# Rezoning Application Form

## Rezoning, Conditional Zoning, Proffer Amendment

Montgomery County, Virginia

755 Roanoke St. Suite 2A, Christiansburg, VA 24073;
540-394-2148; mcplan@montgomerycountyva.gov

**Application Request:** *(Please check one)* ☐ Conditional Rezoning ☑ Rezoning ☐ Amend Proffers

**Applicant Information:** (PLEASE PRINT – if additional owners, please attach additional sheets)

| Owner of Record (attach separate page for add'l owners): | Address: |
|---|---|
| Jerry L. & Vickie L. Akers | 3114 Madtom Lane, Salem, VA 24153 |
| Telephone: (540) 815-1274 | Email: Thejteam40@gmail.com |

| Applicant Name: Owner Contract Purchaser/Lessee | Address: |
|---|---|
| Nathan Kidd | 4378 Harborwood Road, Salem, VA 24153 |
| Telephone: (540) 309-1645 | Email: Nathan.Kidd@kiddmachineworks.com |

| Representative Name and Company: | Address: |
|---|---|
| Brushy Mountain Engineering, ATTN: Barney Horrell | 3553 Carvins Cove Road, Salem, VA 24153 |
| Telephone: (540) 526-6800 | Email: barney@brushymtnengr.com |

**Property Description:**

| Location or Address: *(Describe in relation to nearest intersection)* 10001 Old Roanoke Road | | |
|---|---|---|
| Parcel ID Number(s): **007525** | Acreage: **1.317 acres** | Existing Zoning: GB General Business |
| Comprehensive Plan Designation: Planned Light Industrial/Commercial, Corridor Overlay | Existing Use: Vacant 2 story brick building | |

**Description of Request:** (Please provide additional information on attached sheet if necessary)

| Proposed Zoning (Include Acreage ): ML Manufacturing Light, 1.317 acres |
|---|
| Proposed Use: Machine Shop |

*I certify that the information supplied on this application and on the attachments provided (maps or other information) is accurate and true to the best of my knowledge. In addition, I hereby grant permission to the agents and employees of Montgomery County and State of Virginia to enter the above property for the purposes of processing and reviewing the above application.*

Owner 1 Signature — Date: 4-28-20

Owner 2 Signature (for add'l owners please attach separate sheet) — Date: 4-28-20

Applicant Signature — Date: 4-28-20

Representative/Agent Signature — Date: 04/28/2020

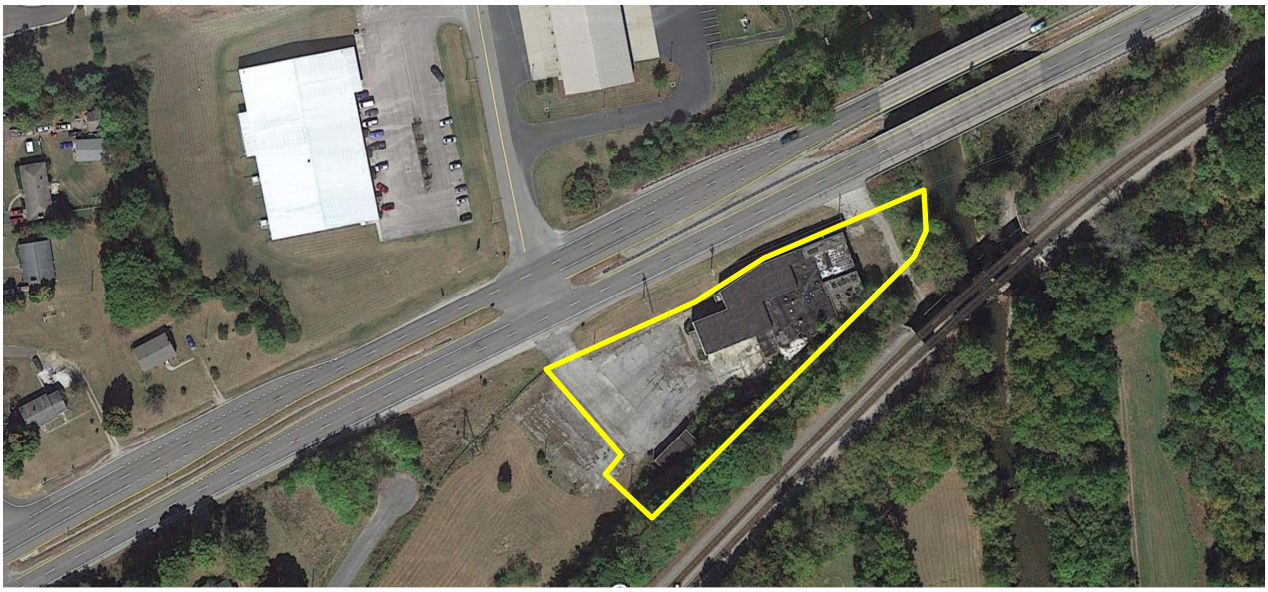
# REZONING APPLICATION

**for**

# KIDD Machine Works

**Parcel ID: 007525**

**Site Address:**
**10001 Old Roanoke Road**
**Montgomery County, Virginia**



**Prepared on April 28, 2020**

**Application Prepared by:**
**Brushy Mountain Engineering, PLLC**
**3553 Carvins Cove Road**
**Salem, VA 24153**
**(540) 526-6800**

## TABLE OF CONTENTS



## ATTACHMENTS

**Introduction:**

Background: The subject property has long been a keystone of the Elliston community. For many years the Green Hill Meat Processing Plant provided jobs for local residents and delicious pork and beef products for the entire region. Several years ago, Green Hill was purchased by Sara Lee and eventually the plant was closed. The property was donated to TAP and has been sold. The current owners are Jerry L. and Vickie L. Akers who recently subdivided the property into two tracts. The applicant, Nathan Kidd, now has a Contract to Purchase the lot with the old buildings on it pending approval of this rezone to allow for a machine shop in the existing building.

**Current Conditions:** There are two separate brick buildings on the subject tract. The larger building is the old meat processing plant. The smaller building is a storage building with two overhead doors. A shared access easement was created when the parcel was split so that both tracts could use the existing driveway onto Old Roanoke Road (Hwy 11 & 460). This shared driveway must remain to serve both tracts. The rear of the property is bordered by double railroad tracks on an elevated rail bed. These rail lines cross the Roanoke River on a multi-span high bridge. The Roanoke River borders the subject property to the east before it flows to the north and under Old Roanoke Road. A portion of the subject property is within the floodplain.

Attached is the recent subdivision plat which shows the existing site improvements on the subject property. The larger building is situated less than a foot from the front Right-of-Way line. Pavement covers the majority of the site. The pavement extends to a concrete wall in the rear and onto the remainder tract to the west. A truck dock is located in the front portion of the building. There is very little landscaping present on the site currently.

**Proposed Site Improvements:** Mr. Kidd plans to remodel the larger building and use it for a machine shop. It is critical to his business operation that he maintain the truck dock on the front side of the building. Parking will be provided along the rear of the property and near the main door into the building. At this time there are no new buildings planned. The existing asphalt parking lot will be repaired and sealed before being restriped with adequate parking. Landscaping will be installed to the extent feasible while still providing the required vehicle access to the site and the adjacent parcel.

**Landscaping:** There is very little space on the subject property in front of the existing building. This prevents installing the standard front yard buffer or corridor plantings. The proposed site plan shows the area of existing pavement which will be removed to allow for the installation of trees and plantings. A paved path to the truck dock on the front side of the building must be maintained which limits the area of pavement which can be removed. The existing trees in the rear of the property will remain to screen the railroad tracks. The fact that these tracks are elevated as they approach the bridge means that any plantings along the southern property line would be ineffective screening from the agricultural property to the south. The potential planting area to the west is limited by the need to maintain a shared access drive and the existing smaller building. The proposed site plan calls for removing a portion of the existing asphalt to allow for new trees and plantings.

