	C-Max	
Act Effct Green (s)	13.8	38.0	54.0	14.0	38.2	11.0	27.0	46.0	21.0	37.0	55.8
Actuated g/C Ratio	0.12	0.32	0.45	0.12	0.32	0.09	0.22	0.38	0.18	0.31	0.46
v/c Ratio	0.85	1.52	0.72	1.57	0.84	1.56	1.29	0.69	1.73	1.37	0.02
Control Delay	72.2	270.6	34.1	304.6	40.0	302.4	175.4	35.1	367.2	204.7	7.2
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	72.2	270.6	34.1	304.6	40.0	302.4	175.4	35.1	367.2	204.7	7.2
LOS	E	F	C	F	D	F	F	D	F	F	A
Approach Delay		196.9			143.7		160.2			256.3	
Approach LOS		F			F		F			F	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 130

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.73

Intersection Signal Delay: 197.5

Intersection LOS: F

Intersection Capacity Utilization 122.6%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 1: Montano Rd & Coors Blvd

26 s	32 s	19 s	43 s
16 s	42 s	19 s	43 s

2030 AM Peak BUILD Conditions - Case "N"

Existing Geometry
D:\ATOB\PROJECTS\Montano_Access_Daskalos\Synchro\2030ABXCaseN.syn

HCM Signalized Intersection Capacity Analysis

1: Montano Rd & Coors Blvd

Terry O. Brown, PE
4/7/2011

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	292	1486	449	474	436	299	428	1286	643	927	1915	16
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	0.97	0.95	1.00	0.97	0.95		0.97	0.91	0.88	0.97	0.91	1.00
Flt	1.00	1.00	0.85	1.00	0.94		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)	3400	3505	1568	3400	3291		3400	5036	2760	3400	5036	1568
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3400	3505	1568	3400	3291		3400	5036	2760	3400	5036	1568
Peak-hour factor, PHF	0.88	0.88	0.88	0.76	0.76	0.76	0.88	0.88	0.88	0.90	0.90	0.90
Adj. Flow (vph)	332	1689	510	624	574	393	486	1461	731	1030	2128	18
RTOR Reduction (vph)	0	0	0	0	102	0	0	0	1	0	0	10
Lane Group Flow (vph)	332	1689	510	624	865	0	486	1461	730	1030	2128	8
Turn Type	Prot		pt+ov	Prot			Prot		pt+ov	Prot		pt+ov
Protected Phases	7	4	4 5	3	8		5	2	2 3	1	6	6 7
Permitted Phases												
Actuated Green, G (s)	13.8	38.0	54.0	14.0	38.2		11.0	27.0	46.0	21.0	37.0	55.8
Effective Green, g (s)	13.8	38.0	54.0	14.0	38.2		11.0	27.0	46.0	21.0	37.0	55.8
Actuated g/C Ratio	0.12	0.32	0.45	0.12	0.32		0.09	0.22	0.38	0.18	0.31	0.46
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)	391	1110	706	397	1048		312	1133	1058	595	1553	729
v/s Ratio Prot	0.10	c0.48	0.33	c0.18	0.26		0.14	0.29	0.26	c0.30	c0.42	0.01
v/s Ratio Perm												
v/c Ratio	0.85	1.52	0.72	1.57	0.83		1.56	1.29	0.69	1.73	1.37	0.01
Uniform Delay, d1	52.1	41.0	26.9	53.0	37.8		54.5	46.5	31.0	49.5	41.5	17.3
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	15.7	239.4	3.7	269.2	5.4		266.2	137.0	2.0	336.0	170.8	0.0
Delay (s)	67.7	280.4	30.6	322.2	43.2		320.7	183.5	33.0	385.5	212.3	17.3
Level of Service	E	F	C	F	D		F	F	C	F	F	B
Approach Delay (s)		202.1			152.7			167.3			267.4	
Approach LOS		F			F			F			F	
Intersection Summary												
HCM Average Control Delay			205.7			HCM Level of Service				F		
HCM Volume to Capacity ratio			1.49									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			122.6%			ICU Level of Service			H			
Analysis Period (min)			15									
c Critical Lane Group												

2030 AM Peak BUILD Conditions - Case "N"

Existing Geometry
D:\ATOB\PROJECTS\Montano_Access_Daskalos\Synchro\2030ABXCaseN.syn

Timings
1: Montano Rd & Coors Blvd

Terry O. Brown, PE
4/7/2011

											
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	292	1486	449	474	436	428	1286	643	927	1915	16
Turn Type	Prot		pt+ov	Prot		Prot		pt+ov	Prot		pt+ov
Protected Phases	7	4	4 5	3	8	5	2	2 3	1	6	6 7
Permitted Phases											
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)	19.0	43.0	59.0	19.0	43.0	16.0	32.0	51.0	26.0	42.0	61.0
Total Split (%)	15.8%	35.8%	49.2%	15.8%	35.8%	13.3%	26.7%	42.5%	21.7%	35.0%	50.8%
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	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	5.0
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?											
Recall Mode	Min	Min		Min	Min	Min	C-Max		Min	C-Max	
Act Effct Green (s)	13.8	38.0	54.0	14.0	38.2	11.0	27.0	46.0	21.0	37.0	55.8
Actuated g/C Ratio	0.12	0.32	0.45	0.12	0.32	0.09	0.22	0.38	0.18	0.31	0.46
v/c Ratio	0.85	1.52	0.72	1.57	0.84	1.56	1.29	0.69	1.73	1.37	0.02
Control Delay	72.2	270.6	34.1	304.6	40.0	302.4	175.4	35.1	367.2	204.7	7.2
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	72.2	270.6	34.1	304.6	40.0	302.4	175.4	35.1	367.2	204.7	7.2
LOS	E	F	C	F	D	F	F	D	F	F	A
Approach Delay		196.9			143.7		160.2			256.3	
Approach LOS		F			F		F			F	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 130

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.73

Intersection Signal Delay: 197.5

Intersection LOS: F

Intersection Capacity Utilization 122.6%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 1: Montano Rd & Coors Blvd

