

Traffic Memorandum

To: **Town of Gypsum**
Attn. Jim Hancock and Jerry Law
50 Lundgren Boulevard
PO Box 130
Gypsum, CO 81637

From: Kari J. McDowell Schroeder, PE, PTOE

Date: July 4, 2017

Re: **Niva Ridge**
Trip Generation Analysis
Gypsum, Colorado

Project Background:

The applicant is proposing the construction of a mixed-use neighborhood on 319 acres in Gypsum. The project is located on the previous Saddle Ridge property. The site is currently undeveloped.

The applicant would like to construct up to 394 single family homes or mountain cottages, 188 condominiums, associated clubhouses, a 100-room hotel, storage facility, 17,000 sf office spaces, and specialty retail. Phase One of the project would be limited to the amount of development allowed before requiring improvements to Cooley Mesa Road.

This memorandum identifies the volume of traffic that is anticipated to be generated by the proposed project. The traffic volume will be used to determine the anticipated impacts to the surrounding roadway network and identify areas of further traffic analysis.

Access Locations:

The site currently accesses Cooley Mesa Road at the same location as the proposed site access. This access is located 1,850 feet east of Buckhorn Valley Boulevard. It will serve as the primary access to the mixed-use neighborhood. Cooley Mesa Road is classified by the Town of Gypsum as a Major Collector Roadway. This is the equivalent of CDOT's NR-B, non-rural arterial.

A secondary access will be provided on the northeast corner of the property that accesses McGregor Drive.

The multiuse trail paralleling Alkali Creek on the western edge of the property could also be used as an emergency access. It will be gated to restrict public access.

Trip Generation:

The anticipated traffic generation for this project was calculated using the Institute of Transportation Engineers' 9th Edition of the *Trip Generation Manual*. The national standards rates were applied to the size of each use to determine the average weekday and morning/evening peak hour traffic volumes.

Internal trip capture is anticipated on the mixed-use property. An internal capture rate can generally be defined as a percentage reduction that can be applied to trip generation estimates for individual land uses to account for trips internal to the site. The internal capture rates were calculated for each land use category using ITE's *Trip Generation Handbook*⁸ methodology. Internal capture was calculated separately for Phase One and for project buildout. The internal capture calculations are included.

At buildout, the site is anticipated to generate 8,790 vehicle trips per day. This includes 720 trips during the morning peak hour and 815 trips during the evening peak hour.

Transportation Network Impacts:

Per Section 3.11(4) of the *State Highway Access Code*, an NR-B roadway with a posted speed limit of 40mph or less requires the construction of a left turn lane at 25 vph during peak morning or evening traffic.

The 25 vph threshold is anticipated to occur with the construction of 40 single family homes and a 3,000 sf restaurant. Therefore, it has been assumed that these are the land uses included in Phase One.

The Town of Gypsum's Public Works Manual Section 3.14 requires the construction of full acceleration and deceleration lanes at the intersection of a Major Collection and Minor Collector roadway. The previous Saddle Ridge traffic study suggested the construction of a roundabout at the intersection of Cooley Mesa Road and the site access. This would allow for less delay at the site access, and less widening for auxiliary turn lanes on Cooley Mesa Road.

McDowell Engineering is currently using this trip generation data to scope the extent of the required traffic analysis with the Town of Gypsum. The next step will be to collect and analyze traffic data. A full traffic study will determine the directional distribution, traffic assignment, Level of Service, and impacts on the surrounding roadway network.

McDowell Engineering is looking forward to a methodology and coordination meeting with Town staff to provide necessary analysis and engineering recommendations for the entitlement process. Please call if you would like any additional information or have any questions regarding this matter.

Sincerely,
McDowell Engineering, LLC



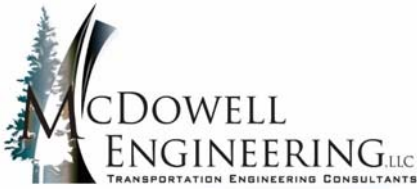
Kari J. McDowell, PE, PTOE
Traffic Engineer



MCDOWELL
ENGINEERING LLC
TRANSPORTATION ENGINEERING CONSULTANTS

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PROJECT NUMBER: M1286
 PREPARED BY: KJS
 DATE: 7/4/2017
 REVISED:

