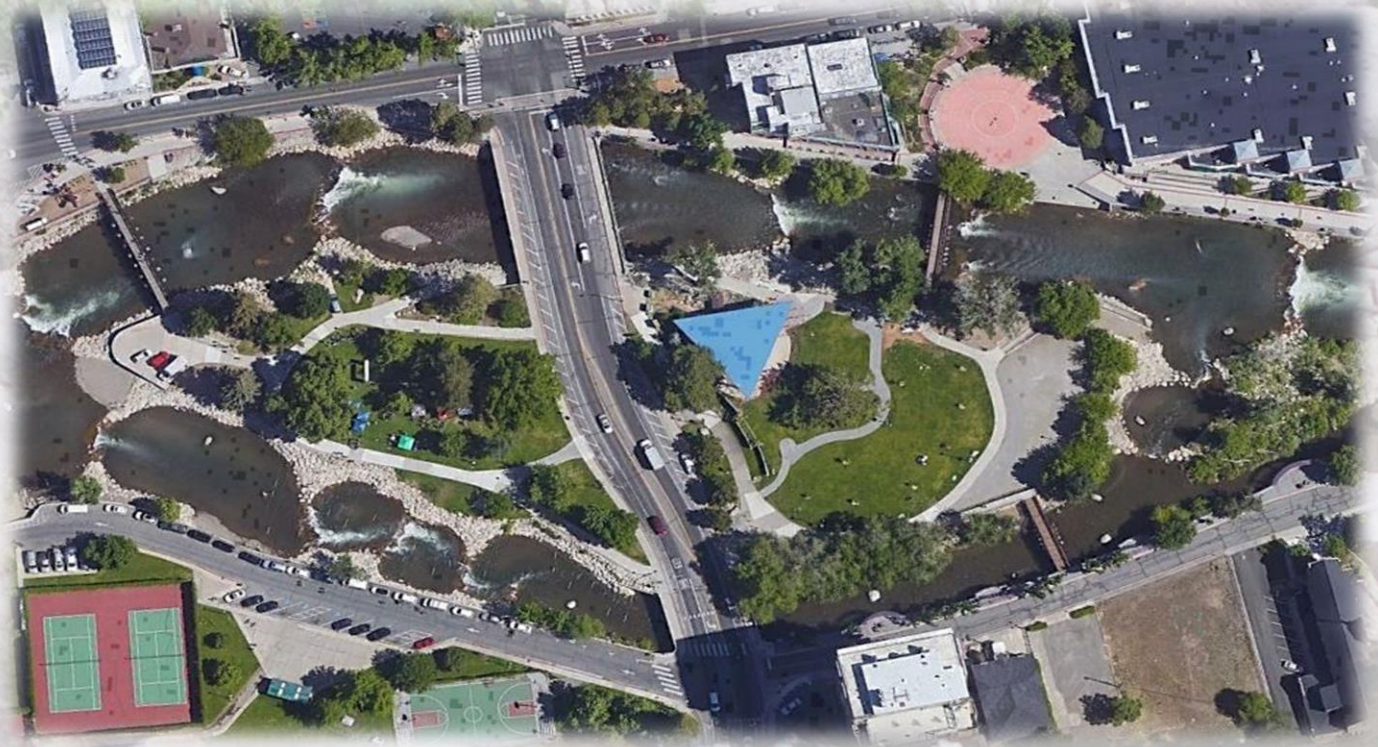
Design and Environmental Study For



ARLINGTON AVENUE BRIDGES REPLACEMENT

Design Review Committee Meeting #3 | May 10, 2022

Purpose of Today's DRC Meeting:

ARLINGTON AVENUE BRIDGES PROJECT

- ✓ Traffic Model Results – Queue Lengths
- ✓ Roadway Design Updates
- ✓ Bridge Design Updates
- ✓ Hydraulic Modeling Updates
- ✓ Utilities
- ✓ Environmental Update
- ✓ Right of Way
- ✓ Schedule