**Proposed Business Operation Details:** The proposed machine shop will start operations with only a couple of full-time employees but hopes to expand to nearly 10 employees within a couple of years. The primary customers for the machine shop are the railroad and large regional manufacturing plants. The machine shop takes in metal stock and uses high precision machinery to shape the metal into mechanical components. The concrete construction of the existing building is well suited for the sensitive machinery that will be used. Raw metal will be delivered to the front truck dock on an as needed basis. Finished product will be loaded onto shipping trucks at the same dock. Generally, the facility will not serve walk in customers, therefore the daily traffic will generally be limited to employees.

**VDOT Traffic Analysis:** Attached is a detailed traffic analysis. The finding is that turn and deceleration lanes are not warranted for the planned use. However, if the adjoining property is developed in the future or the operation of the machine shop expands more rapidly than hoped, an updated traffic study will be required.

**Utility Availability:** The existing building has been vacant for many years and all of the internal metal, including the plumbing and wiring, have been removed for scrap. This means all interior mechanical infrastructure will be new. There is an existing sanitary sewer main east of the building which follows the river to the treatment facility. A new septic tank will be installed and then connected to this sanitary main. This design concept has been reviewed by Chuck Campbell. There is an existing water main on the north side of Old Roanoke Road. The cost to connect to this main is prohibitive. There is an existing well on the property which previously served the meat packing plant. The planned water usage is only for a couple of employee restrooms which is considerably less than the meat packing operation. The existing well is currently being tested for coliform bacteria. VDH does not require any testing on existing wells that serve private residences or businesses under a certain size. Therefore, the coliform testing is voluntary and will ensure good water quality.

There is currently 3-phase electric service available directly in front of the building. As mentioned above the building has been previously stripped and will be completely rewired.

**Comprehensive Plan Review:** The Future Land Use Map designates this site as Planned Light Industrial/Commercial and notes that the site is in the Lafayette Route 11/460 Corridor Plan. In the Elliston and Lafayette Village Plan the first item identified by citizen input was “the need for increased jobs and light industrial, commercial, and tourism development”. The planned machine shop will create jobs in the light manufacturing nature. The Owner of the machine shop is proffering that the site will be developed as a machine shop and that any significant expansion or change in use will trigger a new traffic impact study.

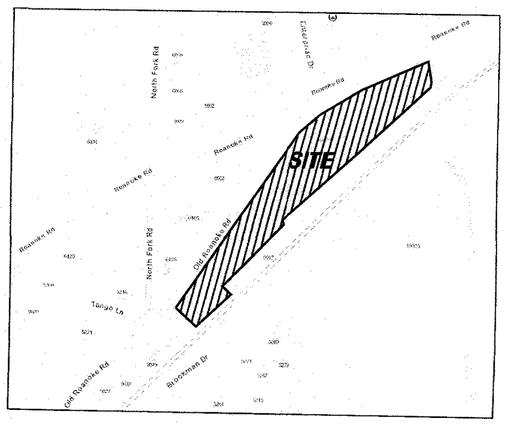
PLU 2.1 Criteria for Evaluating Rezoning Applications

1. Location: The site is located in the Elliston Urban Expansion Area
2. Public Utilities: As discussed above, the building will be connected to the public sanitary sewer main and will use an existing well.

3. Road Access: VDOT has reviewed the attached Traffic Analysis for the planned use as a machine shop and determined that the existing entrance is adequate as is.
4. Public Facilities & Amenities: A site development plan for the entire property is included. There are no new buildings or paved areas planned at this time. Instead some existing pavement area is to be removed to allow for landscaping. This manufacturing use will not be for the general public and therefore does not warrant any walkways or public open spaces.
5. Interparcel Access: The existing entrance is already included in an shared access easement so that it will also serve the undeveloped property to the north. As proffered, if and when this adjoining property is developed, a new traffic impact study will be required.
6. Pedestrian Access: The existing site improvements provide access from the parking into the building. There are no sidewalks or pedestrian trails along Old Roanoke Road that need to be connected.
7. Buffers: As discussed above, the Owner is working closely with County Planning staff to provide landscape buffers.

**Conclusion:** The proposed rezone will allow for an existing building which has stood vacant for years now to be brought back to life as a machine shop. There are other industrial/manufacturing nature businesses on the opposite side of the highway and this property was previously industrial in nature (meat processing plant). Mr. Kidd is requesting this rezone so that he may create jobs in Elliston and revitalize an important historic landmark along Old Roanoke Road.

**INSTRUMENT #_____ P.B.___, PG.___, SLIDE___**




LOCATION MAP BY CHRISTIANSBURG GIS 1" = 425'

STATE OF VIRGINIA
_____ OF _____
TO WIT:

I, _____, A NOTARY PUBLIC IN AND FOR THE AFORESAID STATE DO HEREBY CERTIFY THAT JERRY L. AKERS, WHOSE NAME IS SIGNED TO THE FOREGOING WRITING HAS PERSONALLY APPEARED BEFORE ME AND ACKNOWLEDGED THE SAME IN MY AFORESAID JURISDICTION ON THIS ____ DAY OF _____, 2019.

_____
NOTARY PUBLIC, DATE & SEAL

REGISTRATION #:_____

STATE OF VIRGINIA
_____ OF _____
TO WIT:

I, _____, A NOTARY PUBLIC IN AND FOR THE AFORESAID STATE DO HEREBY CERTIFY THAT VICKIE L. AKERS, WHOSE NAME IS SIGNED TO THE FOREGOING WRITING HAS PERSONALLY APPEARED BEFORE ME AND ACKNOWLEDGED THE SAME IN MY AFORESAID JURISDICTION ON THIS ____ DAY OF _____, 2019.

_____
NOTARY PUBLIC, DATE & SEAL

REGISTRATION #:_____

CONFORMING STATEMENT:

I HEREBY CERTIFY THAT THIS PLAT WAS MADE BY ME AND THAT THE MONUMENTS SHOWN ON THIS PLAT HAVE BEEN PLACED AND THEIR LOCATION AND CHARACTER ARE CORRECTLY SHOWN. THIS SURVEY IS CORRECT TO THE BEST OF MY KNOWLEDGE AND COMPLIES WITH THE MINIMUM STANDARDS AND PROCEDURES AS ESTABLISHED BY THE VIRGINIA STATE BOARD OF ARCHITECTS, PROFESSIONAL ENGINEERS, LAND SURVEYORS, CERTIFIED INTERIOR DESIGNERS, AND LANDSCAPE ARCHITECTS.

_____
ALAN CLEMONS – L.S. DATE

TAX PARCEL #060–A 9A(0.107± ACRES) APPEARS TO HAVE BEEN TAKEN IN BY THE HIGHWAY TAKE SHOWN ON SHEETS 5 AND 6 OF HIGHWAY PLAN NUMBER 11–060–1661–01 DATED AND REVISED 11–29–49.

**KNOW ALL MEN BY THESE PRESENTS TO WIT:**

THAT JERRY L. & VICKIE L. AKERS ARE THE OWNERS OF A 3.531 ACRE TRACT, A 0.901 ACRE TRACT, AND A 0.107 ACRE TRACT, BEING THE PROPERTY CONVEYED TO SAID OWNERS BY CHARLES LACY AKERS BY DEED DATED 9 JUNE, 2003 AND RECORDED IN THE CLERK'S OFFICE OF THE CIRCUIT COURT OF THE COUNTY OF MONTGOMERY, VIRGINIA IN INSTRUMENT #200413052.

