Turning Movement & Short Count Data Processing

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Overview

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

Brief Description

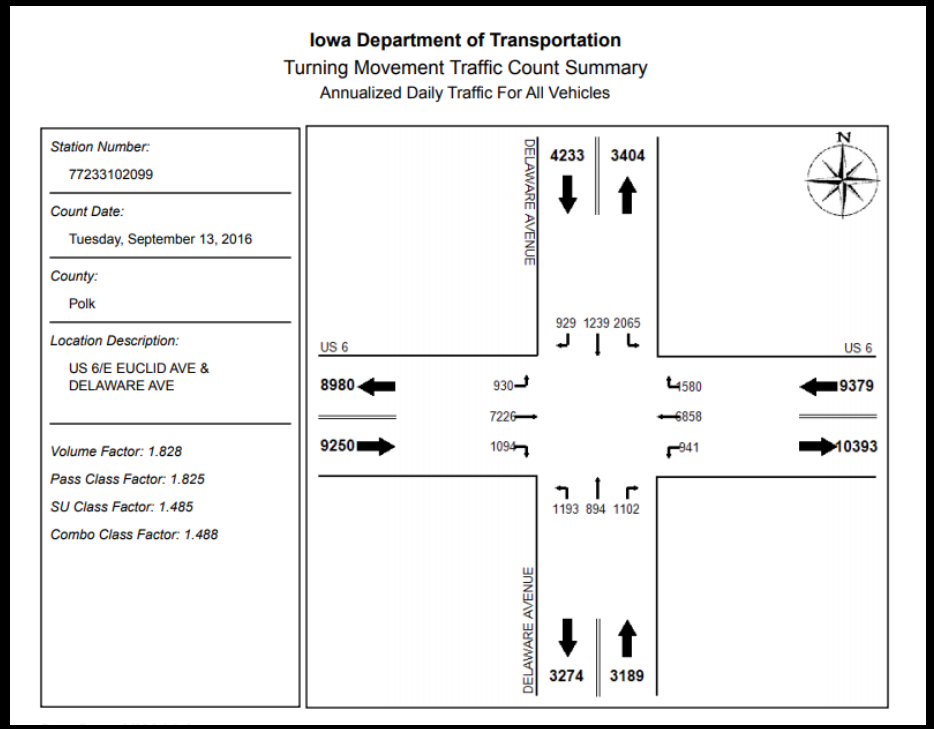
- Data stored in TRADAS Database
- Goal: Assign turning movement and short term counts spatially
  - Turning movement – Including AADT, AADTT, Percentages, etc.
  - *Short term counts – Including road volumes and peak-hour counts for all modes (personal, single, combo).
    - Eventually, data to be processed 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

Identify

Identify from: <Top-most layer>

- 2010_2017_TM_DATA
  - 77233102110
  - 77233102110

Location: 493,222.456 180,823.922 Meters

Field	Value
FID	20627
Shape	Point
OBJECTID	20628
ID	2504
YEAR	2016
ROADNAME	77233102110
INTERSECTI	77233102099
DTTM_BEGIN	9/13/2016
LEG	N
FROM_AADT	3404
TO_AADT	4233
FROM_BIN1	2756
FROM_BIN2	475
FROM_BIN3	173
TO_BIN1	3559
TO_BIN2	465
TO_BIN3	210
CITY_NUMBE	1945
COUNTY_NO	77
LEG_DIRECT	1
LEG_TYPE	10
TWP	23
NODE	3102
RANGE	
ESRI_OID	644
TOTAL_VOL	7637
PRCNT_FROM	44.57
PRCNT_TO	55.43
PASS_F_AAD	2756
PASS_TO_AA	3559
TOT_PASS	6315
FROM_AADT_	648
TO_AADT_T	675
TOT_TRUCKS	1323
POINT_X	298024.86289
POINT_Y	180745.47501
NewX	298024.86289
NewY	180795.47501

