Turning Movement & Short Count Data Processing

Iowa DOT – MTMUG – 10/24/2018

Overview

- Brief Description
- Examples of Issues
- Turning Movement Process
- Short Count Process
- Challenges
- Future Use

Brief Description

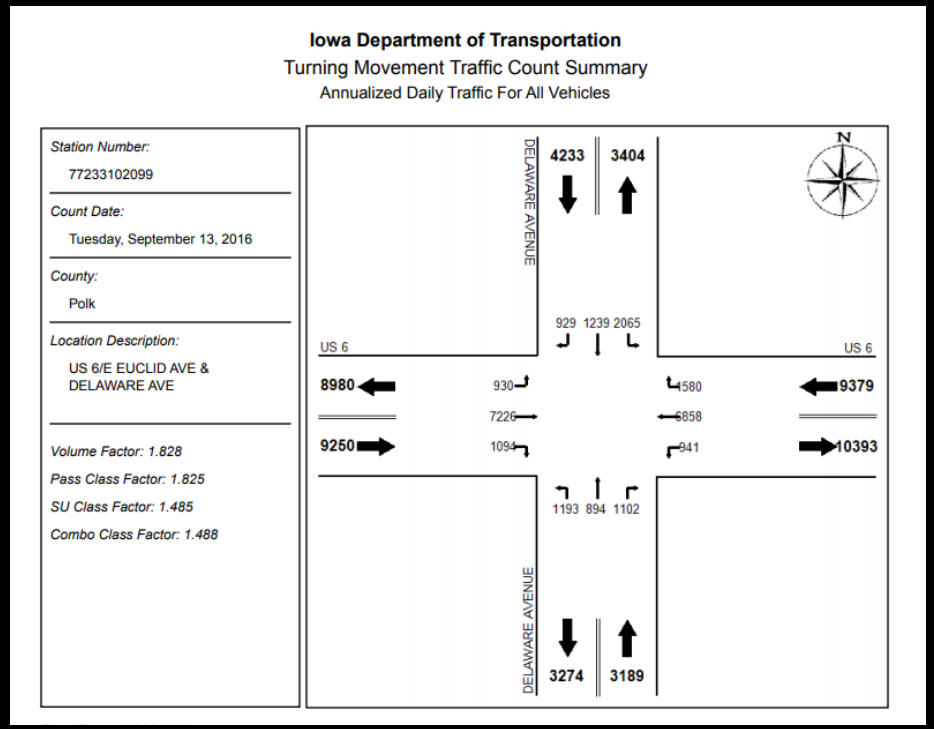
- Data stored in TRADAS Database
- Goal: Assign turning movement and short term counts spatially
  - Turning movement – Including AADT, AADTT, Percentages, etc.
  - *Short term counts – Including road volumes and peak-hour counts for all modes (personal, single, combo).
    - Eventually, data to be processed for individual modes.
- Problems:
  - Shapefile data was ‘stacked’
  - Projections of coordinates skewed
  - Data had to be pulled from TRADAS