THE SAID OWNERS HEREBY CERTIFY THAT THEY HAVE RESUBDIVIDED THE PROPERTIES OF THEIR OWN FREE WILL AND ACCORD AS REQUIRED BY SECTIONS 15.2–2240 THRU 15.2–2279 OF THE 1950 CODE OF VIRGINIA AS AMENDED TO DATE AND THE MONTGOMERY COUNTY SUBDIVISION ORDINANCE AS AMENDED TO DATE.

WITNESS THE SIGNATURES AND SEALS OF SAID OWNERS:

_____
JERRY L. AKERS – OWNER DATE
INSTRUMENT #200413052

_____
VICKIE L. AKERS – OWNER DATE
INSTRUMENT #200413052




60' 30' 0' 60' 120'
1" = 60'
GRAPHIC SCALE

**LEGEND:**

- IRON FOUND
- IRON SET
- DEEDED CORNER
- WELL
- CLEAN OUT
- UTILITY POLE
- –OHW– OVERHEAD WIRE
- –X– FENCE
- LIGHT POLE
- SEWER MANHOLE

LINE TABLE

| LINE # | DIRECTION | LENGTH |
|---|---|---|
| L1 | N 47°04'00" E | 126.00' |
| L2 | N 61°29'30" E | 100.40' |
| L3 | N 69°44'00" E | 197.40' |
| L4 | S 4°51'00" W | 52.50' |
| L5 | S 33°41'20" W | 16.56' |
| L6 | S 27°01'20" W | 48.56' |
| L7 | N 54°19'50" W | 7.62' |
| L8 | N 47°35'00" W | 74.60' |
| L9 | S 42°36'12" E | 136.84' |
| L10 | S 51°37'47" W | 32.00' |
| L11 | S 41°43'40" E | 63.47' |

COMMONWEALTH OF VIRGINIA
ALAN CLEMONS
Lic. No. 002823
11-14-19
LAND SURVEYOR

THIS PLAT IS BASED ON A PARTIAL CURRENT FIELD SURVEY. JERRY L. & VICKIE L. AKERS ARE THE OWNERS OF RECORD, SEE INSTRUMENT #200413052.

IN THE CLERK'S OFFICE OF THE CIRCUIT COURT OF MONTGOMERY COUNTY, VIRGINIA THIS MAP WAS PRESENTED WITH THE CERTIFICATE OF ACKNOWLEDGEMENT THERETO ATTACHED ADMITTED TO RECORD AT _____ O'CLOCK ____.M. ON THIS _____ DAY OF _____, 2019.

TESTE: ERICA W. CONNER
CLERK

BY: _____
DEPUTY CLERK

SOURCE OF TITLE:

THE PARCELS AS SHOWN HEREON IS THE PROPERTY ACQUIRED BY JERRY L. & VICKIE L. AKERS BY DEED RECORDED IN INSTRUMENT #200413052 IN THE CLERKS OFFICE OF THE CIRCUIT COURT OF MONTGOMERY COUNTY, VIRGINIA, SAID DEED BEING THE LAST INSTRUMENT BY WHICH SAID OWNER ACQUIRED THEIR INTEREST TO THE SUBJECT PROPERTY.

ALAN CLEMONS – L.S. 11-14-19 DATE

**MONTGOMERY COUNTY NOTES:**

1. APPROVAL HEREOF BY THE MONTGOMERY COUNTY SUBDIVISION AGENT IS FOR PURPOSES OF ENSURING COMPLIANCE WITH THE MONTGOMERY COUNTY SUBDIVISION ORDINANCE. PRIVATE MATTERS, SUCH AS COMPLIANCE WITH RESTRICTIVE COVENANTS OR OTHER TITLE REQUIREMENTS, APPLICABLE TO THE PROPERTY SHOWN HEREON, ARE NOT REVIEWED OR APPROVED WITH REGARD TO THIS SUBDIVISION OR RESUBDIVISION.
2. THE RECORDATION OF THIS PLAT OF SUBDIVISION DOES NOT CONSTITUTE A CONVEYANCE OF LAND. ANY LOT, PARCEL OR TRACT OF LAND SHOWN HEREON THAT IS INTENDED FOR SALE AND/OR CONVEYANCE MUST BE CONVEYED BY DEED RECORDED IN THE OFFICE OF THE CLERK OF CIRCUIT COURT OF MONTGOMERY COUNTY.

APPROVED:

_____
SUBDIVISION AGENT FOR MONTGOMERY COUNTY DATE

**GENERAL NOTES:**

1. THIS PLAT WAS PREPARED WITHOUT BENEFIT OF A TITLE REPORT AND IS SUBJECT THERETO. THEREFORE, THERE MAY EXIST ENCUMBRANCES WHICH AFFECT THE PROPERTY NOT SHOWN HEREON.
2. THE SUBJECT PROPERTY IS WITHIN THE LIMITS OF ZONES "X–UNSHADED", "X–SHADED", "AE", AND "AE FLOODWAY", AS SHOWN ON THE FEMA FLOOD INSURANCE RATE MAP PANEL NO. 51121C0177C, EFFECTIVE DATE SEPTEMBER 25, 2009. THIS DETERMINATION IS BASED ON SAID MAP AND HAS NOT BEEN VERIFIED BY ACTUAL FIELD ELEVATIONS.
3. PIN SET BY PARKER DESIGN GROUP IS 1/2" DIAMETER BY 18" LONG REINFORCING ROD DRIVEN TO GROUND LEVEL. A WITNESS MARKER IS DRIVEN BESIDE CORNER PIN.
4. PARCEL II AS DESCRIBED IN INSTRUMENT #2004013052 APPEARS TO HAVE BEEN BEEN CONSUMED BY HIGHWAY RIGHT–OF–WAY, SEE HIGHWAY P.B. 6, PG. 148
5. OWNERS ADDRESS AS OF DATE OF PLAT :
   3114 MADTOM LANE,
   SALEM VA 24153
6. SUBJECT PROPERTIES ARE ZONED GENERAL BUSINESS – "GB"
7. THE STREETS AND/OR PRIVATE ACCESS EASEMENTS IN THIS SUBDIVISION DO NOT MEET THE STANDARDS NECESSARY FOR INCLUSION IN THE SYSTEM OF STATE HIGHWAYS AND SHALL NOT BE MAINTAINED BY THE DEPARTMENT OF TRANSPORTATION OR THE COUNTY OF MONTGOMERY AND ARE NOT ELIGIBLE FOR RURAL ADDITION FUNDS OR ANY OTHER FUNDS APPROPRIATED BY THE GENERAL ASSEMBLY OF VIRGINIA AND ALLOCATED BY THE COMMONWEALTH TRANSPORTATION BOARD
8. NO EVIDENCE OF ANY GRAVE, OBJECT, OR STRUCTURE MARKING A PLACE OF BURIAL WAS OBSERVED AT TIME OF SURVEY.

