



EN, 10/26/17

MEMORANDUM

DATE: May 10, 2017
(previous version March 15, 2017)

TO: Jennifer Irvine, P.E.
County Engineer
El Paso County Department of Public Works

FROM: Jeffrey C. Hodsdon, P.E., PTOE - LSC Transportation Consultants, Inc.

SUBJECT: Academy Gateway
LSC #134640

We have prepared this memorandum to provide you with the most currently anticipated land use and trip generation information for the Academy Gateway development. The memo also addresses Planning and Community Development (PCD) Engineering staff review comments.

Site Land Use Changes and Trip Generation

Attached is an updated trip generation estimate for the entire Academy Gateway site. The trip generation estimate has been updated to reflect the following:

Lot 1: The previously proposed Kum & Go gas station/convenience store has been replaced with another potential gas station/convenience store. The most recent site plan shows fewer vehicle fueling positions than the previously proposed Kum & Go.

Lot 2: The currently anticipated potential user for this lot is a coffee shop with a drive-through window. Note: At the time the traffic impact study (TIS) was prepared, there was no information on potential users.

Lot 10: The currently anticipated potential user for this lot is a limited service hotel. Note: At the time the TIS was prepared, there was no information on a potential user for this site.

The table shows an estimated increase in the morning peak-hour “driveway” trip generation but a decrease in afternoon peak-hour trip generation. The increase in the morning peak hour is primarily

due to the proposed Lot 2 coffee shop. A high percentage of these morning peak-hour trips will likely be pass-by and diverted trips with most exiting to the south on Struthers Road. This would translate to more right turns out of the site at the access points than left turns (right turns being an easier turning movement). This would apply to the gas station/convenience store trips as well.

Gleneagle/Struthers Intersection Traffic Control

It is our understanding that the County is proceeding with the roundabout intersection control option for Gleneagle/Struthers. The report from Wilson & Company dated February 2, 2017 indicates that *Year 2035 peak hour traffic volumes documented in the Academy Gateway Traffic Impact Analysis, January 2014 were used to conduct the traffic analyses for the intersection improvement re-evaluation.*

Other Technical Notes

- The intersection peak-hour traffic volumes shown in Figure 3 of the TIS incorporate adjustments by LSC for the intersection of Gleneagle/Struthers (and Shepherd Heights/ Struthers). LSC adjusted the raw counts from May 21, 2014 at these intersections due to Interstate 25 construction. Motorists were avoiding construction on the interstate by using a combination of Voyager and Struthers as an alternate route. Therefore, the counts were abnormal. We completed a follow-up count at North Gate/Struthers. Based on this newer count, LSC adjusted the volumes at the two intersections to the north of it.
- The TIS indicates the following in the last paragraph on page 7:

Once a connection is made through the Phase II parcel to the north, internal way-finding signs should be placed on site to direct traffic from the Kum & Go and other parcels on the south to the intersection of Struthers/Gleneagle as an alternative to making a left turn at Shepard Heights.

The volume estimates reflect the internal connection and resulting option available to exiting traffic during peak times to utilize this internal connection to turn north onto Struthers or northeast on Gleneagle Drive via the Struther/Gleneagle intersection. The proposed internal signs will assist in directing drivers who may be unfamiliar with the site (and remind those familiar with the site) to the north access via the internal connection. This connection would provide an alternative to the eastbound left turn at the two-way stop-sign controlled middle access intersection during peak periods.

- Per staff comments, average daily traffic (ADT) values have been added to the attached Figures 3 and 8 from the TIS. These ADT values correspond to the peak-hour counts and site-generated traffic volumes and contained in the TIS.
- Estimated fair and equitable contribution to the intersection improvements at Struthers and Gleneagle:

- \$268,125.84 based on **twenty percent** of the estimated total cost of \$1,340,629.20 as shown on the attached cost estimate for the roundabout intersection.
- Twenty percent represents the site buildout traffic percentage of the projected total existing-plus-site morning plus afternoon peak hour intersection approach volumes (all approaches) from Figures 3 and 7 of the TIS. The sum of the existing intersection turning movements (AM plus PM) shown in Figure 3 is 2,624 trips and the sum of the projected buildout site generated turning movements in Figure 7 is 642 trips. Six hundred forty-two divided by 3,266 (the sum of 2,624 and 642) is 0.2 or 20 percent.