*Work in progress

Example – Turning Movements

- Delaware & E.Euclid Ave (US 6). Des Moines, IA

- Desired goal: Turning Movement Diagram

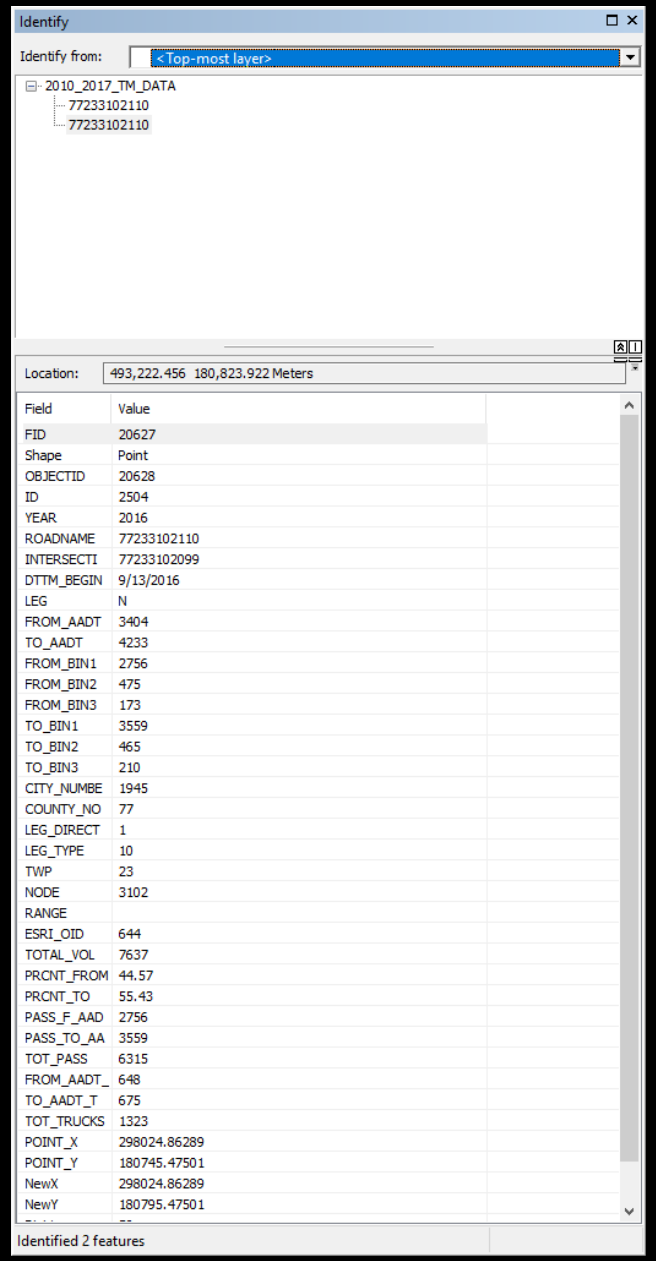


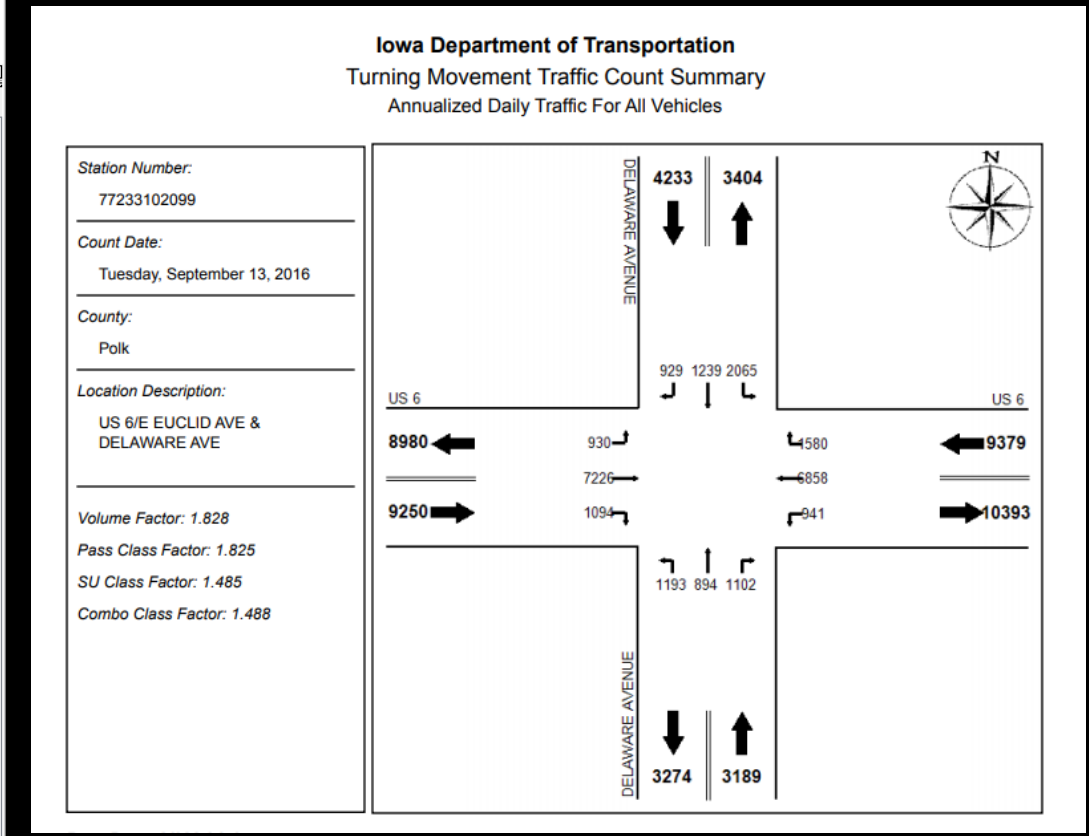
Turning Movements

- Used SQL to pull all data from TRADAS
  - Included AADT to/from for all vehicle types
  - All years pulled separately.
- Imported Data to ArcMap
- Defined XY Coordinates
- Added 4 fields (NewX, NewY, Dist1, Dist2)
  - Used field calculator to fill Dist1 with 50 and Dist2 with 25
  - Trigonometry
- Used Python Scripting to calculate & update the offset of the new XY coordinates
- Verified a random sample of stations to ensure accuracy
- All data merged into 1 shapefile as well as individual-year shapefiles