PLAT OF PARTIAL SURVEY SHOWING
BOUNDARY LINE RELOCATION AND VACATION FOR

# JERRY L. & VICKIE L. AKERS

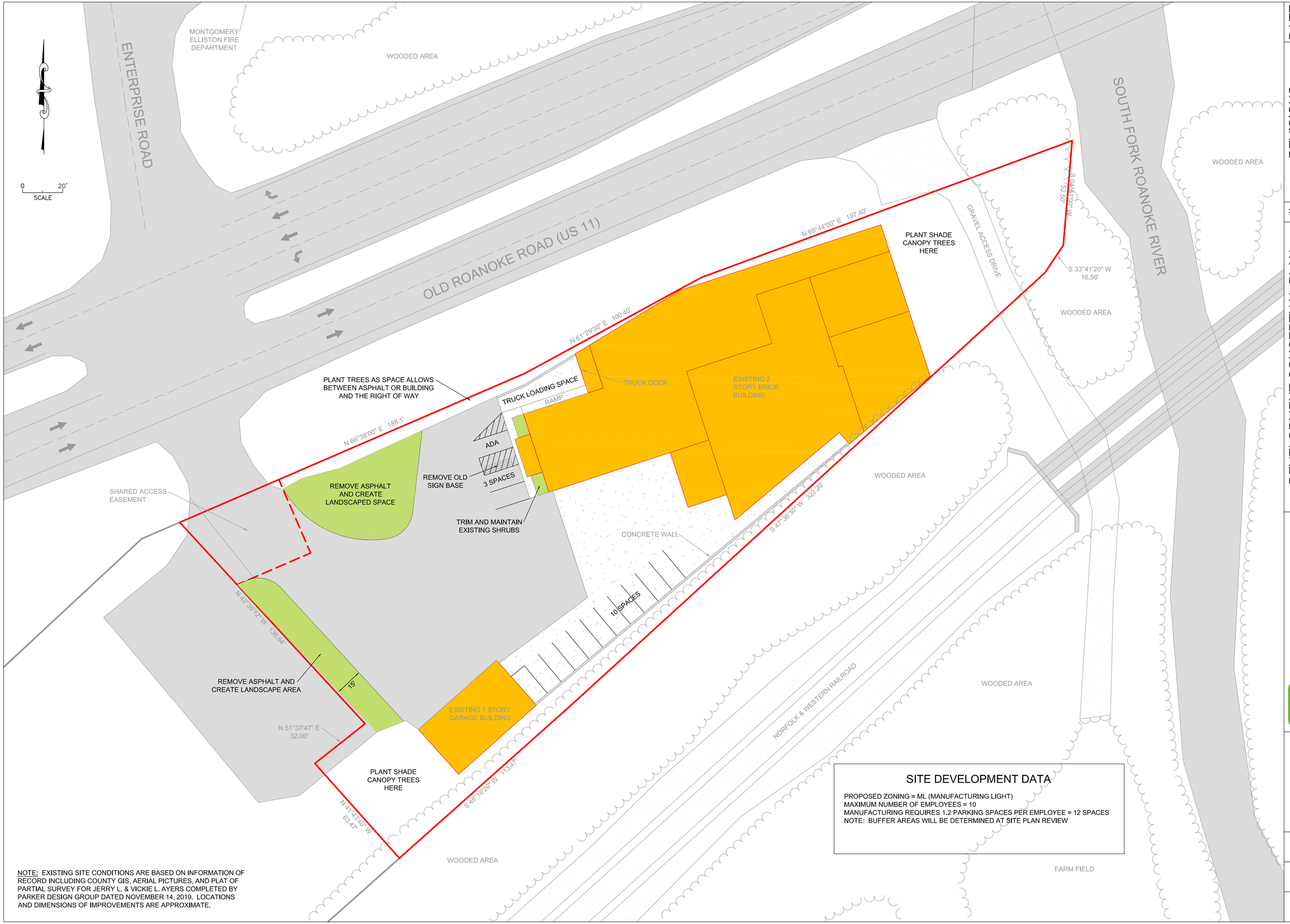
SHOWING DIVISION OF 060–A 8 (3.531 ACRES), 060–A 9 (0.901 ACRES), & 060–A 9 (0.107 ACRES)
SITUATE ON ROANOKE ROAD
CREATING HEREON LOT A (3.115 ACRES) AND LOT B (1.317 ACRES).
ALLEGHANY MAGISTERIAL DISTRICT
MONTGOMERY COUNTY, VIRGINIA
SCALE: 1"=60'

TAX #: 060–A 8, 060–A 9, & 060–A 9A
DRAWN: MAC
CALC.: BDR, BKT

DATE: 14 NOVEMBER, 2019
N.B.: RAW DATA
W.O.: 19–0052: 01


parker DESIGN GROUP
ENGINEERS * SURVEYORS * PLANNERS * LANDSCAPE ARCHITECTS
2122 Carolina Avenue, S.W.
Roanoke, Virginia 24014
Phone: 540-387-1153
Fax: 540-389-5767
www.parkerdg.com


**INSTRUMENT #_____ P.B.___, PG.___, SLIDE___**




## SITE DEVELOPMENT DATA

PROPOSED ZONING = ML (MANUFACTURING LIGHT)
MAXIMUM NUMBER OF EMPLOYEES = 10
MANUFACTURING REQUIRES 1.2 PARKING SPACES PER EMPLOYEE = 12 SPACES
NOTE: BUFFER AREAS WILL BE DETERMINED AT SITE PLAN REVIEW

NOTE: EXISTING SITE CONDITIONS ARE BASED ON INFORMATION OF RECORD INCLUDING COUNTY GIS, AERIAL PICTURES, AND PLAT OF PARTIAL SURVEY FOR JERRY L. & VICKIE L. AYERS COMPLETED BY PARKER DESIGN GROUP DATED NOVEMBER 14, 2019. LOCATIONS AND DIMENSIONS OF IMPROVEMENTS ARE APPROXIMATE.

| # | REVISIONS | DATE |
|---|---|---|
| 1 | FOR REZONING APPLICATION | 04/28/2020 |

DEVELOPMENT CONCEPTUAL PLAN
FOR
# KIDD MACHINE WORKS

NATHAN KIDD, APPLICANT
JERRY L. & VICKIE L. AKERS, PROPERTY OWNERS
TAX PARCEL ID: 07525
10001 OLD ROANOKE ROAD
MONTGOMERY COUNTY, VIRGINIA


BRUSHY MOUNTAIN ENGINEERING, PLLC
3553 Carvins Cove Road
Salem, VA 24153
(540) 526-6800
www.brushymtnengr.com


BME

BME JOB #
20-002

SHEET NAME
REZONE

SHEET NUMBER
1 OF 1

Turn Lane Analysis for Kidd Machine Shop Rezone April 23, 2020

- Proposed Use = Light Manufacturing (Machine Shop)
- Number of Employees = 10 employees

- from ITE Trip Generation Worksheet
  Daily Trips = 30 Trips
  AM Peak Hour Trips = 4 Trips
  PM Peak Hour Trips = 4 Trips

- from 2018 VDOT Traffic Count Data at site
  Average Annual Week Day Traffic (AAWDT) = 8,200 Trips
  % Traffic during Peak Hour (K Factor) = 0.115
  % Traffic in direction of study (Directional Factor is Northbound) = 0.618

  Week Day Peak Hour Traffic = (AAWDT) x (K Factor) = 8200 x 0.115 = 943 trips/hour

  Week Day Peak Hour Northbound = 943 trips/hour x 0.618 = 583 northbound trips/hour

  Week Day Peak Hour Southbound = 943 trips/hour x 0.382 = 360 southbound trips/hour

- from VDOT Figure 3-3 (Left Turn Storage Lane for 4-Lane Highway)
  4 Trips into site from Southbound lane during Week Day Peak Hour
  583 Vehicles in Northbound lane

  CONCLUSION: Left Turn Lane is NOT warranted

- from VDOT Figure 3-27 (Right Turn Treatment for 4-Lane Highway)
  4 Trips into site from Northbound lane during Week Day Peak Hour
  583 Vehicle in Northbound lane

  CONCLUSION: Right Turn Lane or Taper are NOT warranted

No further analysis required at this time. No improvements required for proposed property use. If number of employees increases significantly or use of subject property changes resulting in different trip generation, then further analysis may be required.

