

# SHRP2 Presentation - ADOT's Data and Online GIS

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Senior GIS Analyst



A screenshot of the ADOT online GIS website. The page has a navigation bar with links for HOME, GALLERY, MAP, GROUPS, and MY CONTENT, along with a search bar. The main header features the ADOT logo and the text 'A collaborative information site brought to you by ADOT'. Below this is a large background image of a canyon. A carousel of four map thumbnails is displayed, with the following titles: '5310 Transit Services', '5311 Transit Services', 'ADOT Regional &amp; District Boundaries', and 'ADOT Transportation Board Districts All'. A welcome message at the bottom states: 'Welcome to the Arizona Department of Transportation's central clearinghouse for maps and data. Currently most data and maps are only viewable by invited users. Publicly accessible data may be available at a later date.' It includes the URL 'http://www.azdot.gov' and a disclaimer: 'Note: The State of Arizona makes no claims concerning the accuracy of this map nor assumes any liability resulting from the use of the information herein.'

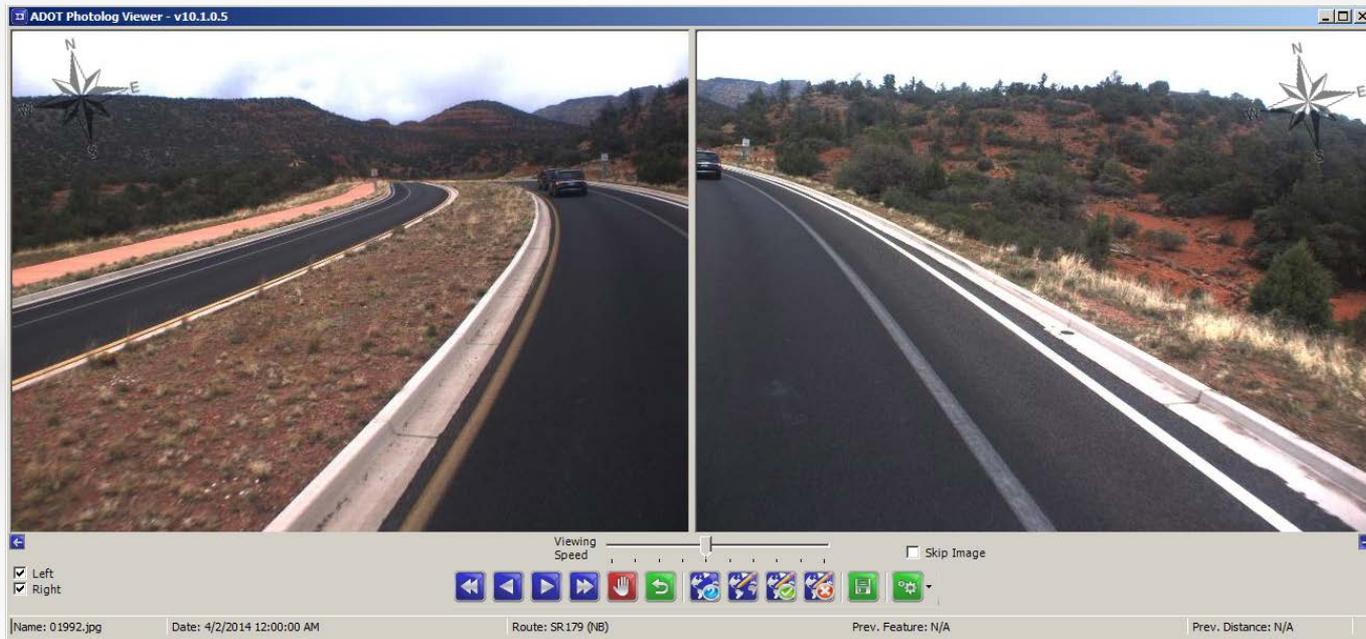
# MPD GIS Data

- ❑ ATIS – Linear Referencing System
  - ❑ Roadway Centerlines
  - ❑ Mileposts



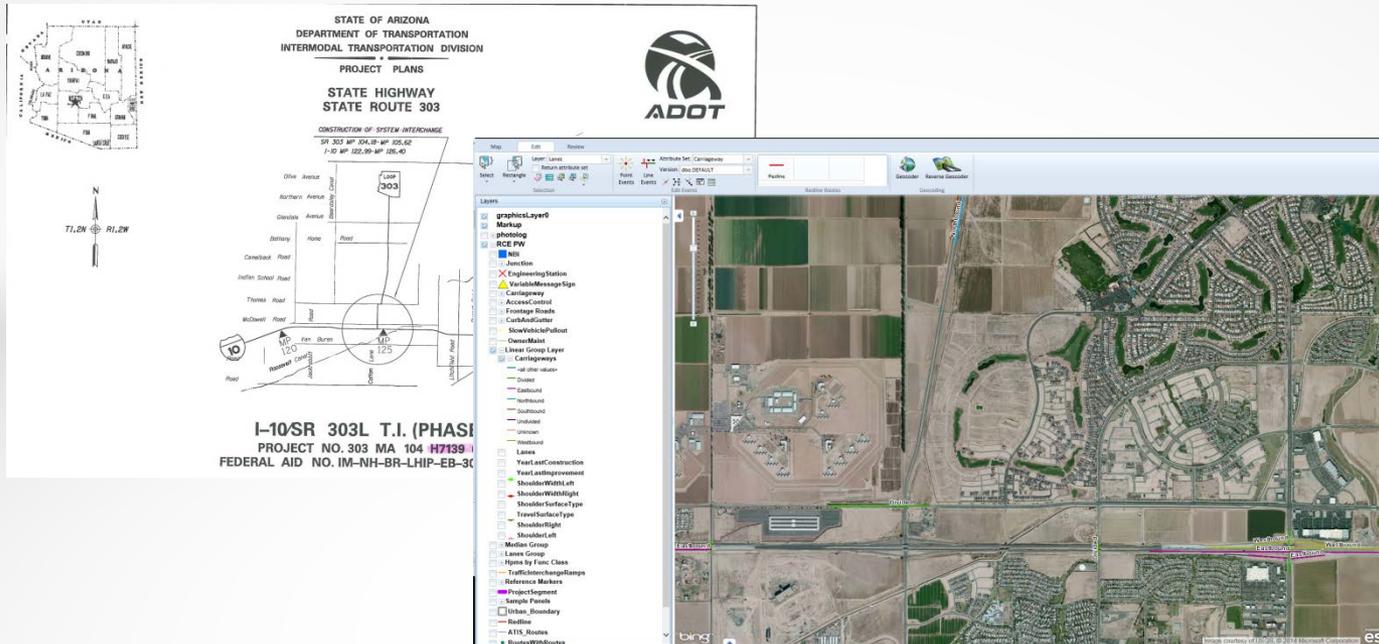
# MPD GIS Data

- ❑ ATIS – Linear Referencing System
  - ❑ Roadway Centerlines
  - ❑ Milepost
- ❑ Annual Photo Log



# MPD GIS Data

- ❑ HPMS/RCI
  - ❑ Plan Sheet Extraction -event data
    - ❑ Travel Surface Type
    - ❑ Shoulder Width
    - ❑ Through Lanes
    - ❑ Functional Classification