Outcome

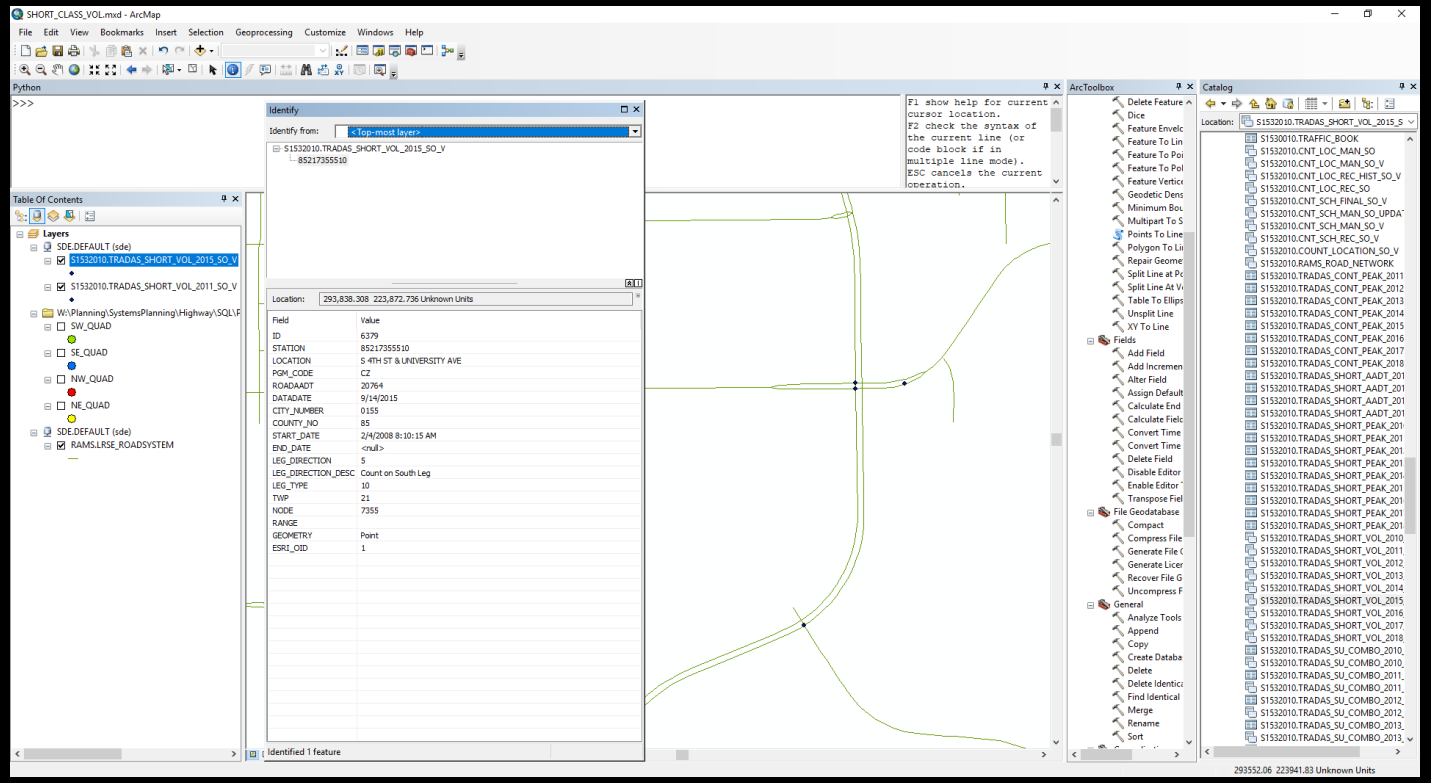
Delaware and E. Euclid Ave. (US 6)
Des Moines, IA





Example – Short Counts

University Ave and S. 4th Street, Ames, IA



Short Count Process

- Still a work in progress
- SQL to pull count quadrants from TRADAS via Oracle
  - Due to nature of counts, it was advisable to work by quadrants instead of years.
  - Credit to Cameron Mason for developing code
- Export count quadrant as duplicate file
- SQL to pull station number and year from TRADAS via Oracle
- Data management in excel
- Add excel file to ArcMap as a table
- Joined table to duplicate file
- Export new shapefile as a copy.

Short Count Process Cont.