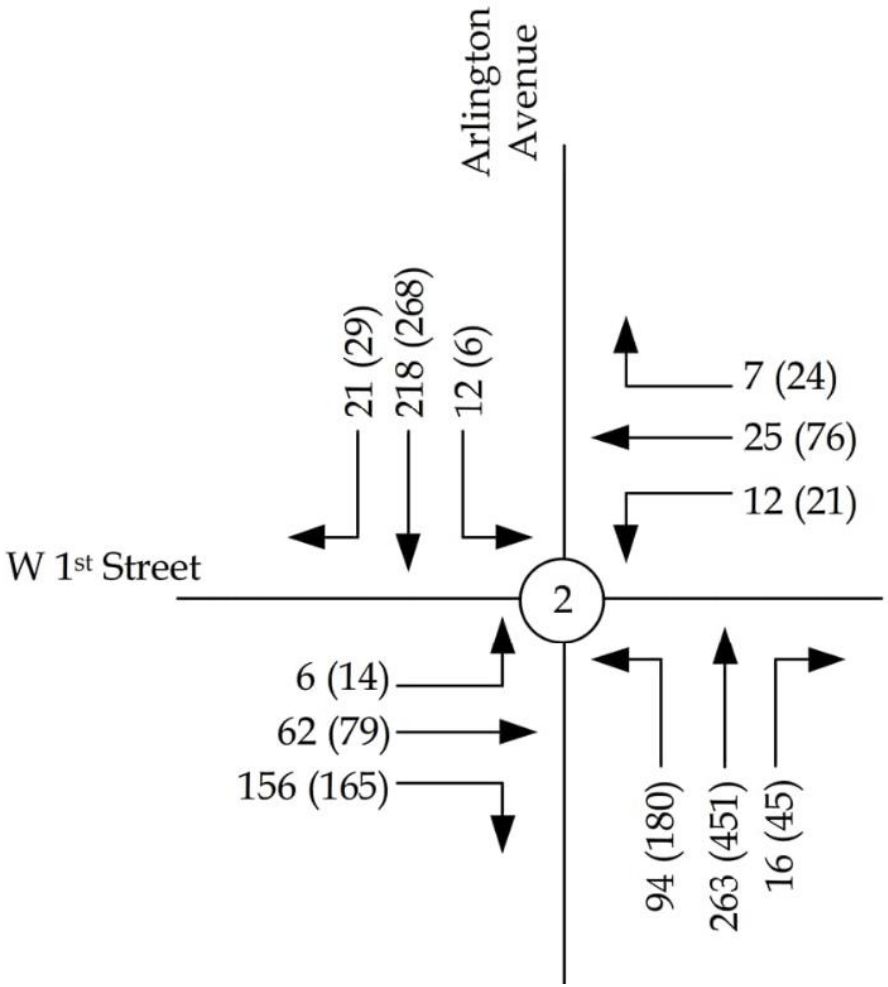
Traffic Counts

Traffic Counts Obtained March 29

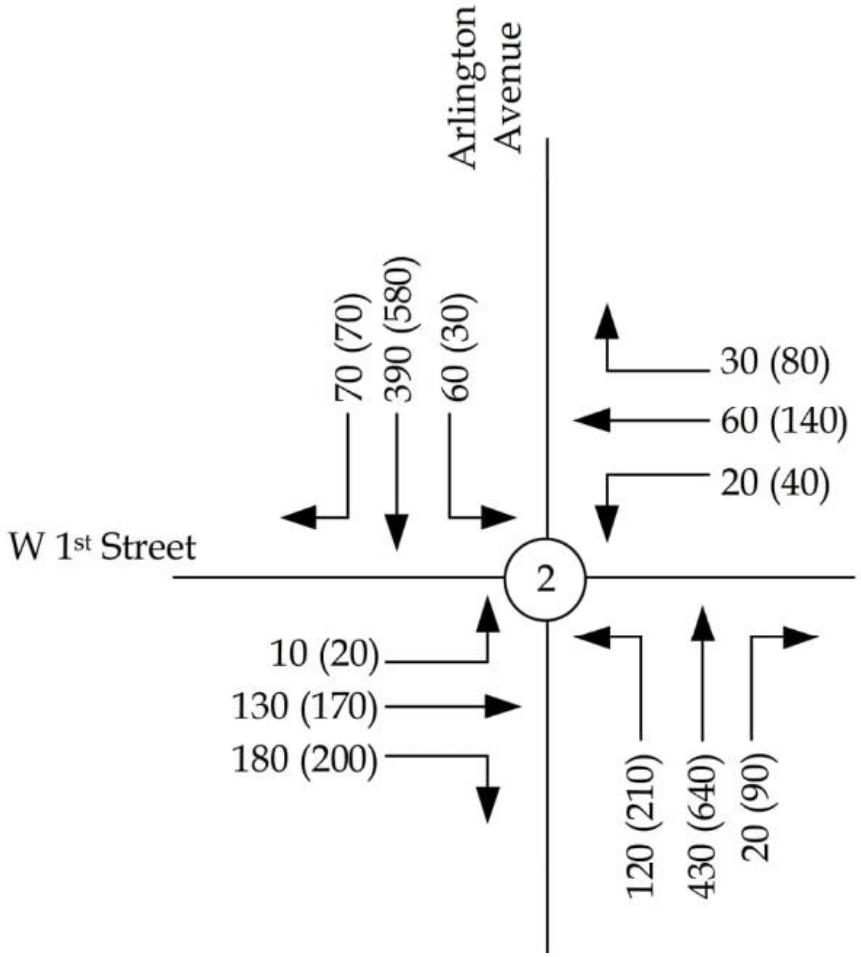
Arlington Ave & First Street AM Peak Hr. (PM Peak Hr.)