			
26 s	32 s	19 s	43 s
			
16 s	42 s	19 s	43 s

2030 AM Peak BUILD Conditions - Case "N"

Existing Geometry
D:\ATOB\PROJECTS\Montano_Access_Daskalos\Synchro\2030ABXCaseY.syn

HCM Signalized Intersection Capacity Analysis 1: Montano Rd & Coors Blvd

Terry O. Brown, PE
4/7/2011

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	292	1486	449	474	436	299	428	1286	643	927	1915	16
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	0.97	0.95	1.00	0.97	0.95		0.97	0.91	0.88	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	0.94		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)	3400	3505	1568	3400	3291		3400	5036	2760	3400	5036	1568
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3400	3505	1568	3400	3291		3400	5036	2760	3400	5036	1568
Peak-hour factor, PHF	0.88	0.88	0.88	0.76	0.76	0.76	0.88	0.88	0.88	0.90	0.90	0.90
Adj. Flow (vph)	332	1689	510	624	574	393	486	1461	731	1030	2128	18
RTOR Reduction (vph)	0	0	0	0	102	0	0	0	1	0	0	10
Lane Group Flow (vph)	332	1689	510	624	865	0	486	1461	730	1030	2128	8
Turn Type	Prot		pt+ov	Prot			Prot		pt+ov	Prot		pt+ov
Protected Phases	7	4	4 5	3	8		5	2	2 3	1	6	6 7
Permitted Phases												
Actuated Green, G (s)	13.8	38.0	54.0	14.0	38.2		11.0	27.0	46.0	21.0	37.0	55.8
Effective Green, g (s)	13.8	38.0	54.0	14.0	38.2		11.0	27.0	46.0	21.0	37.0	55.8
Actuated g/C Ratio	0.12	0.32	0.45	0.12	0.32		0.09	0.22	0.38	0.18	0.31	0.46
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)	391	1110	706	397	1048		312	1133	1058	595	1553	729
v/s Ratio Prot	0.10	c0.48	0.33	c0.18	0.26		0.14	0.29	0.26	c0.30	c0.42	0.01
v/s Ratio Perm												
v/c Ratio	0.85	1.52	0.72	1.57	0.83		1.56	1.29	0.69	1.73	1.37	0.01
Uniform Delay, d1	52.1	41.0	26.9	53.0	37.8		54.5	46.5	31.0	49.5	41.5	17.3
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	15.7	239.4	3.7	269.2	5.4		266.2	137.0	2.0	336.0	170.8	0.0
Delay (s)	67.7	280.4	30.6	322.2	43.2		320.7	183.5	33.0	385.5	212.3	17.3
Level of Service	E	F	C	F	D		F	F	C	F	F	B
Approach Delay (s)		202.1			152.7			167.3			267.4	
Approach LOS		F			F			F			F	
Intersection Summary												
HCM Average Control Delay			205.7			HCM Level of Service				F		
HCM Volume to Capacity ratio			1.49									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			122.6%			ICU Level of Service			H			
Analysis Period (min)			15									
c Critical Lane Group												

2030 AM Peak BUILD Conditions - Case "N"

Existing Geometry
D:\ATOB\PROJECTS\Montano_Access_Daskalos\Synchro\2030ABXCaseY.syn

Timings
1: Montano Rd & Coors Blvd

Terry O. Brown, PE
4/7/2011

											
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	401	609	689	407	1051	1132	2522	336	498	2059	86
Turn Type	Prot		pt+ov	Prot		Prot		pt+ov	Prot		pt+ov
Protected Phases	7	4	4 5	3	8	5	2	2 3	1	6	6 7
Permitted Phases											
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)	16.0	32.0	64.0	21.0	37.0	32.0	59.0	80.0	18.0	45.0	61.0
Total Split (%)	12.3%	24.6%	49.2%	16.2%	28.5%	24.6%	45.4%	61.5%	13.8%	34.6%	46.9%
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	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	5.0
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?											
Recall Mode	Min	Min		Min	Min	Min	C-Max		Min	C-Max	
Act Effct Green (s)	11.0	27.0	59.0	16.0	32.0	27.0	54.0	75.0	13.0	40.0	56.0
Actuated g/C Ratio	0.08	0.21	0.45	0.12	0.25	0.21	0.42	0.58	0.10	0.31	0.43
v/c Ratio	1.53	0.92	1.06	1.05	1.52	1.67	1.26	0.22	1.59	1.44	0.14
Control Delay	294.9	69.2	86.1	111.4	272.6	340.6	153.0	13.1	316.7	237.8	22.9
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	294.9	69.2	86.1	111.4	272.6	340.6	153.0	13.1	316.7	237.8	22.9
LOS	F	E	F	F	F	F	F	B	F	F	C
Approach Delay		129.3			231.9		194.4			245.7	
Approach LOS		F			F		F			F	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 130

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.67

Intersection Signal Delay: 203.0

Intersection LOS: F

Intersection Capacity Utilization 134.1%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 1: Montano Rd & Coors Blvd

			
18 s	59 s	21 s	32 s
			
32 s	45 s	16 s	37 s

2030 PM Peak BUILD Conditions - Case "N"

Existing Geometry
D:\ATOB\PROJECTS\Montano_Access_Daskalos\Synchro\2030PBXCaseN.syn