Table 3 - Project Trip Generation
 Niva Ridge
 Gypsum, Colorado
 Estimated Project-Generated Traffic¹

| ITE Code | Units | Avg. Weekday | AM Peak Hour | PM Peak Hour | Average Weekday Trips (vpd) | Morning Peak Hour | | Evening Peak Hour | | | | | |
|-------------------------------------------------------------------|-----------|--------------|--------------|--------------|-----------------------------|-------------------|------------|-------------------|------------|-----------------|------------|------------------|------------|
| | | | | | | Inbound % Trips | Trips | Outbound % Trips | Trips | Inbound % Trips | Trips | Outbound % Trips | Trips |
| <i>Phase One with Internal Capture</i> | | | | | | | | | | | | | |
| #210 Single Family Home | 40 du | 9.52 | 0.77 | 1.02 | 381 | 26% | 9 | 74% | 23 | 64% | 27 | 36% | 15 |
| Internal Trip Reduction | | | | | -27 | | 0 | | 0 | | -1 | | -1 |
| Subtotal | | | | | 354 | | 9 | | 23 | | 26 | | 14 |
| #931 Quality Restaurant | 3 ksf | 89.95 | 0.81 | 7.49 | 270 | 82% | 2 | 18% | 1 | 67% | 16 | 33% | 8 |
| Internal Trip Reduction | | | | | -27 | | 0 | | 0 | | -1 | | -1 |
| Subtotal | | | | | 243 | | 2 | | 1 | | 15 | | 7 |
| Phase One Subtotal | | | | | 624 | | 11 | | 24 | | 42 | | 22 |
| <i>Project Buildout (Phase 1 +2) with Internal Capture</i> | | | | | | | | | | | | | |
| <i>Phase One</i> | | | | | | | | | | | | | |
| #210 Single Family Home | 80 du | 9.52 | 0.77 | 1.02 | 762 | 26% | 17 | 74% | 46 | 64% | 53 | 36% | 30 |
| Internal Trip Reduction | | | | | -64 | | -2 | | -1 | | -3 | | -2 |
| Subtotal | | | | | 698 | | 15 | | 45 | | 50 | | 28 |
| #931 Quality Restaurant | 3 ksf | 89.95 | 0.81 | 7.49 | 270 | 82% | 2 | 18% | 1 | 67% | 16 | 33% | 8 |
| Internal Trip Reduction | | | | | -29 | | 0 | | 0 | | -2 | | -1 |
| Subtotal | | | | | 241 | | 2 | | 1 | | 14 | | 7 |
| Phase One Subtotal at Buildout | | | | | 1002 | | 19 | | 47 | | 67 | | 37 |
| <i>Phase Two</i> | | | | | | | | | | | | | |
| #310 Hotel | 100 Rooms | 8.17 | 0.56 | 0.59 | 817 | 61% | 35 | 39% | 22 | 53% | 32 | 47% | 28 |
| Internal Trip Reduction | | | | | -88 | | -2 | | -2 | | -3 | | -4 |
| Subtotal | | | | | 729 | | 33 | | 20 | | 29 | | 24 |
| #826 Specialty Retail | 40 ksf | 44.32 | 3.69 | 2.71 | 1773 | 48% | 71 | 52% | 77 | 56% | 61 | 44% | 48 |
| Internal Trip Reduction | | | | | -191 | | -4 | | -8 | | -7 | | -6 |
| Subtotal | | | | | 1582 | | 67 | | 69 | | 54 | | 42 |
| #852 Convenience Market | 2.5 ksf | 414.15 | 31.02 | 34.57 | 1035 | 48% | 38 | 52% | 41 | 44% | 39 | 56% | 49 |
| Internal Trip Reduction | | | | | -112 | | -2 | | -4 | | -4 | | -7 |
| Subtotal | | | | | 923 | | 36 | | 37 | | 35 | | 42 |
| #710 General Office Building | 17 ksf | 11.03 | 1.56 | 1.49 | 188 | 88% | 24 | 12% | 4 | 17% | 5 | 83% | 22 |
| Internal Trip Reduction | | | | | -35 | | -4 | | -1 | | -2 | | -4 |
| Subtotal | | | | | 153 | | 20 | | 3 | | 3 | | 18 |
| #151 Mini-Warehouse | 25 ksf | 2.50 | 0.28 | 0.29 | 63 | 48% | 4 | 52% | 4 | 53% | 4 | 47% | 4 |
| #151 Mini-Warehouse (RV Storage) | 2 acres | 35.43 | 3.90 | 3.89 | 71 | 45% | 4 | 55% | 5 | 52% | 5 | 48% | 4 |
| #495 Recreational Community Center (Public) | 6 ksf | 33.82 | 2.05 | 2.74 | 203 | 66% | 9 | 34% | 5 | 49% | 9 | 51% | 9 |
| Internal Trip Reduction | | | | | -22 | | -1 | | -1 | | -1 | | -1 |
| Subtotal | | | | | 181 | | 8 | | 4 | | 8 | | 8 |
| #210 Single Family Home | 354 du | 9.52 | 0.77 | 1.02 | 3370 | 26% | 71 | 74% | 202 | 64% | 232 | 36% | 130 |
| Internal Trip Reduction | | | | | -283 | | -8 | | -5 | | -12 | | -10 |
| Subtotal | | | | | 3087 | | 63 | | 197 | | 220 | | 120 |
| #230 Condos/Townhomes | 188 DU | 5.81 | 0.44 | 0.52 | 1092 | 17% | 14 | 83% | 69 | 67% | 65 | 33% | 32 |
| Internal Trip Reduction | | | | | -92 | | -1 | | -2 | | -3 | | -3 |
| Subtotal | | | | | 1000 | | 13 | | 67 | | 62 | | 29 |
| Phase Two Subtotal at Buildout | | | | | 7788 | | 248 | | 406 | | 420 | | 291 |
| Proposed Total Trips | | | | | 8790 | | 267 | | 453 | | 487 | | 328 |