- ATIS\_Routes
  - AADT
  - AADTCombination
  - AADTSingleUnit
  - AccessControl
  - Administrative
  - ADOTInventory
  - AlternateRouteName
  - AtGradeOther
  - AuxiliaryLane
  - Base
  - BicycleLane
  - Capacity
  - Carriageway
  - Channelization
  - ClimateZone
  - CounterPeakLane
  - CountyCode
  - CPMComment
  - Cracking
  - CurbAndGutter
  - Curve
  - DirFactor
  - DualOwner
  - EngineeringCurve
  - EngineeringGrade
  - EngineeringStation
  - FacilityType
  - Faulting
  - FunctionalClass
  - FunctionalClassDesired
  - FunctionalSystem
  - FutureAADT
  - FutureNHS
  - Grade
  - HOV
  - IRI
  - Junction
  - KFactor
  - LaneWidth
  - LastOverlayThickness
  - Median
  - Milepost
  - NBT
  - NHS
  - NoPassingZone
  - NumberOfSignals
  - OwnerMaint
  - Ownership
  - PaintedMedian

# Interactive Mapping - APLAN

- ❑ Background
  - ❑ ArcGIS Online Tool
  - ❑ Web based application being used for data sharing, editing, and analysis

## Share

Choose who can view this map.

Your map is currently shared with these people.

Members of these groups:

- APLAN
- I-11 Corridor
- Transit

Link to this map

Map  Presentation

<http://bit.ly/1ropk3e>  Facebook  Twitter

Embed this map

[EMBED IN WEBSITE](#) [MAKE A WEB APPLICATION](#)