# MIXED USE TRIP GENERATION MODEL V4 - INPUT

All shaded cells are inputs
Regular inputs (project-specific)
Inputs that may depend on regional values from census data, travel demand model, etc...

## Section 1 - General Site Information

Site Name

**Geographic**
Developed Area (in acres)
Number of Intersections
Is Transit (bus or rail) present within the site or across the street?

**Notes / Instructions**
Include streets, ROW, parking lots, pocket parks. Do not include open space, vacant lots.
Count intersections either within or on the perimeter of the MXD. Do not count most unsignalized driveways or alleys, but DO count major entrances to shopping areas or residential developments.
Note: This is only used as a way to zero out the probability of external trips if no transit is present.

**Land Use - Surrounding Area**

Is the site in a Central Business District or TOD?
Employment within one mile of the MXD
Employment within a 30 minute Transit Trip (Door-to-door)

Answering "Yes" will reduce the HBO and NHB purpose splits for retail use to those found in smaller stores. The nature of the stores (large vs. small) should be the primary factor in the selection here.
Do not include employment within the MXD itself
Include employment within the MXD itself
This can be a difficult number to get - some suggestions are in the instructions tab in "disclaimers and warnings"

**Site Demographics**
Enter Population Directly? No
Population

If "No", will apply average HH size factors (in section 2) to dwelling units below
You do not need to enter population here. It will be calculated based on dwelling units below and average HH sizes in section 2.

Average Vehicles Owned per Dwelling Unit 1.80

For guidance, one can look up Census 2000 Summary File 3 block group data for the closest block group to the site, at the URL indicated to the right, choosing table H44 when it prompts you for a table:

http://factfinder.census.gov/servlet/CTGeoSearchByListServlet?ds_name=DEC_2000_SF3_U&_lang=en&_ts=257951516373

## Section 2 - Variable Modeling Parameters

**Conversion Factors**

| | | Source: | What does this input affect? |
|---|---|---|---|
| Average Household Size | | | |
| Single Family | 3.2 | | Directly affects trip internalization and mode splits. Also used to compute site population if population isn't entered directly. |
| Multi-Family | 2.5 | | |
| High Rise Condo | 2.5 | | |
| Jobs per ksf | | | |
| Retail | 2.0 | ITE Trip Generation Manual | |
| Office | 3.0 | ITE Trip Generation Manual | Used to compute site employment for any land uses which are entered in ksf rather than jobs. For retail, if land uses are entered in jobs, it's used to convert back to ksf for trip generation calculations. |
| Light Industrial | 1.0 | ITE Trip Generation Manual | |
| Manufacturing | 0.5 | ITE Trip Generation Manual | |
| Warehousing | 2.0 | ITE Trip Generation Manual | |
| Misc. Uses | 2.0 | ITE Trip Generation Manual | |
| Jobs from ITE rates per other unit | | | |
| | | Source | |
| Jobs per Hotel Room | 0.50 | ITE Trip Generation Manual | |
| Jobs per Movie Screen | 4.00 | ITE Trip Generation Manual | |
| Grade School Jobs per student | 0.10 | ITE Trip Generation Manual | Used to compute site employment for these land uses which are typically expressed in other units |
| High School / Middle School Jobs per Student | 0.10 | ITE Trip Generation Manual | |
| College Jobs per student | 0.25 | ITE Trip Generation Manual | |

**Average Trip Lengths (in miles)**
Source: PSRC Travel Model Documentation, Cambridge Systematics, 2007.

| | HBW | HBO | NHB | |
|---|---|---|---|---|
| External Trips | 12.92 | 6.58 | 6.75 | |
| Intra-site Trips | 0.25 | 0.25 | 0.25 | Used for VMT calculations only |

**Trip Purpose Splits by Land Use Type**
**This will affect the final results significantly. Keep "Use NCHRP" on "Yes" unless you have reliable splits which have been QA/QCd**

For each land use type, choose whether to use NCHRP 365 splits as outlined on the Mode Parameters tab.
If "Yes" is chosen, the percentages will not affect the results. If "No," then enter the splits.

NOTE: For residences, the NHB Attractions are automatically calculated as the remainder to ensure the total is 100%
NOTE: For all other purposes, the NHB attractions are automatically set equal to the NHB productions, and the HBO attractions are automatically calculated as the remainder to ensure the total is 100%
*NOTE: There is no NCHRP split defined for schools, so the split has to be entered below.*

| | | Productions | | | Attractions | | | |
|---|---|---|---|---|---|---|---|---|
| **DAILY** | **Use NCHRP?** | **HBW** | **HBO** | **NHB** | **HBW** | **HBO** | **NHB** | **Source (if not using NCHRP):** |
| Residences | Yes | 15% | 50% | 10% | 7% | 8% | 10% | |
| Retail | Yes | 0% | 0% | 15% | 10% | 60% | 15% | |
| Office | Yes | 0% | 0% | 15% | 35% | 35% | 15% | |
| Other non-residential (excluding schools) | Yes | 0% | 0% | 10% | 60% | 20% | 10% | |
| Schools | No | 0% | 0% | 2.5% | 35% | 60% | 3% | |
| **AM PEAK HOUR** | | | | | | | | |
| Residences | Yes | 15% | 50% | 10% | 7% | 8% | 10% | |
| Retail | Yes | 0% | 0% | 15% | 10% | 60% | 15% | |
| Office | Yes | 0% | 0% | 15% | 35% | 35% | 15% | |
| Other non-residential (excluding schools) | Yes | 0% | 0% | 10% | 60% | 20% | 10% | |
| Schools | No | 0% | 0% | 2.5% | 35% | 60% | 3% | |
| **PM PEAK HOUR** | | | | | | | | |
| Residences | Yes | 15% | 50% | 10% | 7% | 8% | 10% | |
| Retail | Yes | 0% | 0% | 15% | 10% | 60% | 15% | |
| Office | Yes | 0% | 0% | 15% | 35% | 35% | 15% | |
| Other non-residential (excluding schools) | Yes | 0% | 0% | 10% | 60% | 20% | 10% | |
| Schools | No | 0% | 0% | 2.5% | 35% | 60% | 3% | |

**NON-HOME BASED TRIPS GENERATED BY PROJECT HOUSEHOLDS**
Enter the percent of these that occur...

| | | Source for this information: |
|---|---|---|
| Completely Within the Project Site | 25% | |
| With one trip end external to the Project Site | 15% | This only affects VMT calculations |
| Completely outside the Project Site | 60% | |

**SITE-SPECIFIC INTERNALIZATION**

This should only be used if the project is isolated from surrounding communities (with the possible exception of using it for schools)

This section of input is for when you have specific trips you want to EXCLUDE from the MXD process. These trips will be counted as internal, and subtracted from the "raw" trips before applying the model. The overall trip reduction percentage will still take these trips into account, and thus be a higher reduction than if you were just letting the model work on all the raw trips.