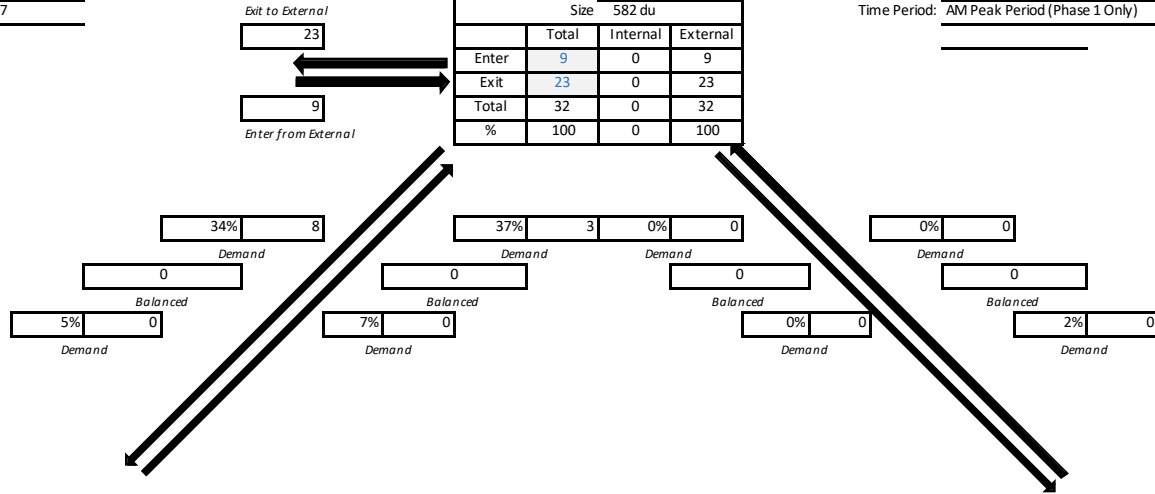
Multi-Use Trip Generation Calculation

Analyst: KJS
Date: 7/5/2017

LAND USE A

| | | | |
|-----------------------------------|-------|----------|----------|
| ITE LU Code Residential #210 #230 | | | |
| Size 582 du | | | |
| | Total | Internal | External |
| Enter | 9 | 0 | 9 |
| Exit | 23 | 0 | 23 |
| Total | 32 | 0 | 32 |
| % | 100 | 0 | 100 |

Name of Dvlpt.: Niva Ridge
Time Period: AM Peak Period (Phase 1 Only)

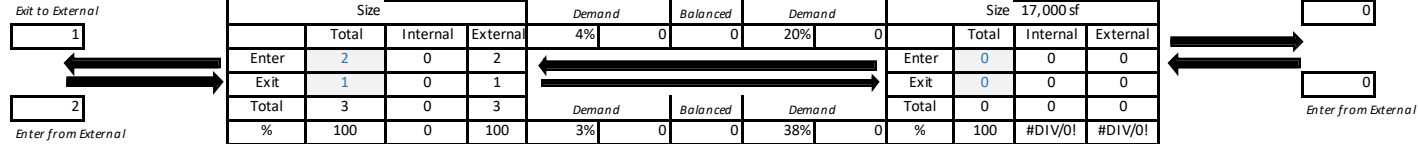


LAND USE B

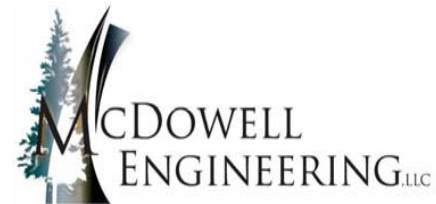
| | | | |
|--------------------------------------|-------|----------|----------|
| ITE LU Code 1931 #310 #826 #852 #495 | | | |
| Size | | | |
| | Total | Internal | External |
| Enter | 2 | 0 | 2 |
| Exit | 1 | 0 | 1 |
| Total | 3 | 0 | 3 |
| % | 100 | 0 | 100 |