HCM Signalized Intersection Capacity Analysis

1: Montano Rd & Coors Blvd

Terry O. Brown, PE

4/7/2011

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	401	609	689	407	1051	154	1132	2522	336	498	2059	86
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	0.97	0.95	1.00	0.97	0.95		0.97	0.91	0.88	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	0.98		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)	3400	3505	1568	3400	3438		3400	5036	2760	3400	5036	1568
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3400	3505	1568	3400	3438		3400	5036	2760	3400	5036	1568
Peak-hour factor, PHF	0.91	0.91	0.91	0.93	0.93	0.93	0.96	0.96	0.96	0.92	0.92	0.92
Adj. Flow (vph)	441	669	757	438	1130	166	1179	2627	350	541	2238	93
RTOR Reduction (vph)	0	0	1	0	9	0	0	0	7	0	0	1
Lane Group Flow (vph)	441	669	756	438	1287	0	1179	2627	343	541	2238	92
Turn Type	Prot		pt+ov	Prot			Prot		pt+ov	Prot		pt+ov
Protected Phases	7	4	4 5	3	8		5	2	2 3	1	6	6 7
Permitted Phases												
Actuated Green, G (s)	11.0	27.0	59.0	16.0	32.0		27.0	54.0	75.0	13.0	40.0	56.0
Effective Green, g (s)	11.0	27.0	59.0	16.0	32.0		27.0	54.0	75.0	13.0	40.0	56.0
Actuated g/C Ratio	0.08	0.21	0.45	0.12	0.25		0.21	0.42	0.58	0.10	0.31	0.43
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)	288	728	712	418	846		706	2092	1592	340	1550	675
v/s Ratio Prot	c0.13	0.19	0.48	0.13	c0.37		c0.35	0.52	0.12	0.16	c0.44	0.06
v/s Ratio Perm												
v/c Ratio	1.53	0.92	1.06	1.05	1.52		1.67	1.26	0.22	1.59	1.44	0.14
Uniform Delay, d1	59.5	50.4	35.5	57.0	49.0		51.5	38.0	13.3	58.5	45.0	22.4
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	255.9	16.5	51.3	57.1	240.6		307.7	119.2	0.1	279.6	203.5	0.1
Delay (s)	315.4	66.9	86.8	114.1	289.6		359.2	157.2	13.4	338.1	248.5	22.5
Level of Service	F	E	F	F	F		F	F	B	F	F	C
Approach Delay (s)		133.7			245.3			202.4			258.0	
Approach LOS		F			F			F			F	
Intersection Summary												
HCM Average Control Delay			212.3			HCM Level of Service			F			
HCM Volume to Capacity ratio			1.53									
Actuated Cycle Length (s)			130.0			Sum of lost time (s)			20.0			
Intersection Capacity Utilization			134.1%			ICU Level of Service			H			
Analysis Period (min)			15									
c Critical Lane Group												

2030 PM Peak BUILD Conditions - Case "N"

Existing Geometry
D:\ATOB\PROJECTS\Montano_Access_Daskalos\Synchro\2030PBXCaseN.syn

Timings
1: Montano Rd & Coors Blvd

Terry O. Brown, PE
4/7/2011

											
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	401	609	689	407	1051	1132	2522	336	498	2059	86
Turn Type	Prot		pt+ov	Prot		Prot		pt+ov	Prot		pt+ov
Protected Phases	7	4	4 5	3	8	5	2	2 3	1	6	6 7
Permitted Phases											
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)	16.0	32.0	64.0	21.0	37.0	32.0	59.0	80.0	18.0	45.0	61.0
Total Split (%)	12.3%	24.6%	49.2%	16.2%	28.5%	24.6%	45.4%	61.5%	13.8%	34.6%	46.9%
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	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	5.0
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?											
Recall Mode	Min	Min		Min	Min	Min	C-Max		Min	C-Max	
Act Effct Green (s)	11.0	27.0	59.0	16.0	32.0	27.0	54.0	75.0	13.0	40.0	56.0
Actuated g/C Ratio	0.08	0.21	0.45	0.12	0.25	0.21	0.42	0.58	0.10	0.31	0.43
v/c Ratio	1.53	0.92	1.06	1.05	1.52	1.67	1.26	0.22	1.59	1.44	0.14
Control Delay	294.9	69.2	86.1	111.4	272.6	340.6	153.0	13.1	316.7	237.8	22.9
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	294.9	69.2	86.1	111.4	272.6	340.6	153.0	13.1	316.7	237.8	22.9
LOS	F	E	F	F	F	F	F	B	F	F	C
Approach Delay		129.3			231.9		194.4			245.7	
Approach LOS		F			F		F			F	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 130

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.67

Intersection Signal Delay: 203.0

Intersection LOS: F

Intersection Capacity Utilization 134.1%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 1: Montano Rd & Coors Blvd

			
18 s	59 s	21 s	32 s
			
32 s	45 s	16 s	37 s

2030 PM Peak BUILD Conditions - Case "N"

Existing Geometry
D:\ATOB\PROJECTS\Montano_Access_Daskalos\Synchro\2030PBXCaseY.syn

HCM Signalized Intersection Capacity Analysis

1: Montano Rd & Coors Blvd

Terry O. Brown, PE
4/7/2011

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	401	609	689	407	1051	154	1132	2522	336	498	2059	86
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	0.97	0.95	1.00	0.97	0.95		0.97	0.91	0.88	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	0.98		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)	3400	3505	1568	3400	3438		3400	5036	2760	3400	5036	1568
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3400	3505	1568	3400	3438		3400	5036	2760	3400	5036	1568
Peak-hour factor, PHF	0.91	0.91	0.91	0.93	0.93	0.93	0.96	0.96	0.96	0.92	0.92	0.92
Adj. Flow (vph)	441	669	757	438	1130	166	1179	2627	350	541	2238	93
RTOR Reduction (vph)	0	0	1	0	9	0	0	0	7	0	0	1
Lane Group Flow (vph)	441	669	756	438	1287	0	1179	2627	343	541	2238	92
Turn Type	Prot		pt+ov	Prot			Prot		pt+ov	Prot		pt+ov
Protected Phases	7	4	4 5	3	8		5	2	2 3	1	6	6 7
Permitted Phases												
Actuated Green, G (s)	11.0	27.0	59.0	16.0	32.0		27.0	54.0	75.0	13.0	40.0	56.0
Effective Green, g (s)	11.0	27.0	59.0	16.0	32.0		27.0	54.0	75.0	13.0	40.0	56.0
Actuated g/C Ratio	0.08	0.21	0.45	0.12	0.25		0.21	0.42	0.58	0.10	0.31	0.43
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)	288	728	712	418	846		706	2092	1592	340	1550	675
v/s Ratio Prot	c0.13	0.19	0.48	0.13	c0.37		c0.35	0.52	0.12	0.16	c0.44	0.06
v/s Ratio Perm												
v/c Ratio	1.53	0.92	1.06	1.05	1.52		1.67	1.26	0.22	1.59	1.44	0.14
Uniform Delay, d1	59.5	50.4	35.5	57.0	49.0		51.5	38.0	13.3	58.5	45.0	22.4
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	255.9	16.5	51.3	57.1	240.6		307.7	119.2	0.1	279.6	203.5	0.1
Delay (s)	315.4	66.9	86.8	114.1	289.6		359.2	157.2	13.4	338.1	248.5	22.5
Level of Service	F	E	F	F	F		F	F	B	F	F	C
Approach Delay (s)		133.7			245.3			202.4			258.0	
Approach LOS		F			F			F			F	
Intersection Summary												
HCM Average Control Delay			212.3			HCM Level of Service			F			
HCM Volume to Capacity ratio			1.53									
Actuated Cycle Length (s)			130.0			Sum of lost time (s)			20.0			
Intersection Capacity Utilization			134.1%			ICU Level of Service			H			
Analysis Period (min)			15									
c Critical Lane Group												