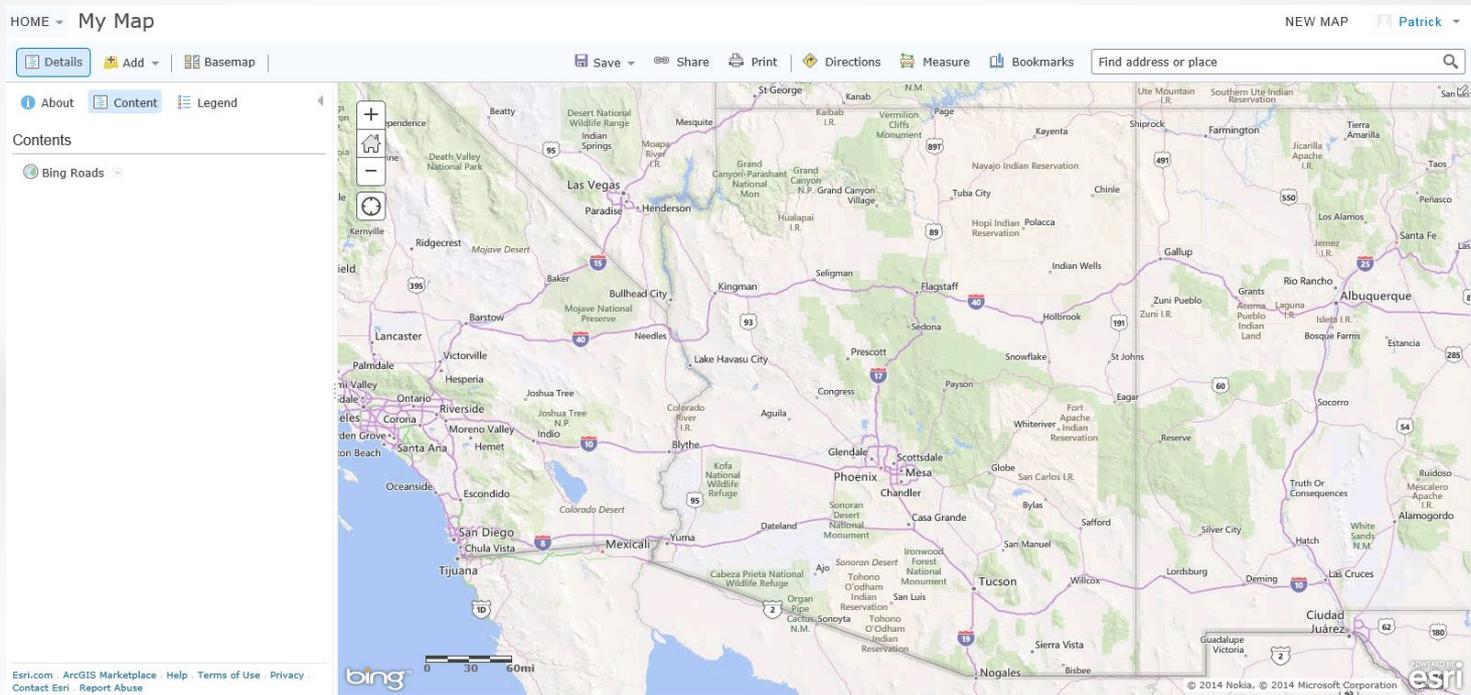
## Perform Analysis

- > Summarize Data 
- > Find Locations 
- > Data Enrichment 
- > Analyze Patterns 
- ▼ Use Proximity 
  -  Create Buffers 
  -  Create Drive-Time Areas 
  -  Find Nearest 
  -  Plan Routes 
- > Manage Data 

# Interactive Mapping - APLAN

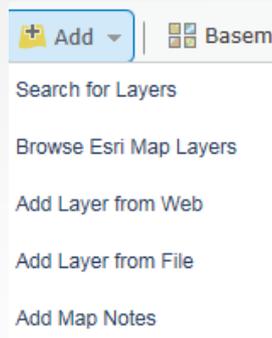
## ❑ Background

- ❑ ArcGIS Online Tool
- ❑ Web based application being used for data sharing, editing, and analysis
- ❑ Designed with the needs of planners in mind (limited GIS knowledge)
- ❑ Worked closely with UDOT on best practices



# Interactive Mapping - APLAN

- ❑ Capabilities
  - ❑ Add and View spatial data interactivity over base maps



# Interactive Mapping - APLAN

## ❑ Capabilities

- ❑ Add and View spatial data interactivity over base maps
- ❑ Access to sensitive data (bridges and crashes) and maps setup via security protection

<input type="checkbox"/>	<a href="#">+ Add Item</a>	<a href="#">Create Map</a>	<a href="#">Create Layer</a>	<a href="#">Share</a>	<a href="#">Delete</a>	<a href="#">Move</a>			
<input type="checkbox"/>	Title		Type	Modified	Shared				
<input type="checkbox"/>		5310 Transit Services	<input type="checkbox"/> Web Map	Dec 6, 2013	Everyone				
<input type="checkbox"/>		5311 Transit Services	<input type="checkbox"/> Web Map	Dec 6, 2013	Everyone				
<input type="checkbox"/>		ADOT Bridge Condition	<input type="checkbox"/> Web Map	Feb 12, 2013	Organization				
<input type="checkbox"/>		ADOT Maintenance Districts	<input type="checkbox"/> Web Map	Dec 24, 2013	Everyone				
<input type="checkbox"/>		Airports	<input type="checkbox"/> Feature Layer	Apr 4, 2014	Everyone				