LAND USE C

| | | | |
|-------------------------|-------|----------|----------|
| ITE LU Code Office #710 | | | |
| Size 17,000 sf | | | |
| | Total | Internal | External |
| Enter | 0 | 0 | 0 |
| Exit | 0 | 0 | 0 |
| Total | 0 | 0 | 0 |
| % | 100 | #DIV/0! | #DIV/0! |



| Net External Trips for Multi-Use Development | | | | | |
|----------------------------------------------|--------|--------|--------|-------|--------------------------|
| | LAND A | LAND B | LAND C | Total | |
| Enter | 9 | 2 | 0 | 11 | |
| Exit | 23 | 1 | 0 | 24 | |
| Total | 32 | 3 | 0 | 35 | |
| Single Use Trip Gen. | 32 | 3 | 0 | 35 | Internal Capture 0.0% |



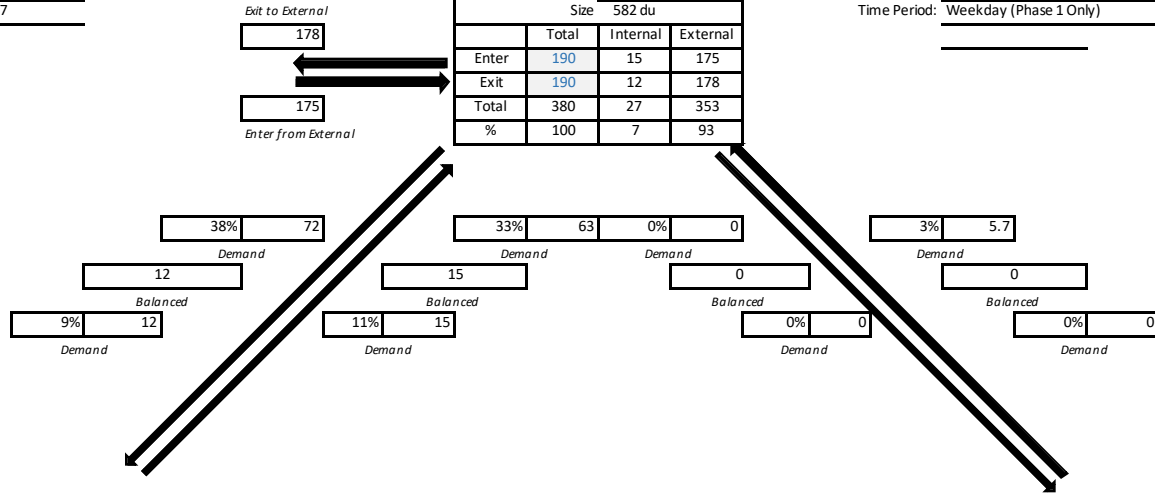
Multi-Use Trip Generation Calculation

Analyst: KJS
Date: 7/5/2017

LAND USE A

| | | | |
|-------------|-------|-----------------------|----------|
| ITE LU Code | | Residential #210 #230 | |
| Size | | 582 du | |
| | Total | Internal | External |
| Enter | 190 | 15 | 175 |
| Exit | 190 | 12 | 178 |
| Total | 380 | 27 | 353 |
| % | 100 | 7 | 93 |

Name of Dvlpt.: Niva Ridge
Time Period: Weekday (Phase 1 Only)

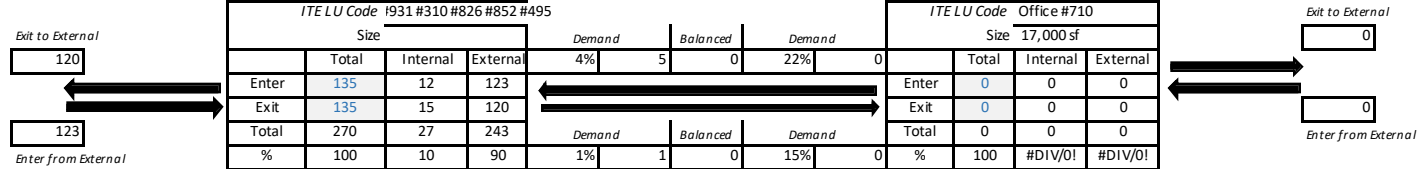


LAND USE B

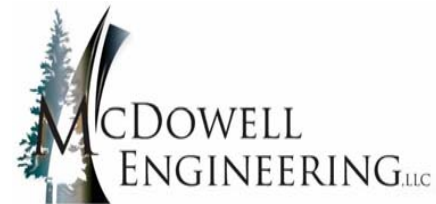
| | | | | |
|-------------|-------|--------------------------|----------|--|
| ITE LU Code | | #931 #310 #826 #852 #495 | | |
| Size | | | | |
| | Total | Internal | External | |
| Enter | 135 | 12 | 123 | |
| Exit | 135 | 15 | 120 | |
| Total | 270 | 27 | 243 | |
| % | 100 | 10 | 90 | |