* * * * *

As the recent Wilson & Company report was based on traffic volumes from our traffic report for this project, this memo will serve as the final update to our traffic report. The Wilson report showed an option for restricting the site access across from Shepard Heights to a three-quarter movement access. We assume the County will disregard this option shown in the Wilson report and allow the Academy Gateway project approvals to proceed with this access as a full-movement intersection.

Enclosures: Table 1 - Trip Generation
Figures 3 and 8 from Updated TIA 7-28-15 with ADT values added
Figure 7 from Updated TIA 7-28-15
Roundabout Intersection Cost Estimate Exhibit

Table 1
Trip Generation Estimate
Academy Gateway

Land Use Code	Land Use Description	Trip Generation Units	Trip Generation Rates ⁽¹⁾										Total Trips Generated										Total External Trips Generated				New External Trips Generated	
			Average Weekday Traffic		Morning Peak Hour		Afternoon Peak Hour		Average Weekday Traffic		Morning Peak Hour		Afternoon Peak Hour		Average Weekday Traffic		Morning Peak Hour		Afternoon Peak Hour		Pass-By Trips ⁽²⁾	New Weekday Traffic						
			In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out										
Trip Generation Estimate Based on Currently Proposed Site Plan																												
945	Gasoline/Service Station with Convenience Market	12 VFP ⁽³⁾	162.78	5.08	5.08	6.76	6.76	1,953	61	61	81	81	15%	1,660	52	52	69	69	66%	564								
937	Coffee/Donut Shop w/ Drive Thru	2.2 KSF ⁽⁴⁾	818.28	51.30	49.28	21.40	21.40	1,800	113	108	47	47	15%	1,530	96	92	40	40	89%	168								
932	High-Turnover (Sit-Down) Restaurant	10 KSF	127.15	5.95	4.86	5.91	3.94	1,272	59	49	59	39	10%	1,144	54	44	53	35	43%	652								
934	Fast-Food Restaurant with Drive-Through Window	3 KSF	496.12	23.16	22.26	16.98	15.67	1,488	69	67	51	47	12%	1,310	61	59	45	41	50%	655								
912	Drive-in Bank	3 DIL ⁽⁵⁾	139.25	5.57	3.72	16.29	16.95	418	17	11	49	51	9%	380	15	10	44	46	47%	201								
310	Hotel	64 Rooms	8.17	0.31	0.22	0.31	0.29	523	20	14	20	19	15%	444	17	12	17	16	0%	444								
820	Shopping Center	47 KSF	70.74	1.01	0.62	2.99	3.37	3,325	48	29	140	158	10%	2,992	43	26	126	143	34%	1,975								
								10,779	387	339	447	443		9,460	338	295	394	390		4,660								
Trip Generation Estimate Based on Previous Site Plan																												
945	Gasoline/Service Station with Convenience Market	20 VFP	162.78	5.08	5.08	6.76	6.76	3,256	102	102	135	135	9%	2,963	92	92	123	123	56%	1,304								
932	High-Turnover (Sit-Down) Restaurant	10 KSF	127.15	5.95	4.86	5.91	3.94	1,272	59	49	59	39	9%	1,157	54	44	54	36	43%	659								
934	Fast-Food Restaurant with Drive-Through Window	3 KSF	496.12	23.16	22.26	16.98	15.67	1,488	69	67	51	47	9%	1,354	63	61	46	43	50%	677								
912	Drive-in Bank	3 DIL	139.25	5.57	3.72	16.29	16.95	418	17	11	49	51	9%	380	15	10	44	46	47%	201								
820	Shopping Center	73 KSF	70.74	1.01	0.62	2.99	3.37	5,164	74	45	218	246	9%	4,699	67	41	199	224	34%	3,101								
								11,597	321	273	512	519		10,553	291	248	466	472		5,943								
			Change in trip generation estimate																									
			-818 66 66 -65 -76 -82 -1,093 47 47 -72 -82 -1,283																									
Notes:																												
(1) Source: "Trip Generation, 9th Edition, 2012" by the Institute of Transportation Engineers (ITE)																												
(2) Source: "Trip Generation Handbook - An ITE Proposed Recommended Practice 2nd Edition, 2004" by ITE																												
(3) VFP = vehicle fueling position																												
(4) KSF = 1,000 square feet of floor area																												
(5) DIL = drive-in lane																												
Source: LSC Transportation Consultants, Inc.																												