<input type="checkbox"/>		Airports	<input type="checkbox"/> Shapefile	Apr 4, 2014	Organization				
<input type="checkbox"/>		Airports and Legislative Districts	<input type="checkbox"/> Web Map	Jan 8, 2013	Organization				
<input type="checkbox"/>		Airports_Geocode	<input type="checkbox"/> CSV	Jul 22, 2014	Not Shared				
<input type="checkbox"/>		Airports_Geocode	<input type="checkbox"/> Feature Layer	Jul 22, 2014	Organization				
<input type="checkbox"/>		Airports_Geocode	<input type="checkbox"/> Web Map	Jul 22, 2014	Organization				
<input type="checkbox"/>		Approved 5-Year Plan 2015-2019	<input type="checkbox"/> Shapefile	Jul 14, 2014	Not Shared				
<input type="checkbox"/>		Approved 5-Year Plan 2015-2019	<input type="checkbox"/> Feature Layer	Jul 14, 2014	Organization				
<input type="checkbox"/>		Arizona Airports	<input type="checkbox"/> Web Map	Dec 30, 2013	Everyone				
<input type="checkbox"/>		Arizona COGs & MPOs	<input type="checkbox"/> Web Map	Dec 30, 2013	Everyone				
<input type="checkbox"/>		Arizona Congressional Districts	<input type="checkbox"/> Web Map	Dec 30, 2013	Everyone				
<input type="checkbox"/>		Arizona Dept. of Public Safety	<input type="checkbox"/> Web Map	Feb 18, 2014	Not Shared				
<input type="checkbox"/>		Arizona Legislative Districts	<input type="checkbox"/> Web Map	Dec 30, 2013	Everyone				
<input type="checkbox"/>		Arizona Scenic Roads	<input type="checkbox"/> Web Map	Dec 30, 2013	Everyone				
<input type="checkbox"/>		Arizona Sonora	<input type="checkbox"/> Web Map	Dec 30, 2013	Everyone				
<input type="checkbox"/>		AZ State	<input type="checkbox"/> Feature Layer	Apr 4, 2014	Everyone				