LAND USE C

| | | | |
|-------------|-------|-------------|----------|
| ITE LU Code | | Office #710 | |
| Size | | 17,000 sf | |
| | Total | Internal | External |
| Enter | 0 | 0 | 0 |
| Exit | 0 | 0 | 0 |
| Total | 0 | 0 | 0 |
| % | 100 | #DIV/0! | #DIV/0! |



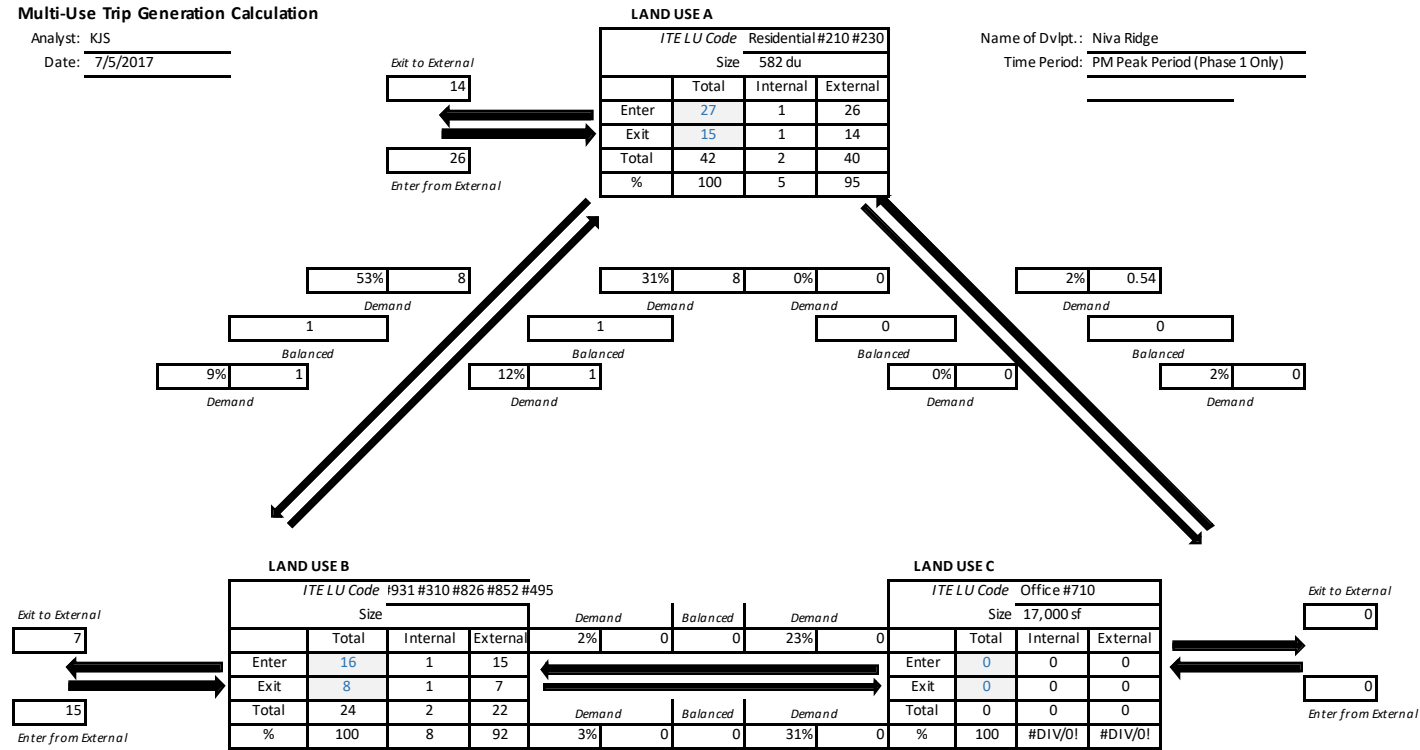
| Net External Trips for Multi-Use Development | | | | | |
|----------------------------------------------|--------|--------|--------|-------|------------------|
| | LAND A | LAND B | LAND C | Total | |
| Enter | 175 | 123 | 0 | 298 | |
| Exit | 178 | 120 | 0 | 298 | |
| Total | 353 | 243 | 0 | 596 | |
| Single Use Trip Gen. | 380 | 270 | 0 | 650 | Internal Capture |
| | | | | | 8.3% |