**Site-Specific Internalization Percentages**

| Land Use | Use Site Specific Internalization? | % of Attractions which come from internal locations HBW | HBO | NHB | Please note sources here: (important! These shouldn't just be guesses!) |
|---|---|---|---|---|---|
| Residential | No | | 50% | 5% | |
| Retail (applies to "local-serving" retail only, see below) | No | 36% | 100% | 100% | not needed |
| Office | No | 36% | 76% | 81% | |
| Industrial | No | 36% | 76% | 81% | |
| School | No | 36% | 100% | 0% | |

*Note: The HBW percentage for residential is blacked out, because HBW trips are never attracted to residences*
*Note: The retail HBO percentage should be 100% since it applies to local-serving retail, no need for a source*
*Note: if the schools are appropriately sized for the project, school HBO attractions should be 100% above, no need for a source*

Local-Serving Retail Parameters (part of the site-specific internalization calculation)

The above internalization is likely to vary significantly among different types of retail. Therefore, the inputs below are used to specify which retail uses are "local-serving," i.e. will draw a significant portion of its shoppers from within the project. The rest will just go through the MXD model process.

% of retail which is local-serving

| | | |
|---|---|---|
| General Retail other than those listed below | 32% | NOTE: see instructions tab for guidance on this percentage |
| Supermarket | 100% | |
| Bank | 100% | |
| Health Club | 75% | |
| Restaurant (non-fast food) | 50% | |
| Fast-Food Restaurant | 50% | |
| Gas Station | 25% | |
| Auto Repair | 50% | |

## Section 3 - Trip Generation

| | Quantity | Units | Trip Equation Method: Daily | AM Peak Hour | PM Peak Hour | Trips: Daily | AM Peak Hour | PM Peak Hour | ITE Daily Parameters: Code | Average Rate | Linear Multiplier | Linear Constant | Log Multiplier | Log Constant | AM PEAK HOUR TRIP RATES: Average Rate | Linear Multiplier | Linear Constant | Log Multiplier | Log Constant | PM PEAK HOUR TRIP RATES: Average Rate | Linear Multiplier | Linear Constant | Log Multiplier | Log Constant | Jobs per Input Unit (if Applicable) | Valid Trip Gen Calc Choice? Daily | AM Peak Hour | PM Peak Hour |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Number of Dwelling Units** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Single Family | 0 | DU | Log Equation | Linear Equation | Log Equation | 0 | 0 | 0 | 210 | 9.57 | | | 0.92 | 2.71 | 0.75 | 0.7 | 9.74 | | | 1.01 | | | 0.9 | 0.51 | | Yes | Yes | Yes |
| Multi-Family | 0 | DU | Linear Equation | Linear Equation | Linear Equation | 0 | 0 | 0 | 220 | 6.65 | 6.06 | 123.56 | | | 0.51 | 0.49 | 3.73 | | | 0.62 | 0.55 | 17.65 | | | | Yes | Yes | Yes |
| High Rise Condo | 0 | DU | Linear Equation | Linear Equation | Linear Equation | 0 | 0 | 0 | 232 | 4.18 | 3.77 | 223.66 | | | 0.34 | 0.29 | 28.86 | | | 0.38 | 0.34 | 15.47 | | | | Yes | Yes | Yes |
| **Retail (note: if you use job units for retail, the spreadsheet will convert before applying trip rates, using the rate in section 2 which you can change)** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| General Retail other than those listed below | 0 | ksf | Log Equation | Log Equation | Log Equation | 0 | 0 | 0 | Note the | 820 | 42.94 | | 0.65 | 5.83 | 1 | | | 0.59 | 2.32 | 3.73 | | | 0.67 | 3.37 | 2.0 | Yes | Yes | Yes |
| Supermarket | 0 | ksf | Average Rate | Average Rate | Average Rate | 0 | 0 | 0 | formulas | 850 | 102.24 | 66.95 | 1391.56 | | 3.59 | | | | | 10.5 | | | 0.61 | 3.95 | 2.0 | Yes | Yes | Yes |
| Bank | 0 | ksf | Average Rate | Average Rate | Average Rate | 0 | 0 | 0 | are | 912 | 148.15 | | | | 12.35 | | | | | 25.82 | | | | | 2.0 | Yes | Yes | Yes |
| Health Club | 0 | ksf | Average Rate | Average Rate | Average Rate | 0 | 0 | 0 | slightly | 492 | 32.93 | | | | 1.38 | | | | | 3.53 | | | 0.95 | 1.43 | 2.0 | Yes | Yes | Yes |
| Restaurant (non-fast food) | 0 | ksf | Average Rate | Average Rate | Average Rate | 0 | 0 | 0 | different | 932 | 127.15 | | | | 11.52 | | | | | 11.15 | | | | | 2.0 | Yes | Yes | Yes |
| Fast-Food Restaurant | 0 | ksf | Average Rate | Average Rate | Average Rate | 0 | 0 | 0 | in this | 934 | 496.12 | | | | 49.35 | | | | | 33.84 | | | | | 2.0 | Yes | Yes | Yes |
| Gas Station | 0 | ksf | Average Rate | Average Rate | Average Rate | 0 | 0 | 0 | section | 945 | 1181.07 | | | | 79.3 | | | | | 97.08 | | | | | 2.0 | Yes | Yes | Yes |
| Auto Repair | 0 | ksf | Average Rate | Average Rate | Average Rate | 0 | 0 | 0 | <==== | 942 | 31.6 | | | | 2.94 | | | | | 3.38 | | | 0.94 | 1.33 | 2.0 | Yes | Yes | Yes |
| **Office** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Non-Medical | 0 | jobs | Log Equation | Log Equation | Linear Equation | 0 | 0 | 0 | | 710 | 3.32 | | 0.84 | 2.23 | 0.48 | | | 0.86 | 0.24 | 0.46 | 0.37 | 60.08 | | | 1.0 | Yes | Yes | Yes |
| Medical | 0 | jobs | Average Rate | Average Rate | Average Rate | 0 | 0 | 0 | | 720 | 8.91 | | 0.67 | 3.76 | 0.53 | | | | | 1.06 | | | 1.06 | -0.32 | 1.0 | Yes | Yes | Yes |
| **Industrial** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Light Industrial | 10 | jobs | Average Rate | Average Rate | Average Rate | 30 | 4 | 4 | | 110 | 3.02 | 2.95 | 30.57 | | 0.44 | 0.27 | 70.47 | | | 0.42 | 0.29 | 58.03 | | | 1.0 | Yes | Yes | Yes |
| Manufacturing | 0 | ksf | Average Rate | Average Rate | Average Rate | 0 | 0 | 0 | | 140 | 3.82 | 3.88 | -20.7 | | 0.73 | 0.83 | -29.52 | | | 0.73 | 0.78 | -15.97 | | | 0.5 | Yes | Yes | Yes |
| Warehousing / Self-Storage | 0 | ksf | Average Rate | Average Rate | Average Rate | 0 | 0 | 0 | | 151 | 2.5 | | | 1.01 | 0.82 | 0.15 | | | | 0.26 | | | 1.02 | 1.49 | 2.0 | Yes | Yes | Yes |
| **Hotel (including restaurant, facilities, etc...)** | 0 | Rooms | Average Rate | Average Rate | Average Rate | 0 | 0 | 0 | | 310 | 8.17 | 8.95 | -373.16 | | 0.56 | | | 1.24 | -2 | 0.59 | | | | | 0.50 | Yes | Yes | Yes |
| **Motel** | 0 | Rooms | Average Rate | Average Rate | Average Rate | 0 | 0 | 0 | | 320 | 5.63 | | | 0.92 | 2.11 | 0.45 | | | 0.92 | -0.46 | 0.47 | | | 0.94 | -0.51 | 0.50 | Yes | Yes | Yes |
| **Movie Theater** | 0 | Screens | Average Rate | Average Rate | Average Rate | 0 | 0 | 0 | | 445 | 175.29 | | | | | 0 | | | | | 13.64 | | | | | 4.00 | Yes | Yes | Yes |
| **School** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| University | 0 | Students | Average Rate | Average Rate | Average Rate | 0 | 0 | 0 | | 550 | 2.38 | 2.23 | 440 | | | 0.21 | 0.21 | -69.14 | | | 0.21 | 0.19 | 118.58 | | | 0.25 | Yes | Yes | Yes |
| High School | 0 | Students | Average Rate | Average Rate | Average Rate | 0 | 0 | 0 | | 530 | 1.71 | | | 0.81 | 1.86 | 0.42 | | | | | 0.13 | | | | | 0.10 | Yes | Yes | Yes |
| Middle School | 0 | Students | Average Rate | Average Rate | Average Rate | 0 | 0 | 0 | | 522 | 1.62 | | | | | 0.54 | | | | | 0.16 | | | | | 0.10 | Yes | Yes | Yes |
| Elementary | 0 | Students | Average Rate | Average Rate | Average Rate | 0 | 0 | 0 | | 520 | 1.29 | | | | | 0.45 | | | 1.14 | -1.86 | 0.15 | | | | | 0.10 | Yes | Yes | Yes |