# Interactive Mapping - APLAN

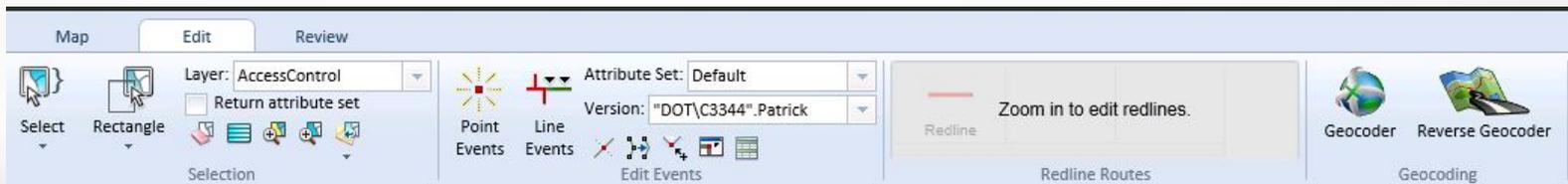
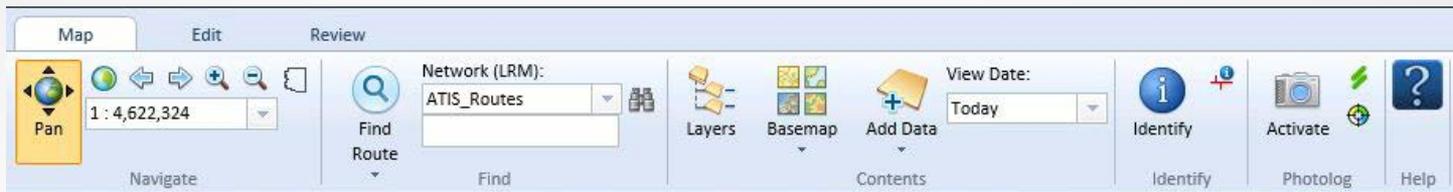
## ❑ Capabilities

- ❑ Add and View spatial data interactivity over base maps
- ❑ Access to sensitive data (bridges and crashes) and maps setup via security protection
- ❑ Different permission levels: User, Publisher and Administrator
- ❑ User friendly interface for non-technical users

Privilege	User	Publisher	Administrator	Custom
Use maps and apps	✓	✓	✓	✓
Create content	✓	✓	✓	Optional
Share maps and apps	✓	✓	✓	Optional
Join and create groups	✓	✓	✓	Optional
Edit features	✓	✓	✓	Optional
Publish hosted features and tiles		✓	✓	Optional
Perform analysis		✓	✓	Optional
Manage Open Data sites			✓	Optional
Invite users to organization			✓	Optional
Manage organization resources			✓	Optional
Configure website			✓	
Create custom roles			✓	
View subscription stats			✓	
ArcGIS Marketplace provider (requires organization authorization)			✓	