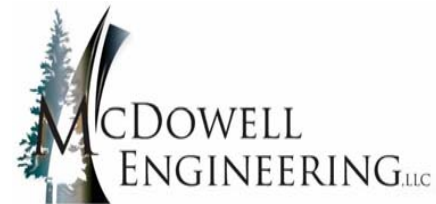
Multi-Use Trip Generation Calculation

Analyst: KJS
Date: 7/5/2017

Name of Dvlpt.: Niva Ridge
Time Period: PM Peak Period (Phase 1 Only)



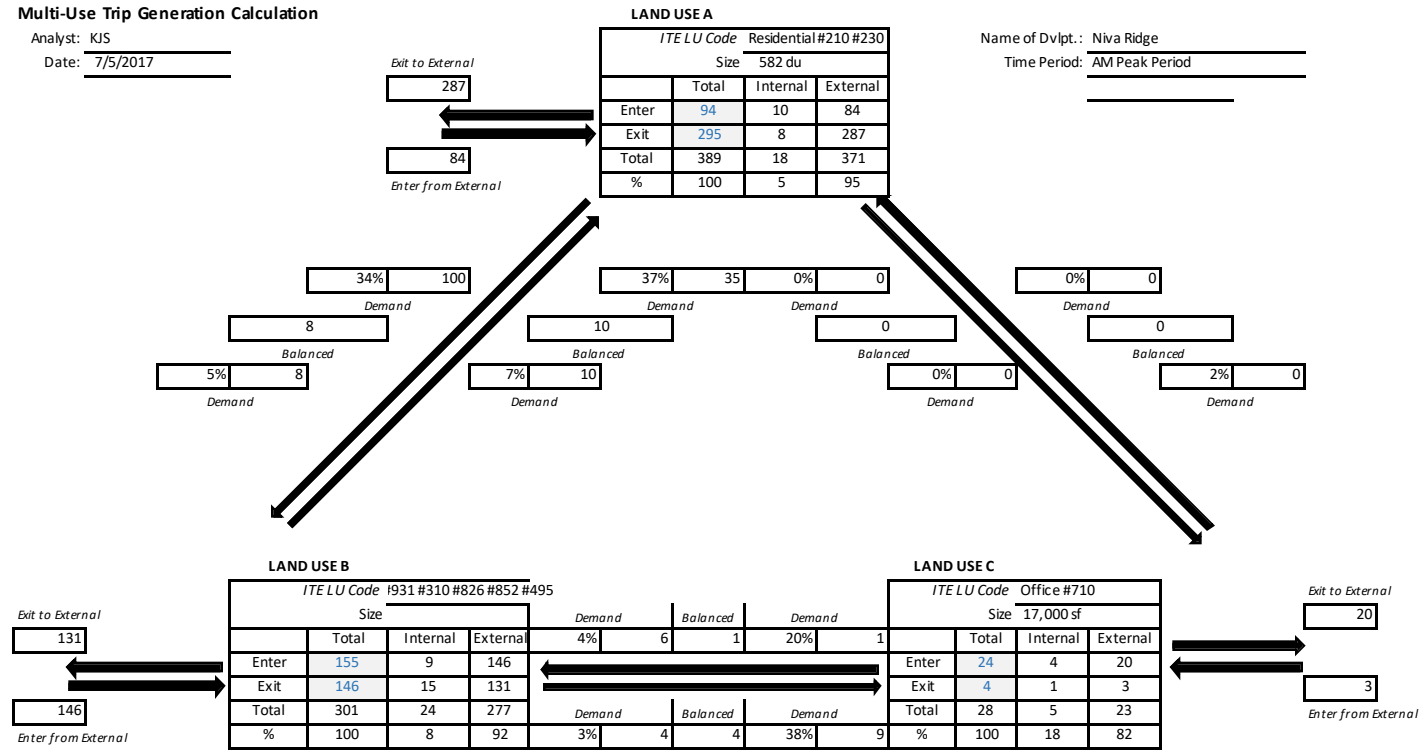
| Net External Trips for Multi-Use Development | | | | | |
|----------------------------------------------|--------|--------|--------|-------|--------------------------|
| | LAND A | LAND B | LAND C | Total | |
| Enter | 26 | 15 | 0 | 41 | |
| Exit | 14 | 7 | 0 | 21 | |
| Total | 40 | 22 | 0 | 62 | |
| Single Use Trip Gen. | 42 | 24 | 0 | 66 | Internal Capture 6.1% |