2030 PM Peak BUILD Conditions - Case "N"

Existing Geometry
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HCM Unsignalized Intersection Capacity Analysis 2: Montano Rd & Winterhaven Rd

Terry O. Brown, PE
4/14/2011

																							
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR											
Lane Configurations																							
Volume (veh/h)	44	2414	228	201	486	28	0	0	254	0	0	42											
Sign Control	Free			Free			Stop			Stop													
Grade	0%			0%			0%			0%													
Peak Hour Factor	0.95	0.95	0.95	0.90	0.90	0.90	0.85	0.85	0.85	0.85	0.85	0.85											
Hourly flow rate (vph)	46	2541	240	223	540	31	0	0	299	0	0	49											
Pedestrians																							
Lane Width (ft)																							
Walking Speed (ft/s)																							
Percent Blockage																							
Right turn flare (veh)																							
Median type	None						None																
Median storage veh																							
Upstream signal (ft)	1202																						
pX, platoon unblocked				0.72			0.72			0.72	0.72	0.72											
vC, conflicting volume	571				2781				3400	3651	1271	2664											
vC1, stage 1 conf vol																							
vC2, stage 2 conf vol																							
vCu, unblocked vol	571				2694				3558	3910	585	2531											
tC, single (s)	4.2				4.2				7.6	6.6	7.0	7.6											
tC, 2 stage (s)																							
tF (s)	2.2				2.2				3.5	4.0	3.3	3.5											
p0 queue free %	95				0				0	0	8	0											
cM capacity (veh/h)	991				106				0	0	324	0											
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	SB 1														
Volume Total	46	1271	1271	240	223	360	211	299	49														
Volume Left	46	0	0	0	223	0	0	0	0														
Volume Right	0	0	0	240	0	0	31	299	49														
cSH	991	1700	1700	1700	106	1700	1700	324	708														
Volume to Capacity	0.05	0.75	0.75	0.14	2.11	0.21	0.12	0.92	0.07														
Queue Length 95th (ft)	4	0	0	0	477	0	0	229	6														
Control Delay (s)	8.8	0.0	0.0	0.0	598.0	0.0	0.0	69.1	10.5														
Lane LOS	A				F				F	B													
Approach Delay (s)	0.1				168.1				69.1	10.5													
Approach LOS										F													
Intersection Summary																							
Average Delay	39.1																						
Intersection Capacity Utilization	89.1%				ICU Level of Service				E														
Analysis Period (min)	15																						

2015 AM Peak BUILD Conditions - Case "N"

Existing Geometry
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HCM Unsignalized Intersection Capacity Analysis 2: Montano Rd & Winterhaven Rd

Terry O. Brown, PE
4/14/2011

															
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR			
Lane Configurations															
Volume (veh/h)	44	2510	53	201	486	28	0	0	158	0	0	42			
Sign Control	Free			Free			Stop			Stop					
Grade	0%			0%			0%			0%					
Peak Hour Factor	0.95	0.95	0.95	0.90	0.90	0.90	0.85	0.85	0.85	0.85	0.85	0.85			
Hourly flow rate (vph)	46	2642	56	223	540	31	0	0	186	0	0	49			
Pedestrians															
Lane Width (ft)															
Walking Speed (ft/s)															
Percent Blockage															
Right turn flare (veh)															
Median type	None			None											
Median storage veh															
Upstream signal (ft)	1202														
pX, platoon unblocked				0.72			0.72			0.72					
vC, conflicting volume	571				2698			3501			3753				
vC1, stage 1 conf vol															
vC2, stage 2 conf vol															
vCu, unblocked vol	571				2578			3699			4051				
tC, single (s)	4.2				4.2			7.6			6.6				
tC, 2 stage (s)															
tF (s)	2.2				2.2			3.5			4.0				
p0 queue free %	95				0			0			36				
cM capacity (veh/h)	991				118			0			0				
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	SB 1						
Volume Total	46	1321	1321	56	223	360	211	186	49						
Volume Left	46	0	0	0	223	0	0	0	0						
Volume Right	0	0	0	56	0	0	31	186	49						
cSH	991	1700	1700	1700	118	1700	1700	291	708						
Volume to Capacity	0.05	0.78	0.78	0.03	1.90	0.21	0.12	0.64	0.07						
Queue Length 95th (ft)	4	0	0	0	447	0	0	102	6						
Control Delay (s)	8.8	0.0	0.0	0.0	496.2	0.0	0.0	37.0	10.5						
Lane LOS	A				F			E			B				
Approach Delay (s)	0.1				139.5			37.0			10.5				
Approach LOS										E	B				
Intersection Summary															
Average Delay				31.4											
Intersection Capacity Utilization				87.2%			ICU Level of Service			E					
Analysis Period (min)				15											