# Data Editing - RCE

- ❑ Roadway Characteristics Editor
  - ❑ Online editing tool from ESRI's Roads and Highways
  - ❑ Ribbon based – customization available
  - ❑ Attribute Sets



# Data Editing - RCE

- ❑ Roadway Characteristics Editor
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  - ❑ Attribute Sets
  - ❑ Event Editing – 93 events
  - ❑ Several Linear Referencing Methods

Add Point Events

New Edit Next Edit

Event Layer: NBI

Network (LRM): ATIS\_Routes (miles)

Route ID: S 087 0

Location

Method: ATIS\_Routes

Measure: 93.5051657 Miles

Dates

Start Date: 10/29/2014 Use route start date

End Date: Use route end date

Prevent measures not on route

Next >

Add Linear Events

New Edit Next Edit

Network (LRM): ATIS\_Routes (miles)

Route ID: S 087 0

From

Method: ATIS Mileposts offset

Location: M208

Offset: N 0.25 Miles

To

Method: Stationing

Station: 1843+58.37 Feet

Dates

Start Date: 10/29/2014 Use route start date

End Date: Use route end date

Retire overlaps

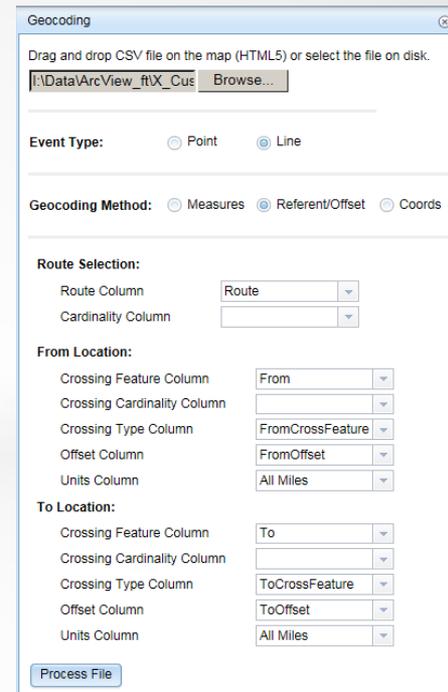
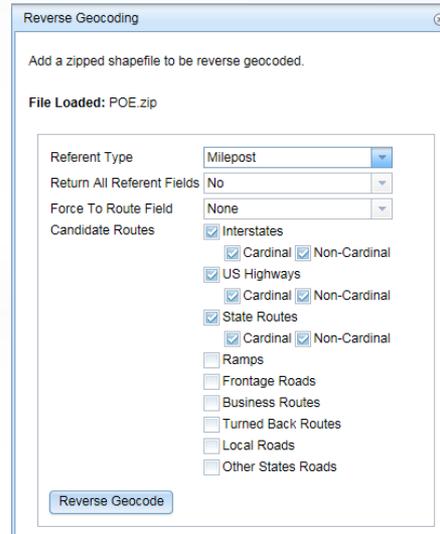
Merge coincident events

Prevent measures not on route

Next >

# Data Editing - RCE

- ❑ Roadway Characteristics Editor
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  - ❑ Event Editing – 93 events
  - ❑ Several Linear Referencing Methods
  - ❑ Geocoder/Reverse Geocoder



# Data Sharing- AZGEO

- ❑ Arizona Geographic Information Council (AGIC) initiative
- ❑ GIS Data Clearinghouse for state agencies
- ❑ Internet map services
- ❑ FGDC compliant metadata
- ❑ Geospatial data downloads