| | Daily | AM Peak Hour | PM Peak Hour |
|---|---|---|---|
| **Trips from Land uses not covered above ==>** | 0 | 0 | 0 |
| **Jobs in those Land Uses** | 0 | | |
| **Total "Raw" ITE Trips** | 30 | 4 | 4 |

Virginia Department of Transportation
Traffic Engineering Division
2018
Annual Average Daily Traffic Volume Estimates By Section of Route
Montgomery Maintenance Area

| Route | Jurisdiction | Length | AADT | QA | 4Tire | Bus | Truck 2Axle | Truck 3+Axle | Truck 1Trail | Truck 2Trail | QC | K Factor | QK | Dir Factor | AAWDT | QW |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bus 11 460 E Main St | From: Bus US 460 S Franklin St<br>Town of Christiansburg<br>To: Roanoke St | 0.12 | **6900** | **G** | 98% | 0% | 1% | 0% | 1% | 0% | F | 0.091 | F | 0.542 | 7500 | G |
| Bus 11 460 Roanoke St | From: E Main St<br>Town of Christiansburg<br>To: First St SE | 0.11 | **11000** | **G** | 98% | 0% | 1% | 0% | 1% | 0% | F | 0.098 | F | 0.57 | 12000 | G |
| Bus 11 460 Roanoke St | From: First St SE<br>Town of Christiansburg<br>To: SR 111 Depot St | 0.98 | **12000** | **G** | 98% | 0% | 1% | 0% | 1% | 0% | F | 0.103 | F | 0.577 | 13000 | G |
| Bus 11 460 Roanoke St | From: SR 111 Depot St<br>Town of Christiansburg<br>To: US 460 | 0.86 | **16000** | **G** | 98% | 0% | 1% | 1% | 0% | 0% | C | 0.104 | F | 0.602 | 17000 | G |
| 11 Roanoke St | From: US 460<br>Town of Christiansburg (Maint: 60)<br>To: I-81 | 1.15 | **16000** | **G** | 96% | 0% | 1% | 1% | 1% | 0% | C | 0.095 | F | 0.528 | 17000 | G |
| 11 460 Roanoke St | From: I-81<br>Town of Christiansburg (Maint: 60)<br>To: Tower Rd, Hampton Rd | 0.09 | **9300** | **N** | 96% | 0% | 1% | 1% | 2% | 0% | N | 0.1 | F | 0.558 | 10000 | N |
| 11 460 Roanoke St | From: Tower Rd, Hampton Rd<br>Town of Christiansburg<br>To: ECL Christiansburg | 2.01 | **9300** | **G** | 96% | 0% | 1% | 1% | 2% | 0% | F | 0.1 | F | 0.558 | 10000 | G |
| 11 460 Roanoke Rd | From: ECL Christiansburg<br>Montgomery County<br>To: 60-753 Old Town Rd | 5.11 | **7000** | **G** | 96% | 0% | 1% | 1% | 2% | 0% | F | 0.1 | F | 0.521 | 7300 | G |
| 11 460 Roanoke Rd | From: 60-753 Old Town Rd<br>Montgomery County<br>To: 60-631 Brake Rd | 3.21 | **7600** | **G** | 96% | 0% | 1% | 1% | 2% | 0% | F | 0.101 | F | 0.626 | 8000 | G |
| 11 460 Roanoke Rd | From: 60-631 Brake Rd<br>Montgomery County<br>To: Roanoke County Line | 2.43 | **7800** | **G** | 96% | 0% | 1% | 1% | 2% | 0% | C | 0.115 | F | 0.618 | 8200 | G |
| 11 Ramp | From: US 11 FROM RT 460 TO 81 SOUTH & PARK<br>Town of Christiansburg (Maint: 60)<br>To: US 11- 120C TO PARKWAY DRIVE | 0.10 | **2700** | **G** | | | | | | | | 0.108 | F | | 2700 | G |
| 11 Ramp | From: US 11- 120C TO PARKWAY DRIVE<br>Town of Christiansburg (Maint: 60)<br>To: US 460-E124A FROM RT 11 AND PARKWAY DRIV | 0.18 | **1200** | **G** | | | | | | | | 0.112 | F | | 1200 | G |
| 11 Ramp | From: Ramp from US 460 East<br>Town of Christiansburg (Maint: 60)<br>To: I-81 South Collector Rd | 0.15 | **5600** | **G** | | | | | | | | 0.140 | F | | 6100 | G |
| 11 Ramp | From: US 11- 120A TO PARKWAY DRIVE<br>Town of Christiansburg (Maint: 60)<br>To: US 460 FROM RT 11 | 0.13 | **1500** | **G** | | | | | | | | 0.137 | F | | 1500 | G |
| 11 Ramp | From: US 11, Bus US 460 Roanoke St<br>Town of Christiansburg (Maint: 60)<br>To: US 460 East | 0.13 | **7500** | **G** | | | | | | | | 0.101 | F | | 7500 | G |
| North 11 Ramp | From: US 11 TO ROUTE RT 81 SOUTH<br>Town of Christiansburg (Maint: 60)<br>To: I-81-S118X FROM RT 11 NORTH | 0.15 | **1200** | **G** | | | | | | | | 0.097 | F | | 1200 | G |