Notes:

(1) Source: "Trip Generation, 9th Edition, 2012" by the Institute of Transportation Engineers (ITE)

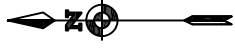
(2) Source: "Trip Generation Handbook - An ITE Proposed Recommended Practice 2nd Edition, 2004" by ITE

(3) VFP = vehicle fueling position

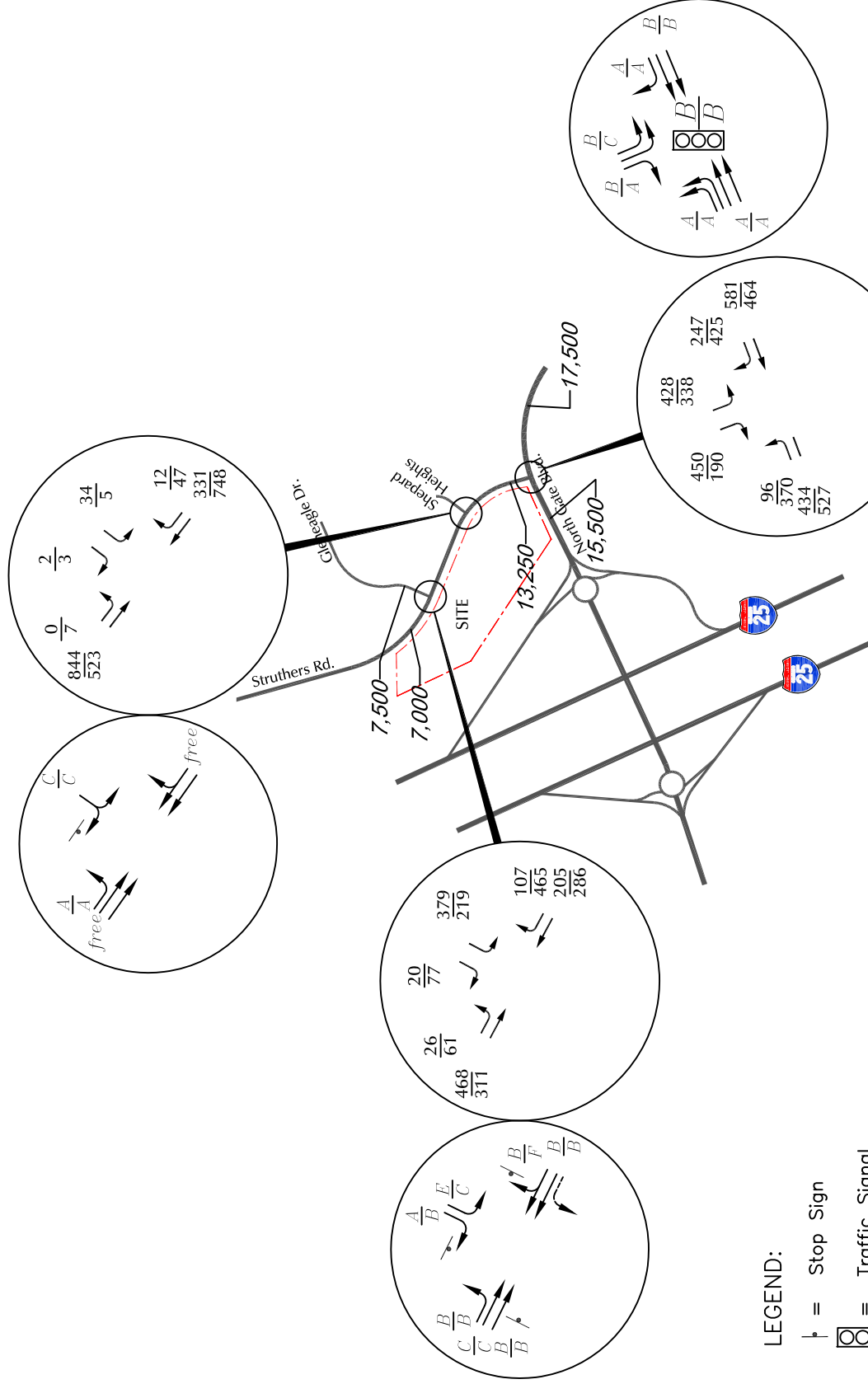
(4) KSF = 1,000 square feet of floor area

(5) DIL = drive-in lane

Source: LSC Transportation Consultants, Inc.