Identified 2 features

Iowa Department of Transportation

Turning Movement Traffic Count Summary

Annualized Daily Traffic For All Vehicles

Station Number:
77233102099

Count Date:
Tuesday, September 13, 2016

County:
Polk

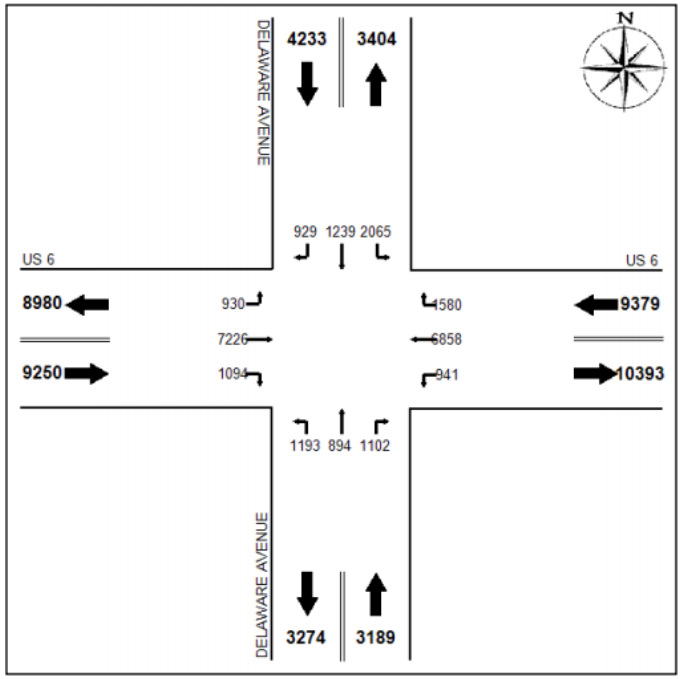
Location Description:
US 6/E EUCLID AVE & DELAWARE AVE