- Deleted duplicate fields.
- Defined XY Coordinates
- Added 6 new fields(N_POINT_X, N_POINT_Y, Dist1, Dist2, Dist3, Dist4)
  - Field calculator on Dist1 through Dist4: 100, 75, 50, 25 respectively
- Developed similar Python Script to offset and update shapefiles
- Verified a random sample of stations to ensure accuracy

Outcome

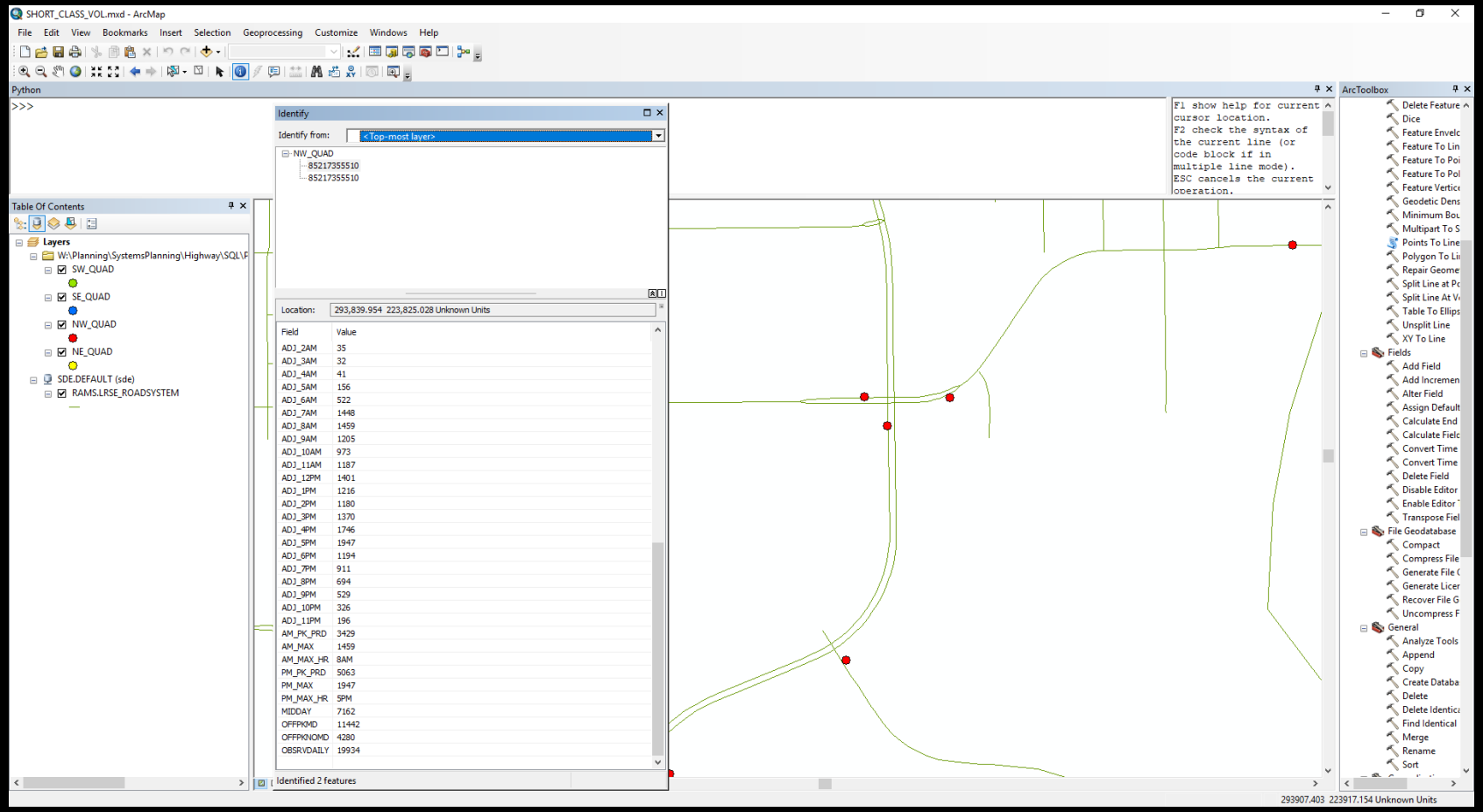
University Ave & S. 4th Street. Ames, IA

AM Peak Hour: 8am – 1,459

PM Peak Hour: 5pm – 1,947

Observed daily(Road Volume): 19,934

Offsetting coordinate points helps visually see where counts were conducted



Challenges

- Unable to use Python script outside of ArcMap
  - Changing code to be able to be entered via the ArcMap Python Interpreter
  - Will be utilizing FME in the future.
- Long Process for both TM and SC– Heavily Documented
- Projection Issues occurred with all initial data from Oracle
  - Spatial Data was not centered on Iowa
  - Aided by the Iowa DOT Cartography team
- Some 2017 short term counts have not been processed yet, leading to 70 stations missing data.
  - Future work to be done

Future Uses

- Data to eventually be shipped back to TRADAS
- Can be used in models to ensure more accurate counts and cut down on prep time
- Potential use in traffic forecasting
- Data will be more easily accessible for all users
- Processes in place for future year count data processing

Questions?