Approximate Scale
Scale: 1" = 1,200'

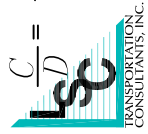


LEGEND:

⊥ = Stop Sign

⊞ = Traffic Signal

$\frac{26}{31}$ = AM Weekday Peak-Hour Traffic (vehicles per hour)
 $\frac{31}{26}$ = PM Weekday Peak-Hour Traffic (vehicles per hour)
 $\frac{A}{B}$ = AM Individual Movement Peak-Hour Level of Service
 $\frac{B}{A}$ = PM Individual Movement Peak-Hour Level of Service
 $\frac{C}{D}$ = AM Entire Intersection Peak-Hour Level of Service
 $\frac{D}{C}$ = PM Entire Intersection Peak-Hour Level of Service



2,000 = Average Weekday Traffic (vehicles per day) Estimated by LSC

Figure 3

Existing Traffic, Lane Geometry, Traffic Control and Levels of Service

Academy Gateway (LSC #134640)

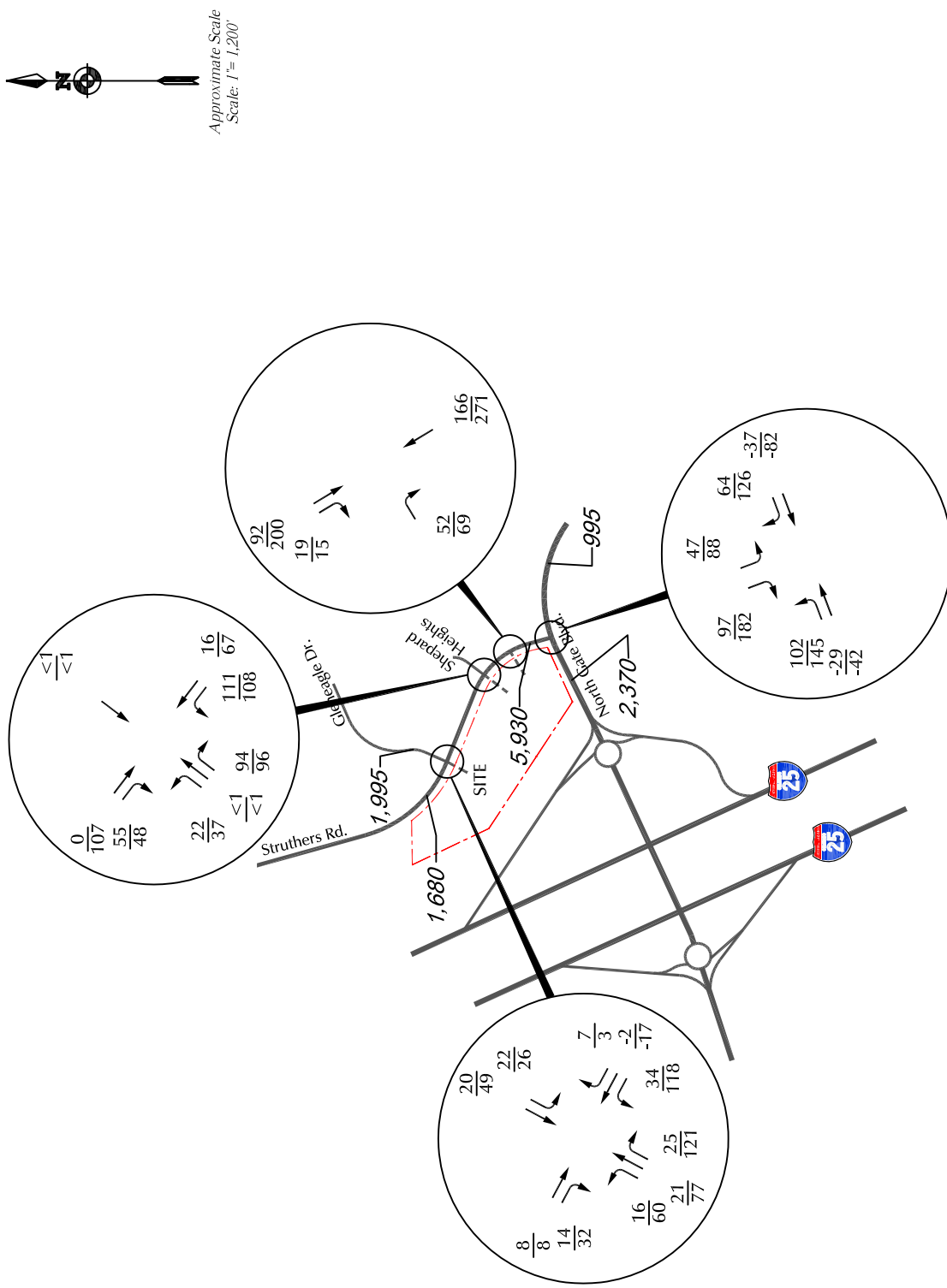


Figure 7

Assignment of Buildout Site-Generated Traffic

Academy Gateway (LSC #134640)