2015 AM Peak BUILD Conditions - Case "N"

Existing Geometry
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HCM Unsignalized Intersection Capacity Analysis 2: Montano Rd & Winterhaven Rd

Terry O. Brown, PE
4/14/2011

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Volume (veh/h)	71	691	328	281	1380	377	0	0	246	0	0	91	
Sign Control	Free			Free			Stop			Stop			
Grade	0%			0%			0%			0%			
Peak Hour Factor	0.90	0.90	0.90	0.95	0.95	0.95	0.85	0.85	0.85	0.85	0.85	0.85	
Hourly flow rate (vph)	79	768	364	296	1453	397	0	0	289	0	0	107	
Pedestrians													
Lane Width (ft)													
Walking Speed (ft/s)													
Percent Blockage													
Right turn flare (veh)													
Median type	None						None						
Median storage (veh)													
Upstream signal (ft)	1202												
pX, platoon unblocked													
vC, conflicting volume	1849			1132			2351	3367	384	3074	3533	925	
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	1849			1132			2351	3367	384	3074	3533	925	
tC, single (s)	4.2			4.2			7.6	6.6	7.0	7.6	6.6	7.0	
tC, 2 stage (s)													
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3	
p0 queue free %	75			51			100	100	53	100	100	60	
cM capacity (veh/h)	320			607			6	3	611	1	2	269	
Direction, Lane#	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	79	384	384	364	296	968	881	289	107				
Volume Left	79	0	0	0	296	0	0	0	0				
Volume Right	0	0	0	364	0	0	397	289	107				
cSH	320	1700	1700	1700	607	1700	1700	611	269				
Volume to Capacity	0.25	0.23	0.23	0.21	0.49	0.57	0.52	0.47	0.40				
Queue Length 95th (ft)	24	0	0	0	67	0	0	63	45				
Control Delay (s)	19.9	0.0	0.0	0.0	16.4	0.0	0.0	16.1	26.9				
Lane LOS	C				C			C	D				
Approach Delay (s)	1.3				2.3			16.1	26.9				
Approach LOS								C	D				
Intersection Summary													
Average Delay	3.7												
Intersection Capacity Utilization	62.5%			ICU Level of Service						B			
Analysis Period (min)	15												

2015 PM Peak BUILD Conditions - Case "N"

Existing Geometry
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HCM Unsignalized Intersection Capacity Analysis 2: Montano Rd & Winterhaven Rd

Terry O. Brown, PE
4/14/2011

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	71	857	34	281	1380	377	0	0	80	0	0	91
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.90	0.90	0.90	0.95	0.95	0.95	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	79	952	38	296	1453	397	0	0	94	0	0	107
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (ft)	1203											
pX, platoon unblocked												
vC, conflicting volume	1849			990			2535	3551	476	2971	3390	925
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1849			990			2535	3551	476	2971	3390	925
tC, single (s)	4.2			4.2			7.6	6.6	7.0	7.6	6.6	7.0
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	75			57			100	100	82	100	100	60
cM capacity (veh/h)	320			688			4	2	532	3	3	269
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	SB 1			
Volume Total	79	476	476	38	296	968	881	94	107			
Volume Left	79	0	0	0	296	0	0	0	0			
Volume Right	0	0	0	38	0	0	397	94	107			
cSH	320	1700	1700	1700	688	1700	1700	532	269			
Volume to Capacity	0.25	0.28	0.28	0.02	0.43	0.57	0.52	0.18	0.40			
Queue Length 95th (ft)	24	0	0	0	54	0	0	16	45			
Control Delay (s)	19.9	0.0	0.0	0.0	14.1	0.0	0.0	13.2	26.9			
Lane LOS	C				B			B	D			
Approach Delay (s)	1.5				1.9			13.2	26.9			
Approach LOS								B	D			
Intersection Summary												
Average Delay	2.9											
Intersection Capacity Utilization	62.5%			ICU Level of Service			B					
Analysis Period (min)	15											

2015 PM Peak BUILD Conditions - Case "N"

Existing Geometry
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HCM Unsignalized Intersection Capacity Analysis 2: Montano Rd & Winterhaven Rd

Terry O. Brown, PE
4/6/2011

																				
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR								
Lane Configurations																				
Volume (veh/h)	53	2907	234	299	991	57	0	0	254	0	0	42								
Sign Control	Free			Free			Stop			Stop										
Grade	0%			0%			0%			0%										
Peak Hour Factor	0.95	0.95	0.95	0.90	0.90	0.90	0.85	0.85	0.85	0.85	0.85	0.85								
Hourly flow rate (vph)	56	3060	246	332	1101	63	0	0	299	0	0	49								
Pedestrians																				
Lane Width (ft)																				
Walking Speed (ft/s)																				
Percent Blockage																				
Right turn flare (veh)																				
Median type	None			None																
Median storage veh																				
Upstream signal (ft)	1202																			
pX, platoon unblocked				0.71			0.71			0.71										
vC, conflicting volume	1164				3306				4436	5000	1530	3738								
vC1, stage 1 conf vol																				
vC2, stage 2 conf vol																				
vCu, unblocked vol	1164				3433				5029	5827	923	4042								
tC, single (s)	4.2				4.2				7.6	6.6	7.0	7.6								
tC, 2 stage (s)																				
tF (s)	2.2				2.2				3.5	4.0	3.3	3.5								
p0 queue free %	91				0				0	0	0	0								
cM capacity (veh/h)	590				52				0	0	191	0								
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	SB 1											
Volume Total	56	1530	1530	246	332	734	430	299	49											
Volume Left	56	0	0	0	332	0	0	0	0											
Volume Right	0	0	0	246	0	0	63	299	49											
cSH	590	1700	1700	1700	52	1700	1700	191	454											
Volume to Capacity	0.09	0.90	0.90	0.14	6.36	0.43	0.25	1.56	0.11											
Queue Length 95th (ft)	8	0	0	0	Err	0	0	482	9											
Control Delay (s)	11.7	0.0	0.0	0.0	2566.3	0.0	0.0	322.0	13.9											
Lane LOS	B				F				F	B										
Approach Delay (s)	0.2				569.7				322.0	13.9										
Approach LOS							F			B										
Intersection Summary																				
Average Delay	182.5																			
Intersection Capacity Utilization	103.6%																			
ICU Level of Service	G																			
Analysis Period (min)	15																			

