MnDOT Total Volume and Vehicle Classification Guidelines for Site Scheduling, Count Collection, and Count Submission

These guidelines are intended to aid the Count Manager (or equivalent local agency administrator) in ensuring that data collected is useable for determining AADT and Vehicle Classification. Each year the Count Manager should review these guidelines with their Field Staff, especially for those new to traffic counting. **Please remember that safety is our number one concern. Thank you for your efforts and continued cooperation!**

General Guidelines

- Typical Conditions: It is very important to make sure that all traffic counts are taken during "typical conditions." This means scheduling location visits to avoid effects due to **construction, major events, harvest season, and to count during the school years near universities or high schools**. If a count is taken during "unusual conditions" it is very important to note this, in as much detail as possible, in the comments.

- Field Staffing: To ensure there is adequate time for school year and recounts hire staff March or April through October.

- Date and Time: Traffic counts need to be taken on weekdays for 48 consecutive hours. We can accept **47-49** hour counts, but this should be included in the **comments** to avoid unnecessary recounts (please see "Equipment Failure" below for more details of salvaging data). In many areas Friday afternoons do not fall within "typical conditions" and should be avoided.

- Count Locations: These location descriptions are approximate. The general rule is that in rural areas the counter is set within 1/10 of a mile of the location description and in cities within the block. Equipment should be set to avoid turning movements (such as driveways or service roads) and to adhere to safety guidelines. If necessary the count can be moved to another location **within the same traffic segment** as long as the Count Manager or Central Office is consulted to ensure that the volume still represents the majority of the traffic segment.

- Communication: Please contact Central Office or your Count Manager if there is any question regarding counter placement or segmentation. **This needs to be done either from the field or before traveling out to the site.**

- Construction: Avoiding construction effects (both MnDOT and local) is critical to obtaining quality traffic data. All **construction routes**, **planned detours, and locations in the surrounding area** should be counted either before a project begins or after it is completed. Construction related data will not be accepted by Central Office. If scheduling around the project is not an option please refer to the programs online Construction Policy: http://www.dot.state.mn.us/traffic/data/coll-methods.html#cp

- Field Observations: Use the comments field to capture important details about or changes to a location and the surrounding areas (examples: new development, school, diagonal parking, opening or closing of a major employer). **This additional information can prevent unnecessary recounts**. Please refer to the "Common Comments" listed at the end of this document.

- Sites Assigned: The schedule provided by MnDOT via Jackalope should be used to track and schedule the sites assigned for the season. MnDOT staff should only count those sites found in their schedule. Recounts are very important to the program so please budget adequate time (usually 20-25% with experienced staff). Central Office will verify the need for all recounts on a **weekly** basis.

- Recounts: These should be done in the context of program priorities as well as efficient driving circuits. Priority is as follows, from highest to lowest: First Pass, Trunk Highways, HPMS, State Aid Needs (CSAH/MSAS), County Roads. Please contact Central Office if you need assistance in determining priority. Recounts at vehicle class sites should be confirmed with the MnDOT Vehicle Class unit. In addition, **please remember that recounts should be taken at least 1 month after the initial set if at all possible.**

- Status: The Central Office will estimate each districts Percent Complete as part of the monthly Status Report that is sent to each agency (updated location listings will be available more frequently). Our definition of "Complete" is a site that has enough **usable data** to estimate an AADT. Complete does not mean that a first pass count has been taken or even that a recount has been taken. The Percent Complete Benchmarks for agencies that have one season to collect data are as follows:

    o 40% by July 1st
    o 60% by August 1st
    o 80% by September 1st
    o 100% by October 1st

- Vehicle Classification: The TimeMark counters are used to take most of the vehicle classification counts. This involves using two tubes instead of one and setting up the counter to retain **properly named** data files for later downloading. Please ensure that each VC Site Code used is complete and accurate. The **twelve** digit ID must contain, and in this order, the: VC site number, Number of boxes at a site, Direction of travel, Lane number, Route system, and Route number. Beginning in 2018 all class counts must be set for 48 full hours beginning at the top of the hour. **Please contact the Vehicle Classification Program for details on site coding and data processing prior to collecting data.**

- Safety: **Your safety is our number one concern**. Please send Central Office a list of sites that your district deems too dangerous for Field Staff to attempt data collection as soon as possible. Please refer to the Minnesota Temporary Traffic Control Field Manual 2018: http://www.dot.state.mn.us/trafficeng/publ/fieldmanual/index.html

- Coordination: The State Aid Office for Local Transportation and the Minnesota County Highway Engineers Association (MCHEA) have requested that MnDOT Count Managers **call Engineers or Public Works Directors in all counties and cities scheduled (prior to setting the first count of the season)** regarding construction projects, detours, and any other situations that might affect district's scheduling of traffic counts. Districts should begin calling and/or visiting the cities and counties by mid-March each year. It is important to follow up later in the season to coordinate mowing/sweeping activities and to verify construction progress and completion dates, especially if recounts are needed. This information should be summarized by Sequence Number and sent to the Central Office at the end of the season to explain why a count could not be taken.

Equipment

- Equipment Failure: In some cases it may be possible to salvage a count even if the **equipment failed**. If you encounter this situation, please record the **24 hour total** from the Diamond Tally 6 menu or if using another type of equipment note the **number of hours** that the equipment was functioning as well as the **total volume** at the time of the failure. Enter the proper notes in the Comments field before submitting the data.

- Equipment Maintenance: Properly functioning counter and tubes are key to accurate data collection. All batteries should be fully charged. TimeMark battery voltage should be between 6.4 and 7.0 volts after charging; if not, replace the battery. **Batteries in Tally 4 or Tally 6 units need to be ordered and replaced every 4-5 years**. Tubes should be examined for holes, and any other equipment acquisitions and preparations should be completed prior to the beginning of the field season.