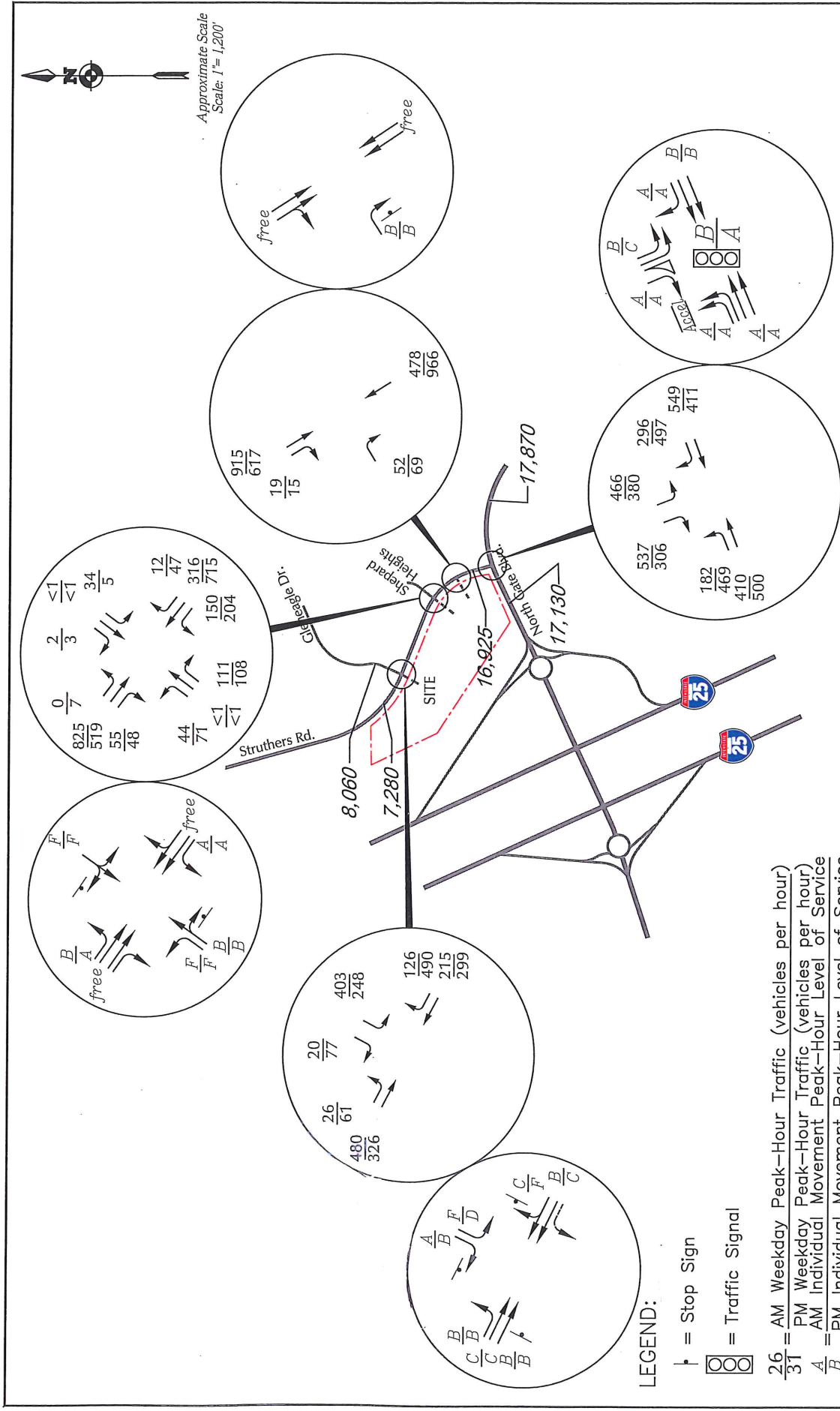


Figure 8

Existing + Phase 1 Site Traffic, Lane Geometry, Traffic Control and Levels of Service

Academy Gateway (LSC #134640)