Volume Factor: 1.828

Pass Class Factor: 1.825

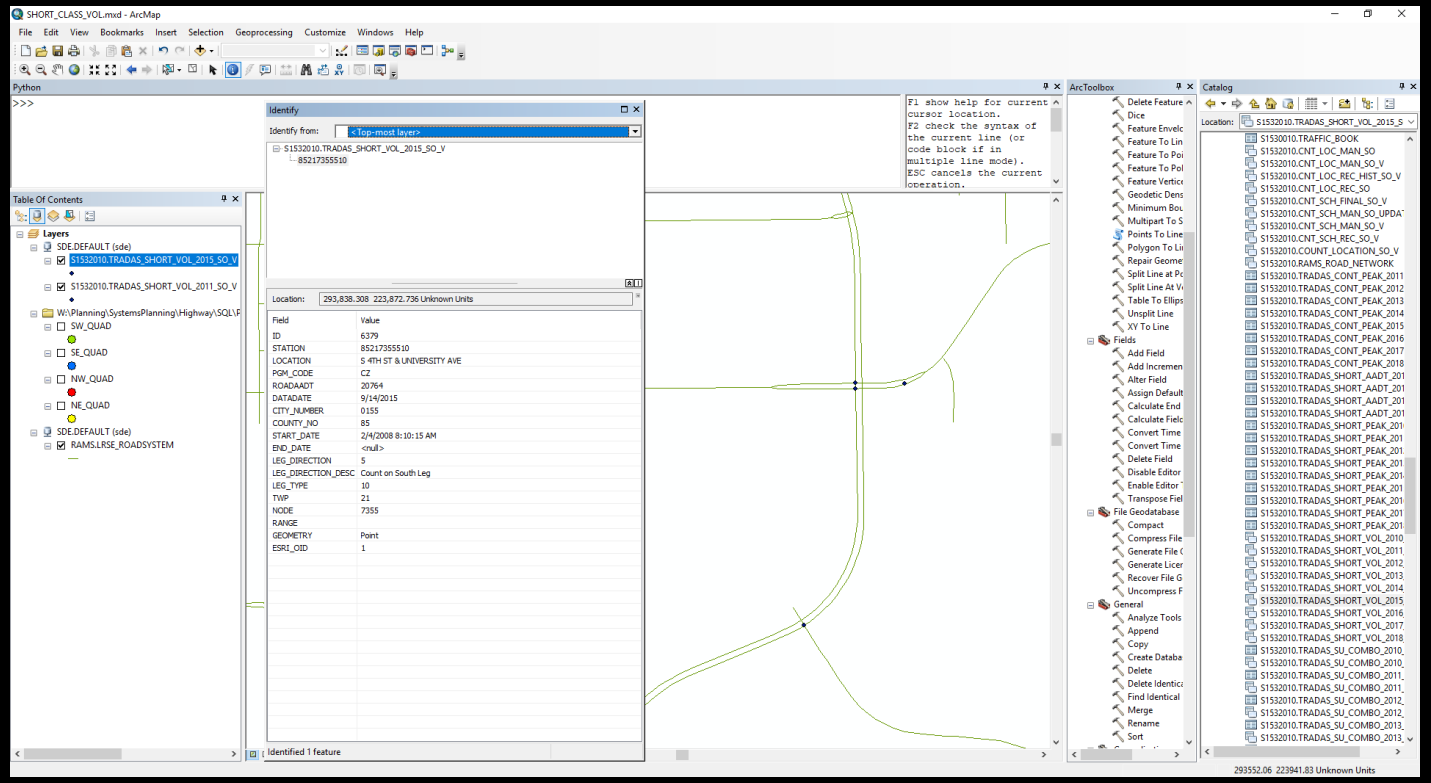
SU Class Factor: 1.485

Combo Class Factor: 1.488



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

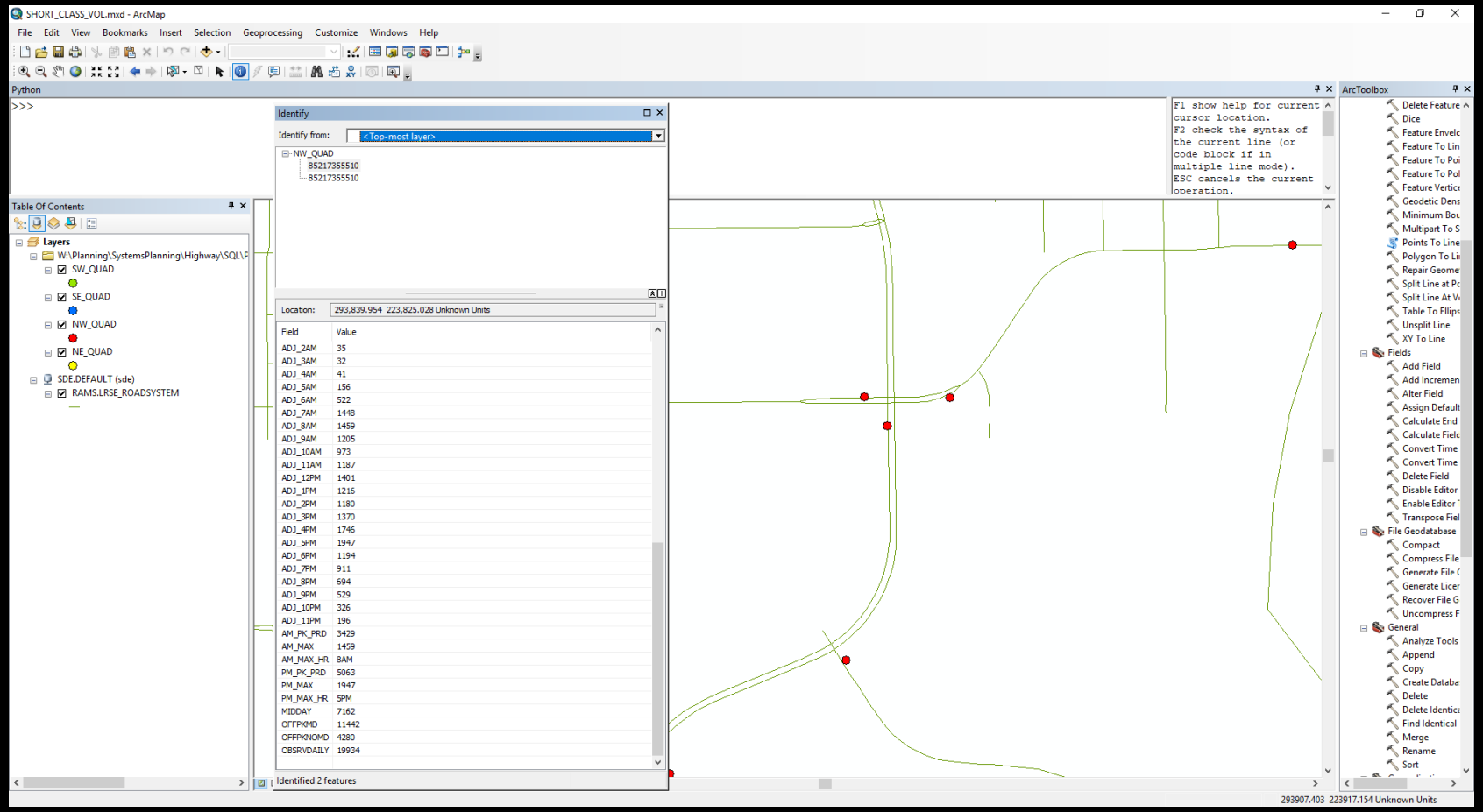
University Ave & S. 4th Street. Ames, IA

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?

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