2030 AM Peak BUILD Conditions - Case "N"

Existing Geometry
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HCM Unsignalized Intersection Capacity Analysis 2: Montano Rd & Winterhaven Rd

Terry O. Brown, PE
4/6/2011

																		
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR						
Lane Configurations																		
Volume (veh/h)	53	3003	59	299	991	57	0	0	158	0	0	42						
Sign Control	Free			Free			Stop			Stop								
Grade	0%			0%			0%			0%								
Peak Hour Factor	0.95	0.95	0.95	0.90	0.90	0.90	0.85	0.85	0.85	0.85	0.85	0.85						
Hourly flow rate (vph)	56	3161	62	332	1101	63	0	0	186	0	0	49						
Pedestrians																		
Lane Width (ft)																		
Walking Speed (ft/s)																		
Percent Blockage																		
Right turn flare (veh)																		
Median type	None			None														
Median storage (veh)																		
Upstream signal (ft)	1202																	
pX, platoon unblocked				0.71			0.71			0.71								
vC, conflicting volume	1164				3223				4537	5102	1581	3675						
vC1, stage 1 conf vol																		
vC2, stage 2 conf vol																		
vCu, unblocked vol	1164				3315				5172	5969	994	3954						
tC, single (s)	4.2				4.2				7.6	6.6	7.0	7.6						
tC, 2 stage (s)																		
tF (s)	2.2				2.2				3.5	4.0	3.3	3.5						
p0 queue free %	91				0				0	0	0	89						
cM capacity (veh/h)	590				58				0	0	171	0						
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	SB 1									
Volume Total	56	1581	1581	62	332	734	430	186	49									
Volume Left	56	0	0	0	332	0	0	0	0									
Volume Right	0	0	0	62	0	0	63	186	49									
cSH	590	1700	1700	1700	58	1700	1700	171	454									
Volume to Capacity	0.09	0.93	0.93	0.04	5.69	0.43	0.25	1.09	0.11									
Queue Length 95th (ft)	8	0	0	0	Err	0	0	233	9									
Control Delay (s)	11.7	0.0	0.0	0.0	2250.3	0.0	0.0	148.6	13.9									
Lane LOS	B				F				F	B								
Approach Delay (s)	0.2				499.5				148.6	13.9								
Approach LOS										F	B							
Intersection Summary																		
Average Delay	155.0																	
Intersection Capacity Utilization	106.2%			ICU Level of Service			G											
Analysis Period (min)	15																	

2030 AM Peak BUILD Conditions - Case "N"

Existing Geometry
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HCM Unsignalized Intersection Capacity Analysis 2: Montano Rd & Winterhaven Rd

Terry O. Brown, PE
4/6/2011

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	99	983	334	281	1380	377	0	0	246	0	0	91
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.95	0.95	0.95	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	110	1092	371	296	1453	397	0	0	289	0	0	107
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)		1202										
pX, platoon unblocked				0.93			0.93	0.93	0.93	0.93	0.93	
vC, conflicting volume	1849			1463			2737	3753	546	3298	3926	925
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1849			1347			2717	3810	361	3321	3996	925
tC, single (s)	4.2			4.2			7.6	6.6	7.0	7.6	6.6	7.0
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	66			37			100	100	51	100	100	60
cM capacity (veh/h)	320			467			2	1	589	1	1	269
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	SB 1			
Volume Total	110	546	546	371	296	968	881	289	107			
Volume Left	110	0	0	0	296	0	0	0	0			
Volume Right	0	0	0	371	0	0	397	289	107			
cSH	320	1700	1700	1700	467	1700	1700	589	269			
Volume to Capacity	0.34	0.32	0.32	0.22	0.63	0.57	0.52	0.49	0.40			
Queue Length 95th (ft)	37	0	0	0	108	0	0	68	45			
Control Delay (s)	22.0	0.0	0.0	0.0	25.1	0.0	0.0	16.9	26.9			
Lane LOS	C				D			C	D			
Approach Delay (s)	1.5				3.5			16.9	26.9			
Approach LOS								C	D			
Intersection Summary												
Average Delay			4.3									
Intersection Capacity Utilization			62.5%		ICU Level of Service				B			
Analysis Period (min)			15									

2030 PM Peak BUILD Conditions - Case "N"

Existing Geometry
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HCM Unsignalized Intersection Capacity Analysis 2: Montano Rd & Winterhaven Rd

Terry O. Brown, PE
4/6/2011

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	99	1149	40	281	1380	377	0	0	80	0	0	91
Sign Control	Free					Free			Stop		Stop	
Grade	0%					0%			0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.95	0.95	0.95	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	110	1277	44	296	1453	397	0	0	94	0	0	107
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked				0.93			0.93			0.93		
vC, conflicting volume	1849			1321			2922			3195		
vC1, stage 1 conf vol							638			3784		
vC2, stage 2 conf vol										925		
vCu, unblocked vol	1849			1189			2915			3210		
tC, single (s)	4.2			4.2			7.6			7.6		
tC, 2 stage (s)							6.6			6.6		
tF (s)	2.2			2.2			3.5			3.5		
p0 queue free %	66			45			100			100		
cM capacity (veh/h)	320			535			2			1		
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	SB 1			
Volume Total	110	638	638	44	296	968	881	94	107			
Volume Left	110	0	0	0	296	0	0	0	0			
Volume Right	0	0	0	44	0	0	397	94	107			
cSH	320	1700	1700	1700	535	1700	1700	511	269			
Volume to Capacity	0.34	0.38	0.38	0.03	0.55	0.57	0.52	0.18	0.40			
Queue Length 95th (ft)	37	0	0	0	83	0	0	17	45			
Control Delay (s)	22.0	0.0	0.0	0.0	19.7	0.0	0.0	13.6	26.9			
Lane LOS	C				C			B	D			
Approach Delay (s)	1.7				2.7			13.6		26.9		
Approach LOS								B		D		
Intersection Summary												
Average Delay												
Intersection Capacity Utilization												
Analysis Period (min)												