The screenshot shows the AZGEO Clearinghouse website. At the top right, there are links for "Register" and "Log In", and the "AZ.GOV" logo. A search bar is also present. The navigation menu includes "HOME", "ABOUT", "GROUPS", "MAP", "CONTRIBUTE", "CONTACT", and "HELP". The main content area features a section titled "STANDARDIZED METADATA" with the tagline "We made it simple and useful." Below this, it lists the metadata included in all AZGEO data, such as Data Custodian, Access and Use Constraints, Data Abstract, Data Purpose, Keywords/Data tags, Publication Date, Spatial Extent, Projection, Datum, Units, Time period of data, Project status, Update frequency, and Next expected update. To the right of this section is a sidebar with links for "Who uses AZGEO?", "Controlled Access", "Standardized Metadata", and "Subscribe to Data". At the bottom, there are three icons representing "1. Join Groups", "2. Download Data", and "3. Give Back".



# Static Maps

- ❑ Annual Map Book
- ❑ Daily Requests

## ADOT Map Book

State Highway System

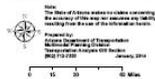


Arizona D  
Multimod  
GIS Sectio



State Highway System  
Interstate  
US Route  
State Route

Cities and Towns  
County Boundaries



# Metadata – Data Dictionary

- ❑ Metadata on all GIS data in MPD
- ❑ Currently being updated
- ❑ FGDC Format
- ❑ Currently in PDF format, but intended for use in a searchable website

## Mileposts

### Virtual Point Locations

**Feature Name:** ATIS.DBO.a00m  
**Feature Type:** Point  
**Feature Description:** Feature class of mileposts sign locations on numbered sign routes  
**Feature Projection:** NAD\_1983\_StatePlane\_Arizona\_Central\_FIPS\_0202\_Feet\_Intl  
**Feature Extent:** Statewide  
**Methodology:** Developed by using the a00rte as the route and using a Linear Referencing Method (LRM) to pinpoint where the mileposts should be placed based on the length of the roadway.  
**Credit:** ADOT  
**Location:** ATIS SDE – Road\_Parts  
**Submittal Year:**  
**Redaction:**  
**Versions:** End Of Year (Calendar year)/Moving Forward  
**Last Updated:** Continuous  
**Next Update:** Live with quarterly publications  
**Data Contact:** Multimodal Planning Division-GIS  
**Phone Number:** 602.712.7333  
**Office:** Multimodal Planning Division

Column Name	Column Type/Length	Column Description
ROUTE	Text (32)	Milepost Number using ATIS nomenclature
ONROAD	Text (32)	ATIS nomenclature represents name of road
ELEVATION	Double (38, 8)	Elevation in meters
STATION	Double (38, 8)	Station Number
CARD	Text (1)	Direction of increasing or decreasing mileposts
RTE_TYPE	Text (10)	Distinction between frontage, main line or ramp
MPTYPE	Text (10)	Milepost or Kilometer post
MPS	Short (5)	Milepost every five miles
MP10	Short (5)	Milepost every ten miles
MP20	Short (5)	Milepost every twenty miles
MPnum	Long (10)	Milepost Number
RETIRED_DATE	Date	Filled in when a milepost is retired from network
RETIRED	Short (5)	Distinction between active, inactive, retired or future mileposts
X_RTE_ID	Long (10)	Route ID
RTE_ID	Long (10)	Value that relates the ROUTE to the indexed values in the ATIS library
SOURCE F	Text (3)	Source Code

# Demonstration

Now the good stuff!!



# Comments and Questions?

- ❑ Patrick Whiteford, GISP:

[pwhiteford@azdot.gov](mailto:pwhiteford@azdot.gov)

602.712.8591

- ❑ APLAN: <http://adot.maps.arcgis.com/home/index.html>

- ❑ Need to have an invite to view maps

- ❑ ADOT Maps: <http://www.azdot.gov/maps>

- ❑ ArcGIS Online: <http://www.arcgis.com/about/>

- ❑ Roads and Highways:

<http://www.esri.com/software/arcgis/extensions/roads-and-highways>

- ❑ AZGEO: <https://azgeo.az.gov/AZGEO/>