**Warrants for Left Turn Storage Lanes on Four-Lane Highways**

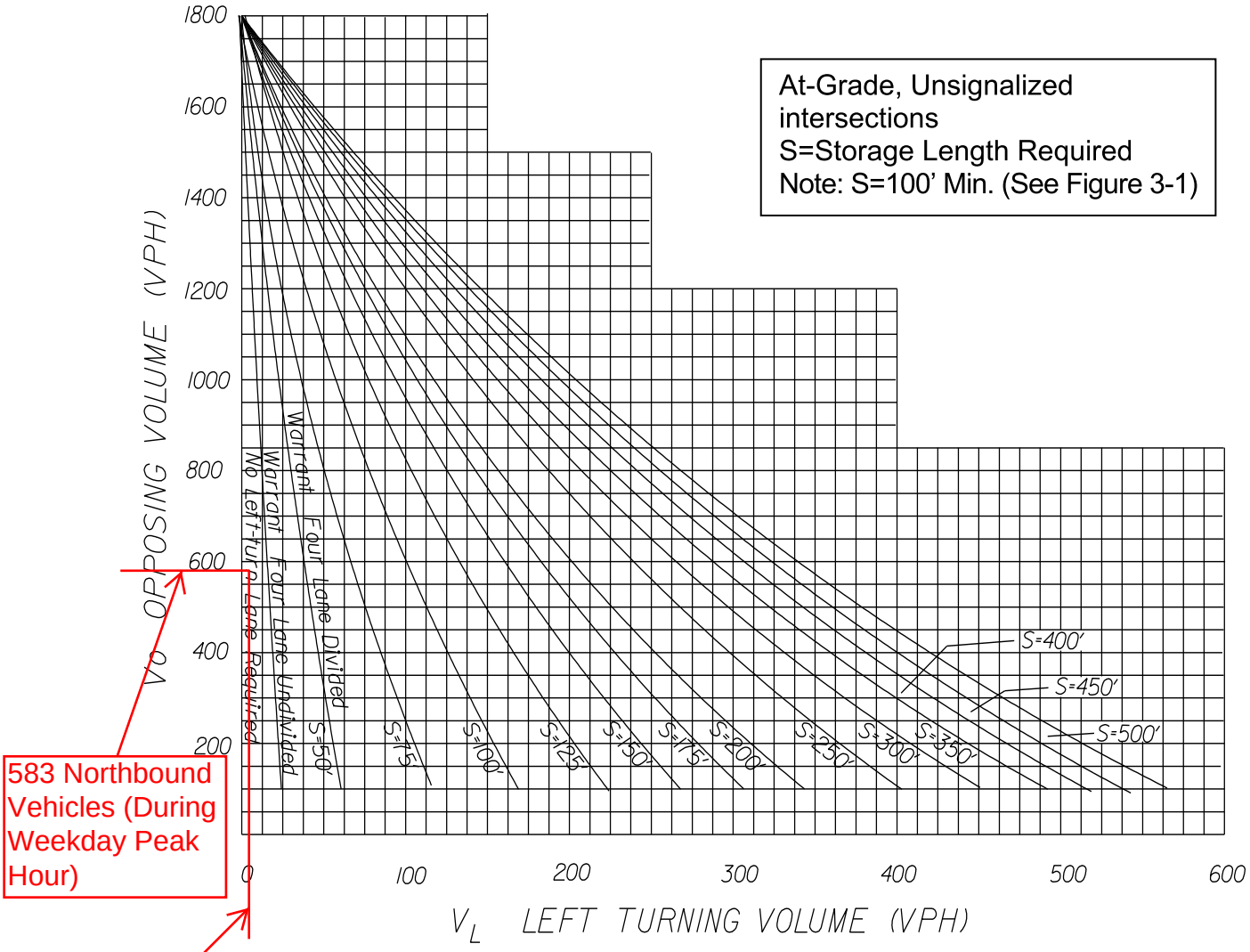
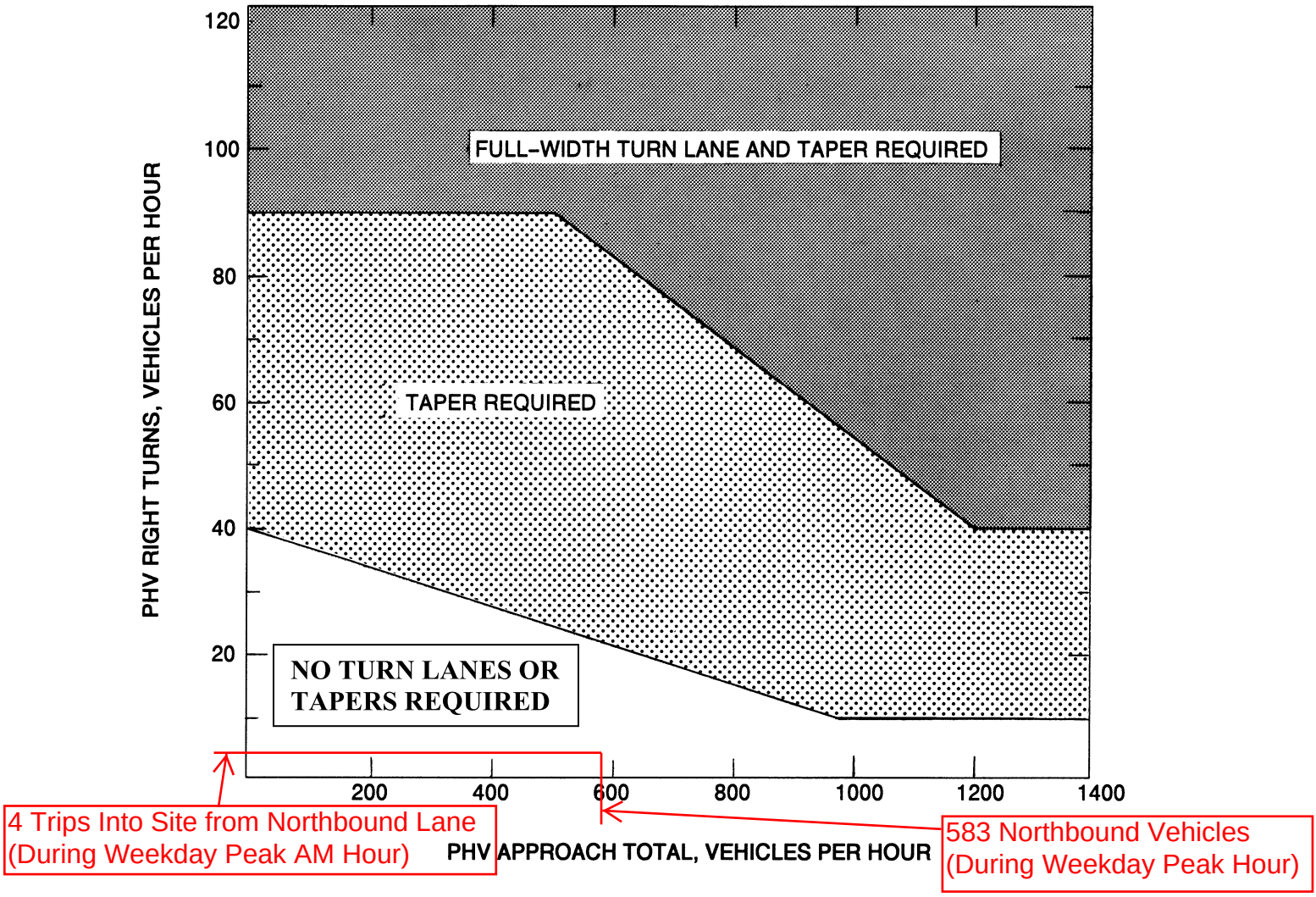



**FIGURE 3-3 WARRANTS FOR LEFT TURN STORAGE LANES ON FOUR-LANE HIGHWAYS**

Figure 3-3 was derived from *Highway Research Report No. 211*.

Opposing volume and left turning volume in vehicles per hour (VPH) are used for left turn storage lane warrants on four-lane highways.

For plan detail requirements when curb and/or gutter are used, see VDOT's *Road Design Manual*, Section 2E-3 on the VDOT web site: *http://www.virginiadot.org/business/locdes/rdmanual-index.asp*.




Appropriate Radius required at all Intersections and Entrances (Commercial or Private).

## LEGEND

**PHV-** - Peak Hour Volume (also Design Hourly Volume equivalent)

## Adjustment for Right Turns

If PHV is not known use formula: PHV = ADT x K x D

K = the percent of AADT occurring in the peak hour
D = the percent of traffic in the peak direction of flow

Note: An average of 11% for K x D will suffice.

When right turn facilities are warranted, see Figure 3-1 for design criteria.*

**FIGURE 3-27 WARRANTS FOR RIGHT TURN TREATMENT (4-LANE HIGHWAY)**

* Rev. 1/15