Scheduling Guidelines

- Length of Season: Traffic counts should be taken between April 1st and October 1st (October 31st if no harvest conditions). Counts taken in October can often be affected by harvest and other First Pass: non-typical conditions, so it is best to complete the counts as early as possible.

- First Pass: We expect that all locations will be counted at least once during the season and that first coverage is a higher priority than recounts.

- Construction: Schedule counts in locations affected by construction either before the project begins or after it is completed. MnDOT staff should make the necessary contact with cities and counties to verify construction activity. If this is not possible because the project will be ongoing for the entire field season or several seasons, consult the online Construction Policy: http://www.dot.state.mn.us/traffic/data/coll-methods.html#cp.

- School Zones: Please schedule counts at sites where school year traffic is higher than summer traffic during the school year (April-May or September-October). Elementary and Middle schools may or may not fall under this category. Field staff is to use their best judgment, or contact the local partner, and relay any information back to Central Office.

- Holidays: We recommend that you do not take counts on days adjacent to holidays or weekends when those holidays occur. For example, do not count on the days immediately prior to or following the July 4th holiday.

- Harvest: Please do not count sites that have increased volumes during the harvest season late in the year. Depending on the type of agricultural crops in your district, some counts may still be taken into September. **This is especially important for Vehicle Class Counts (VC).**

Data Submission (for all raw/unadjusted total volume traffic counts)

- Real Data: **Do not submit a raw count of "0"** for when there was a lost tube or counter failure. **Do not submit a null count or count of "0" for construction, detour, or any other site that was not actually set.** Please reset these situations and do not send partial data to MnDOT unless 24 hours of **typical condition** data can be retrieved.

- Before any data submission, please ensure that you have read the Jackalope User Guide.

- Accuracy: The accurate submission of counts is very important. It is critical that these tasks be assigned to someone who is very conscientious and who makes very few errors. Completed data submission files should be submitted to Jackalope on a regular basis for Central Office to review. Please contact the Traffic Volume Program central office staff if you have any questions.

- Collection Type: The most common data types used are Pairs (P) and Axles (A). Collection of Vehicles (V) is rare and can only be used when a count is taken using a 2-tube vehicle class setup and the count data has been axle corrected to represent vehicles.

  - **A** – Total axle single hits recorded over the counting period (for example the TimeMark counter window), software will divide by 2 to create Pairs
  - **P** – Total axle pairs recorded over the counting period
  - **V** – Total vehicles (for example loop detectors) recorded over the counting period

- Duration: The most common count duration is 48 hours, though in some agencies the counter report may be setup to calculate the 24 hours average. If this 24 hour average is being entered as the raw count data the Duration must be set to 24 to properly process the count.

  - **24** – raw value entered is for 1 day/24 hours, software will apply factors to create adjusted count
  - **48** – raw value entered is for 2 days/48 hours, software divide by 2 before applying factors to create adjusted count
  - **72** – raw value entered is for 3 days/72 hours, software divide will by 3 before applying factors to create adjusted count

- Sites assigned a Vehicle Class count should not be done as both a single tube set AND a double tube set. All VC Cards or RDF's need to be provided to MnDOT CO as soon as possible. Conflicts will occur if total volumes from the VC set are reported separately. The Total Volume will be taken from the Vehicle Class counts. The need for recount, whether a Vehicle Class set or a Total Volume set will be marked on the Jackalope schedule.

- Comments: When entering data in Jackalope, **the comment field should be used anytime a count is questionable or anytime the field person noticed something of importance while in the field.** This comment should be **concise** (refer to the "Common Comments" section below for some examples of abbreviations). If further elaboration is necessary, this should be sent to MnDOT CO.

Contacts

Please visit our website for additional information: http://www.dot.state.mn.us/traffic/data/. If you have any general questions or questions while in the field please call the appropriate unit within Traffic Forecasting and Analysis: http://www.dot.state.mn.us/tda/contacts.html#TFA.

Common Comments

- **CONST** – count site under construction during the entire current year or longer (review Construction Policy)
- **DET** – count site was part of a detour during the entire current year or longer (review Construction Policy)
- **DP** – diagonal parking might be impacting count
- **PP** – parallel parking might be impacting count
- **TRK RT** – truck route causing higher than average traffic (don't need to know # of axels)
- **TRAF PAT CHNG** – travel pattern has changed and has impacted AADT (increase or decrease)
- **NEW DEV** – new housing or building developments in the area
- **UPGRADE** – route has been paved, widened, or upgraded in some way since last count
- **SEE HIST** – see count history for comparable AADT
- **SEE SURR** – see count info from additional locations along the same route to support the change at the count location in question
- **AVG HIST** – current AADT created by averaging the current count with historical counts (if anything other than past is used the years will be listed)
- **AVG CURR** – current AADT created by averaging the multiple counts from this year
- **EST** – current AADT was estimated
- **EST HIST** – current AADT was estimated from history
- **EST SURR** – AADT estimated from surrounding counts for this cycle
- **AD** – analyst discretion, some counts are questionable and not used in AADT estimation
- **DIR CALC** – only one direction was collected, value is doubled to estimate AADT
- **CLOSE TO TOL –** close to the need for recount tolerance (above or below)
- **RCL** – recounts confirm AADT is lower (not needed if recount is within tolerance)
- **RCH** – recounts confirm AADT is higher (not needed if recount is within tolerance)
- **LIM HIST** or **NO HIST**– count history to compare against current count is limited or non-existent
- **NO AADT**, **NO COUNT** - the count location was added to the current year but not in time to collect a count
- **NEW LOC** – the count location was added during the current year, history may not apply
- **DEF** – no count was taken, default value was entered
- **LOC MOVED** – the count location was moved in the year indicated