2030 PM Peak BUILD Conditions - Case "N"

Existing Geometry
D:\ATOB\PROJECTS\Montano_Access_Daskalos\Synchro\2030PBXCaseY.syn

HCM Unsignalized Intersection Capacity Analysis 3: Montano Rd & 'A'

Terry O. Brown, PE
4/14/2011

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↗		↑↑		↗
Volume (veh/h)	2326	176	0	585	0	96
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.90	0.90	0.85	0.85
Hourly flow rate (vph)	2448	185	0	650	0	113
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (ft)	707					
pX, platoon unblocked			0.71		0.71	0.71
vC, conflicting volume			2634		2773	1224
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			2481		2679	483
tC, single (s)			4.2		6.9	7.0
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	70
cM capacity (veh/h)			127		12	372
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	1224	1224	185	325	325	113
Volume Left	0	0	0	0	0	0
Volume Right	0	0	185	0	0	113
cSH	1700	1700	1700	1700	1700	372
Volume to Capacity	0.72	0.72	0.11	0.19	0.19	0.30
Queue Length 95th (ft)	0	0	0	0	0	32
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	18.9
Lane LOS						C
Approach Delay (s)	0.0				0.0	18.9
Approach LOS						C
Intersection Summary						
Average Delay	0.6					
Intersection Capacity Utilization	76.9%		ICU Level of Service		D	
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis 3: Montano Rd & 'A'

Terry O. Brown, PE
4/14/2011

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑		↑↑		↑
Volume (veh/h)	800	296	0	1072	0	166
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.95	0.95	0.85	0.85
Hourly flow rate (vph)	889	329	0	1128	0	195
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	709					
pX, platoon unblocked			0.93		0.93	0.93
vC, conflicting volume			1218		1453	444
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1075		1329	239
tC, single (s)			4.2		6.9	7.0
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	72
cM capacity (veh/h)			591		134	702
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	444	444	329	564	564	195
Volume Left	0	0	0	0	0	0
Volume Right	0	0	329	0	0	195
cSH	1700	1700	1700	1700	1700	702
Volume to Capacity	0.26	0.26	0.19	0.33	0.33	0.28
Queue Length 95th (ft)	0	0	0	0	0	28
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	12.1
Lane LOS						B
Approach Delay (s)	0.0			0.0		12.1
Approach LOS						B
Intersection Summary						
Average Delay			0.9			
Intersection Capacity Utilization			39.1%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis 3: Montano Rd & 'A'

Terry O. Brown, PE
4/14/2011

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↗		↑↑		↗
Volume (veh/h)	2796	176	0	1191	0	96
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.90	0.90	0.85	0.85
Hourly flow rate (vph)	2943	185	0	1323	0	113
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (ft)	707					
pX, platoon unblocked			0.70		0.70	0.70
vC, conflicting volume			3128		3605	1472
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			3184		3867	808
tC, single (s)			4.2		6.9	7.0
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	50
cM capacity (veh/h)			65		2	224
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	1472	1472	185	662	662	113
Volume Left	0	0	0	0	0	0
Volume Right	0	0	185	0	0	113
cSH	1700	1700	1700	1700	1700	224
Volume to Capacity	0.87	0.87	0.11	0.39	0.39	0.50
Queue Length 95th (ft)	0	0	0	0	0	64
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	36.3
Lane LOS						E
Approach Delay (s)	0.0				0.0	36.3
Approach LOS						E
Intersection Summary						
Average Delay			0.9			
Intersection Capacity Utilization			89.9%	ICU Level of Service		E
Analysis Period (min)			15			

2030 AM Peak BUILD Conditions - Case "N"

Existing Geometry
D:\ATOB\PROJECTS\Montano_Access_Daskalos\Synchro\2030ABXCaseY.syn

HCM Unsignalized Intersection Capacity Analysis 3: Montano Rd & 'A'

Terry O. Brown, PE
4/14/2011

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑		↑↑		↑
Volume (veh/h)	1128	296	0	1072	0	166
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.95	0.95	0.85	0.85
Hourly flow rate (vph)	1253	329	0	1128	0	195
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (ft)	709					
pX, platoon unblocked			0.85		0.85	0.85
vC, conflicting volume			1582		1818	627
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1336		1613	215
tC, single (s)			4.2		6.9	7.0
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	71
cM capacity (veh/h)			432		80	670
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	627	627	329	564	564	195
Volume Left	0	0	0	0	0	0
Volume Right	0	0	329	0	0	195
cSH	1700	1700	1700	1700	1700	670
Volume to Capacity	0.37	0.37	0.19	0.33	0.33	0.29
Queue Length 95th (ft)	0	0	0	0	0	30
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	12.6
Lane LOS						B
Approach Delay (s)	0.0			0.0		12.6
Approach LOS						B
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization			48.1%		ICU Level of Service	A
Analysis Period (min)			15			

2030 PM Peak BUILD Conditions - Case "N"

Existing Geometry
D:\ATOB\PROJECTS\Montano_Access_Daskalos\Synchro\2030PBXCaseY.syn

2/15/2011

Traffic Count Data Sheet

Year Counts Taken: **2010** E-W Street **Montano Blvd** Speed Limit (Montano Blvd)= **40** MPH
 N-S Street: **Coors Blvd** Speed Limit (Coors Blvd)= **45** MPH
 Date of Count: **11/16/10**