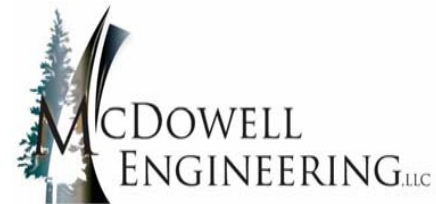
Multi-Use Trip Generation Calculation

Analyst: KJS
Date: 7/5/2017

Name of Dvlpt.: Niva Ridge
Time Period: AM Peak Period



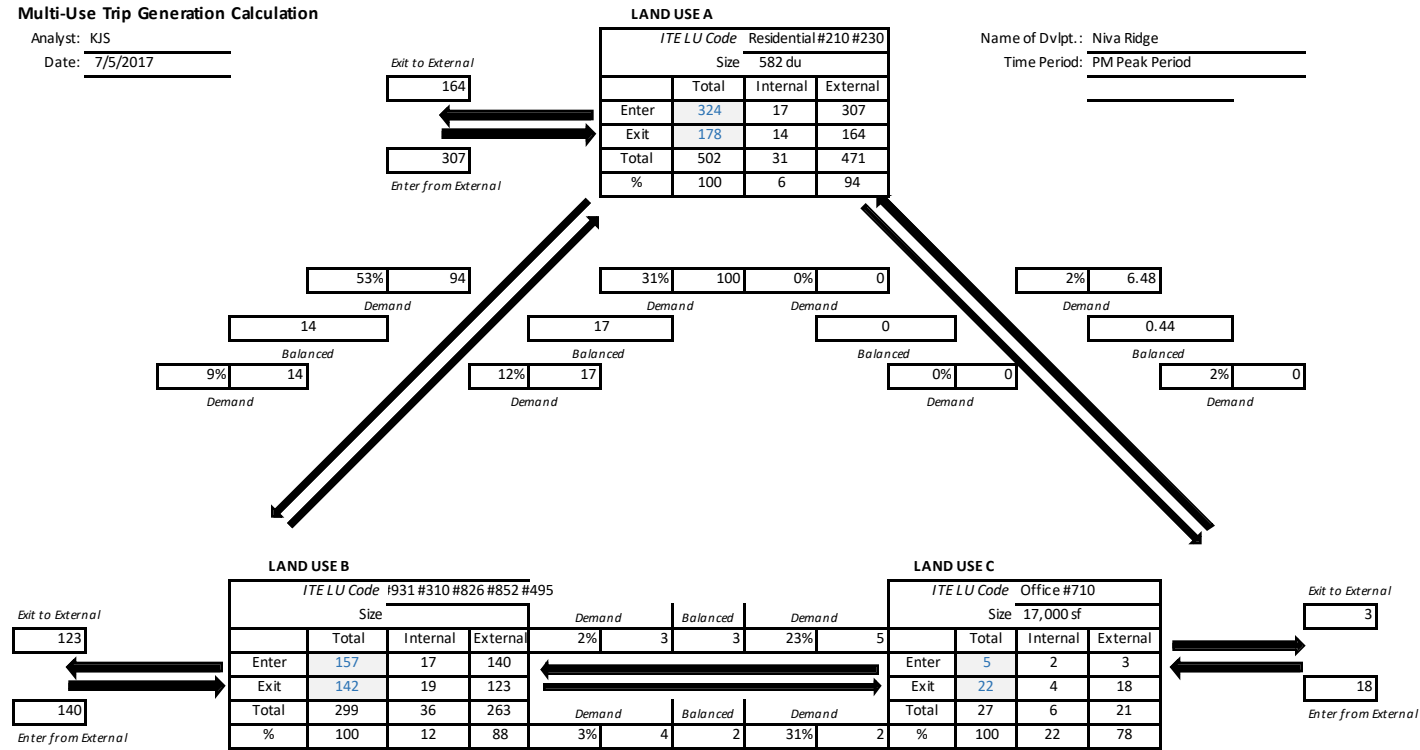
| Net External Trips for Multi-Use Development | | | | | |
|----------------------------------------------|--------|--------|--------|-------|--------------------------|
| | LAND A | LAND B | LAND C | Total | |
| Enter | 84 | 146 | 20 | 250 | |
| Exit | 287 | 131 | 3 | 421 | |
| Total | 371 | 277 | 23 | 671 | |
| Single Use Trip Gen. | 389 | 301 | 28 | 718 | Internal Capture 6.5% |