Roundabout Intersection Estimate for Struthers Road at Gleneagle Drive

Item Number	Item	Units	Estimated Quantity	Unit Price	Extended Cost
202-00000	Clearing and Grubbing	LS	1	\$ 10,000.00	\$ 10,000.00
202-00010	Removal of Tree	EA	7	\$ 380.00	\$ 2,660.00
202-00195	Removal of Median Cover	SY	320	\$ 12.00	\$ 3,840.00
202-00203	Removal of Curb and Gutter	LF	1253	\$ 8.00	\$ 10,024.00
202-00210	Removal of Concrete Pavement	SY	290	\$ 12.00	\$ 3,480.00
202-00220	Removal of Asphalt Mat	SY	10706	\$ 7.00	\$ 74,942.00
202-00810	Removal of Ground Sign	EA	16	\$ 60.00	\$ 960.00
202-00825	Removal of Flashing Beacon	EA	4	\$ 100.00	\$ 400.00
202-05010	Sawing Concrete (10 inch)	LF	13	\$ 12.00	\$ 156.00
202-05030	Sawing Asphalt Material (10 inch)	LF	1081	\$ 6.00	\$ 6,486.00
	Relocate Telephone Vault	EA	1	\$ 5,000.00	\$ 5,000.00
	Relocate Telephone Riser	EA	1	\$ 5,000.00	\$ 5,000.00
203-00000	Unclassified Excavation / Embankment	CY	5000	\$ 18.00	\$ 90,000.00
208-00020	Silt Fence	LF	500	\$ 2.30	\$ 1,150.00
208-00045	Concrete Washout Structure	EA	2	\$ 1,500.00	\$ 3,000.00
208-00070	Vehicle Tracking Pad	EA	1	\$ 2,100.00	\$ 2,100.00
210-04020	Modify Inlet	EA	1	\$ 3,000.00	\$ 3,000.00
210-00827	Reset Pull box	EA	1	\$ 500.00	\$ 500.00
212-00006	Seeding (Native)	ACRE	1	\$ 775.00	\$ 775.00
212-00032	Soil Conditioning	ACRE	1	\$ 2,600.00	\$ 2,600.00
213-00100	Soil Binder	ACRE	1	\$ 500.00	\$ 500.00
213-00004	Mulching (Weed Free Straw)	ACRE	1	\$ 1,100.00	\$ 1,100.00
304-06007	Aggregate Base Course (Class6)	CY	2220	\$ 40.00	\$ 88,800.00
403-00721	Hot Mix Asphalt (Patching) (Asphalt)	SY	80	\$ 190.00	\$ 15,200.00
412-00600	Concrete Pavement (6inch)	SY	2644	\$ 42.00	\$ 111,048.00
412-00801	Concrete Pavement (8inch) (Special)	SY	633	\$ 110.00	\$ 69,630.00
506-00212	Riprap (12inch)	CY	50	\$ 140.00	\$ 7,000.00
603-01185	18 Inch Reinforced Concrete Pipe (CIP)	LF	150	\$ 75.00	\$ 11,250.00
603-01240	24 Inch Reinforced Concrete Pipe (CIP)	LF	800	\$ 125.00	\$ 100,000.00
604-30005	Manhole	EA	3	\$ 4,000.00	\$ 12,000.00
604-00505	Inlet Ty C (5ft)	EA	1	\$ 5,100.00	\$ 5,100.00
604-19210	Inlet Ty R L 10 (10ft)	EA	5	\$ 7,500.00	\$ 37,500.00
608-00000	Concrete Sidewalk	SY	600	\$ 50.00	\$ 30,000.00
608-00010	Concrete Curb Ramp	SY	203	\$ 135.00	\$ 27,405.00
609-21010	Curb and Gutter Type 2 (Section I-B)	LF	2771	\$ 22.00	\$ 60,962.00
609-21020	Curb and Gutter Type 2 (Section II-B)	LF	3579	\$ 21.00	\$ 75,159.00
610-00020	Median Cover Material (Patterned Concrete)	SF	20644	\$ 11.00	\$ 227,084.00
625-00000	Construction Surveying	LS	1	\$ 10,000.00	\$ 10,000.00
627-00005	Epoxy Pavement Marking	GAL	23	\$ 60.00	\$ 1,380.00
630-10005	Traffic Control	LS	1	\$ 60,000.00	\$ 60,000.00
	SUBTOTALS			\$	\$ 1,117,191.00
	Contingencies @ 20%				\$ 223,438.20
					\$ 1,340,629.20