Begin Time	End Time	Eastbound (Montano Blvd)			Westbound (Montano Blvd)			Northbound (Coors Blvd)			Southbound (Coors Blvd)		
		L	T	R	L	T	R	L	T	R	L	T	R
7:00 AM	7:15 AM	45	335	85	51	57	27	43	223	178	157	298	2
7:15 AM	7:30 AM	48	305	69	51	28	29	46	237	185	163	348	0
7:30 AM	7:45 AM	56	250	43	57	58	40	64	319	134	163	375	3
7:45 AM	8:00 AM	85	217	103	71	73	52	99	345	125	139	291	6
8:00 AM	8:15 AM	42	168	102	59	125	63	73	225	83	89	225	2
8:15 AM	8:30 AM	35	146	142	37	73	43	42	269	66	44	246	4
8:30 AM	8:45 AM	67	166	124	42	85	30	28	200	64	70	162	2
8:45 AM	9:00 AM	59	124	134	54	71	33	39	285	59	69	226	4
AM Peak Hour Volumes		234	1107	300	230	216	148	252	1124	622	622	1312	11
% of Total Traffic		3.8%	17.9%	4.9%	3.7%	3.5%	2.4%	4.1%	18.2%	10.1%	10.1%	21.2%	0.2%
% Directional			26.6%			9.6%			32.3%			31.5%	
AM Peak Hour Factor			0.88			0.76			0.88			0.90	

Begin Time	End Time	Eastbound (Montano Blvd)			Westbound (Montano Blvd)			Northbound (Coors Blvd)			Southbound (Coors Blvd)		
		L	T	R	L	T	R	L	T	R	L	T	R
4:00 PM	4:15 PM	49	86	69	72	187	78	58	425	39	56	325	11
4:15 PM	4:30 PM	51	87	71	71	191	84	62	428	46	60	347	10
4:30 PM	4:45 PM	55	82	74	75	195	91	49	430	48	61	375	13
4:45 PM	5:00 PM	62	74	70	99	272	55	127	383	68	70	374	24
5:00 PM	5:15 PM	73	70	86	88	249	24	149	413	65	87	333	11
5:15 PM	5:30 PM	67	68	110	107	279	38	142	406	54	88	390	20
5:30 PM	5:45 PM	60	59	91	84	251	37	149	436	48	69	366	10
5:45 PM	6:00 PM	62	60	85	100	245	34	137	453	42	48	333	14
PM Peak Hour Volumes		262	271	357	378	1051	154	567	1638	235	314	1463	65
% of Total Traffic		3.9%	4.0%	5.3%	5.6%	15.6%	2.3%	8.4%	24.2%	3.5%	4.6%	21.7%	1.0%
% Directional			13.2%			23.4%			36.1%			27.3%	
PM Peak Hour Factor			0.91			0.93			0.96			0.92	

Montano_Coors_IC.xls

Traffic Count Data Sheet

Year Counts Taken:		2011	Montano Access Dakalos										Speed Limit (Montano)=		40	MPH
			E-W Street Montano										Speed Limit (Winter Haven)=		30	MPH
			N-S Street: Winter Haven										Date of Count:		2/23/11	
			UNSIGNALIZED													
Begin Time	End Time	Eastbound (Montano)			Westbound (Montano)			Northbound (Winter Haven)			Southbound (Winter Haven)					
		L	T	R	L	T	R	L	T	R	L	T	R	L	T	R
7:00 AM	7:15 AM	40	508	0	4	74	0	0	0	0	0	0	0	0	0	9
7:15 AM	7:30 AM	6	567	2	6	86	9	0	0	6	0	0	0	0	0	17
7:30 AM	7:45 AM	12	744	0	19	132	11	0	0	11	0	0	0	0	0	7
7:45 AM	8:00 AM	6	676	14	61	115	21	0	0	33	0	0	0	0	0	7
8:00 AM	8:15 AM	20	477	12	10	162	26	0	0	19	0	0	0	0	0	11
8:15 AM	8:30 AM	60	349	5	0	143	24	0	0	4	0	0	0	0	0	4
8:30 AM	8:45 AM	40	354	0	5	135	26	0	0	4	0	0	0	0	0	8
8:45 AM	9:00 AM	44	343	2	2	112	24	0	0	4	0	0	0	0	0	13
AM Peak Hour Volumes		44	2464	28	96	495	28	0	0	69	0	0	0	0	0	42
% of Total Traffic		1.3%	75.4%	0.9%	2.9%	15.2%	0.9%	0.0%	0.0%	2.1%	0.0%	0.0%	0.0%	0.0%	0.0%	1.3%
% Directional			77.6%			19.0%				2.1%					1.3%	
AM Peak Hour Factor			0.84			0.78				0.52					0.62	
Begin Time	End Time	Eastbound (Montano)			Westbound (Montano)			Northbound (Winter Haven)			Southbound (Winter Haven)					
		L	T	R	L	T	R	L	T	R	L	T	R	L	T	R
4:00 PM	4:15 PM	8	178	3	4	389	92	0	0	3	0	0	0	0	0	35
4:15 PM	4:30 PM	20	168	4	8	326	95	0	0	8	0	0	0	0	0	22
4:30 PM	4:45 PM	20	193	3	7	357	82	0	0	11	0	0	0	0	0	20
4:45 PM	5:00 PM	23	192	4	3	352	108	0	0	8	0	0	0	0	0	14
5:00 PM	5:15 PM	5	174	2	4	379	74	0	0	5	0	0	0	0	0	20
5:15 PM	5:30 PM	17	190	6	6	356	84	0	0	11	0	0	0	0	0	23
5:30 PM	5:45 PM	7	184	2	0	379	93	0	0	4	0	0	0	0	0	14
5:45 PM	6:00 PM	9	168	0	4	354	85	0	0	4	0	0	0	0	0	13
PM Peak Hour Volumes		71	731	14	22	1424	377	0	0	30	0	0	0	0	0	91
% of Total Traffic		2.6%	26.5%	0.5%	0.8%	51.6%	13.7%	0.0%	0.0%	1.1%	0.0%	0.0%	0.0%	0.0%	0.0%	3.3%
% Directional			29.6%			66.1%				1.1%					3.3%	
PM Peak Hour Factor			0.93			0.94				0.68					0.65	