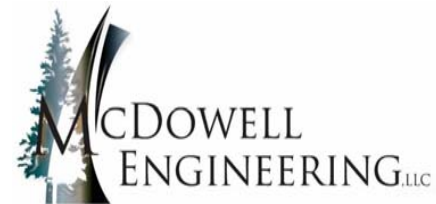
Multi-Use Trip Generation Calculation

Analyst: KJS
Date: 7/5/2017

Name of Dvlpt.: Niva Ridge
Time Period: PM Peak Period



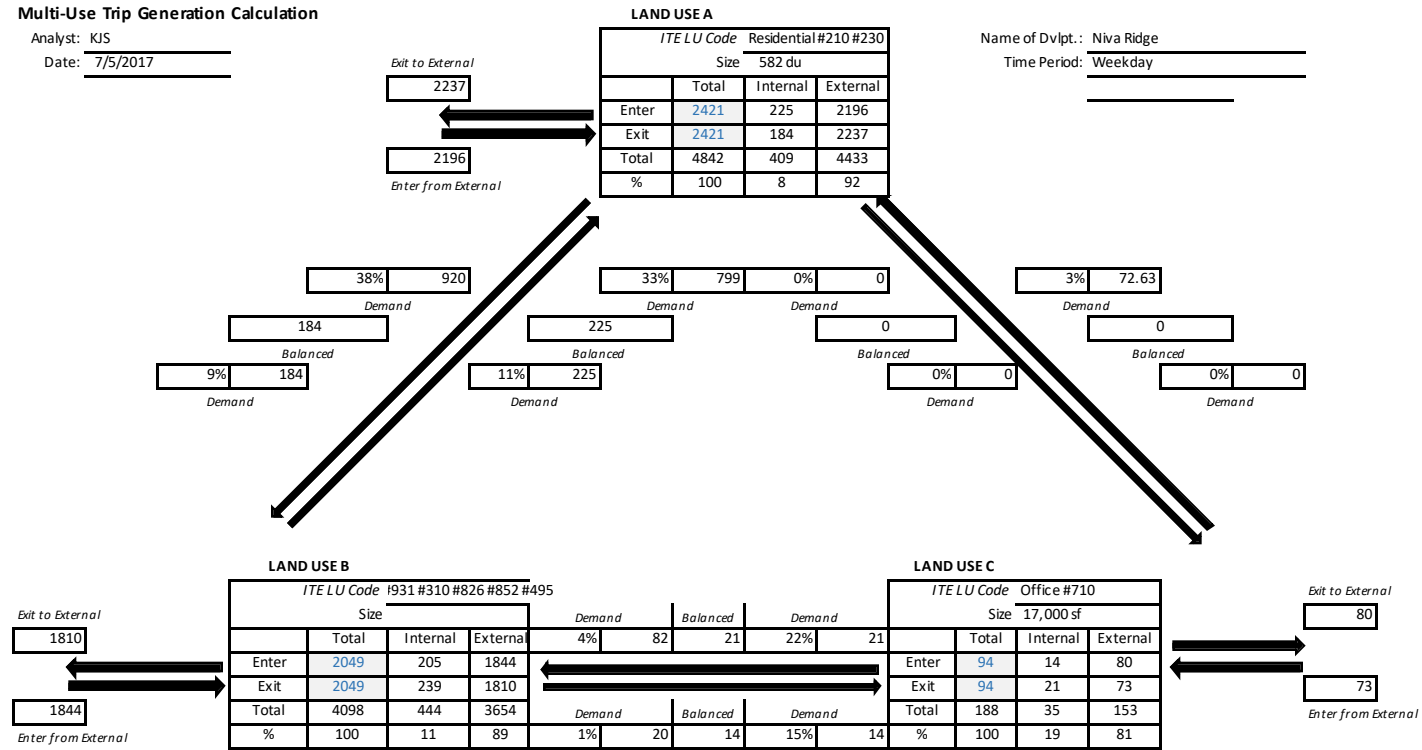
| Net External Trips for Multi-Use Development | | | | | |
|----------------------------------------------|--------|--------|--------|-------|------------------|
| | LAND A | LAND B | LAND C | Total | |
| Enter | 307 | 140 | 3 | 450 | |
| Exit | 164 | 123 | 18 | 305 | |
| Total | 471 | 263 | 21 | 755 | |
| Single Use Trip Gen. | 502 | 299 | 27 | 828 | Internal Capture |
| | | | | | 8.8% |



Multi-Use Trip Generation Calculation

Analyst: KJS
Date: 7/5/2017

Name of Dvlpt.: Niva Ridge
Time Period: Weekday



| Net External Trips for Multi-Use Development | | | | | |
|----------------------------------------------|--------|--------|--------|-------|--------------------------|
| | LAND A | LAND B | LAND C | Total | |
| Enter | 2196 | 1844 | 80 | 4120 | |
| Exit | 2237 | 1810 | 73 | 4120 | |
| Total | 4433 | 3654 | 153 | 8240 | |
| Single Use Trip Gen. | 4842 | 4098 | 188 | 9128 | Internal Capture 9.7% |