ARLINGTON AVENUE BRIDGES PROJECT

Existing 2022



Future 2050



Queue Lengths

95th percentile for year 2050

Queue Lengths Only (*Add Deceleration, Taper Length(s)*)

ARLINGTON AVENUE BRIDGES PROJECT

Southbound Right

queue from analysis shorter than existing
maintain existing

Southbound Left

Eastbound Right

150 ft

(Existing only 50’
Built as such
In 2003-ish)

Westbound

Shared Left/Thru

Northbound Left

250’
(Ext. ~ 175’)

Northbound Right

queue from analysis shorter than existing
maintain existing ~ 175’

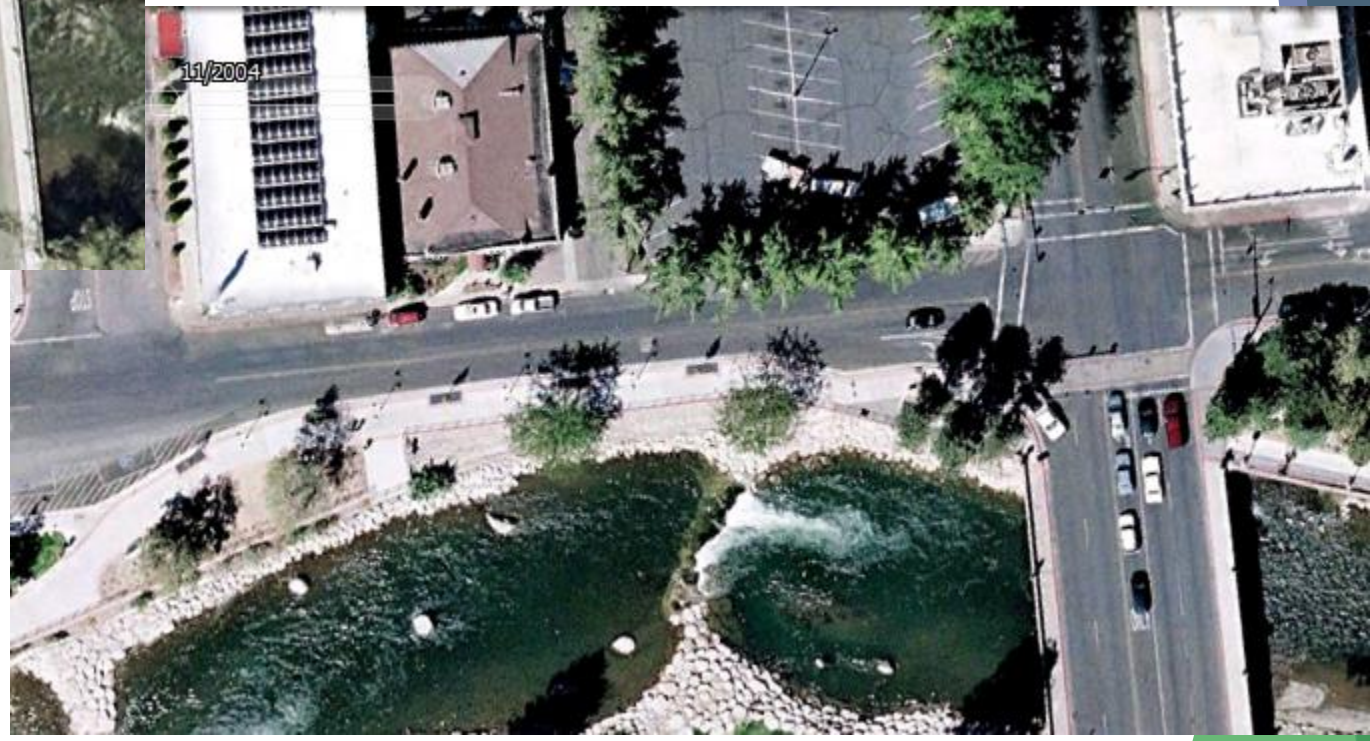
Queue Lengths

95th percentile for year 2050

Queue Lengths Only (*Add Deceleration, Taper Length(s)*)

ARLINGTON AVENUE BRIDGES PROJECT

2002



2004

Queue Lengths

95th percentile for year 2050

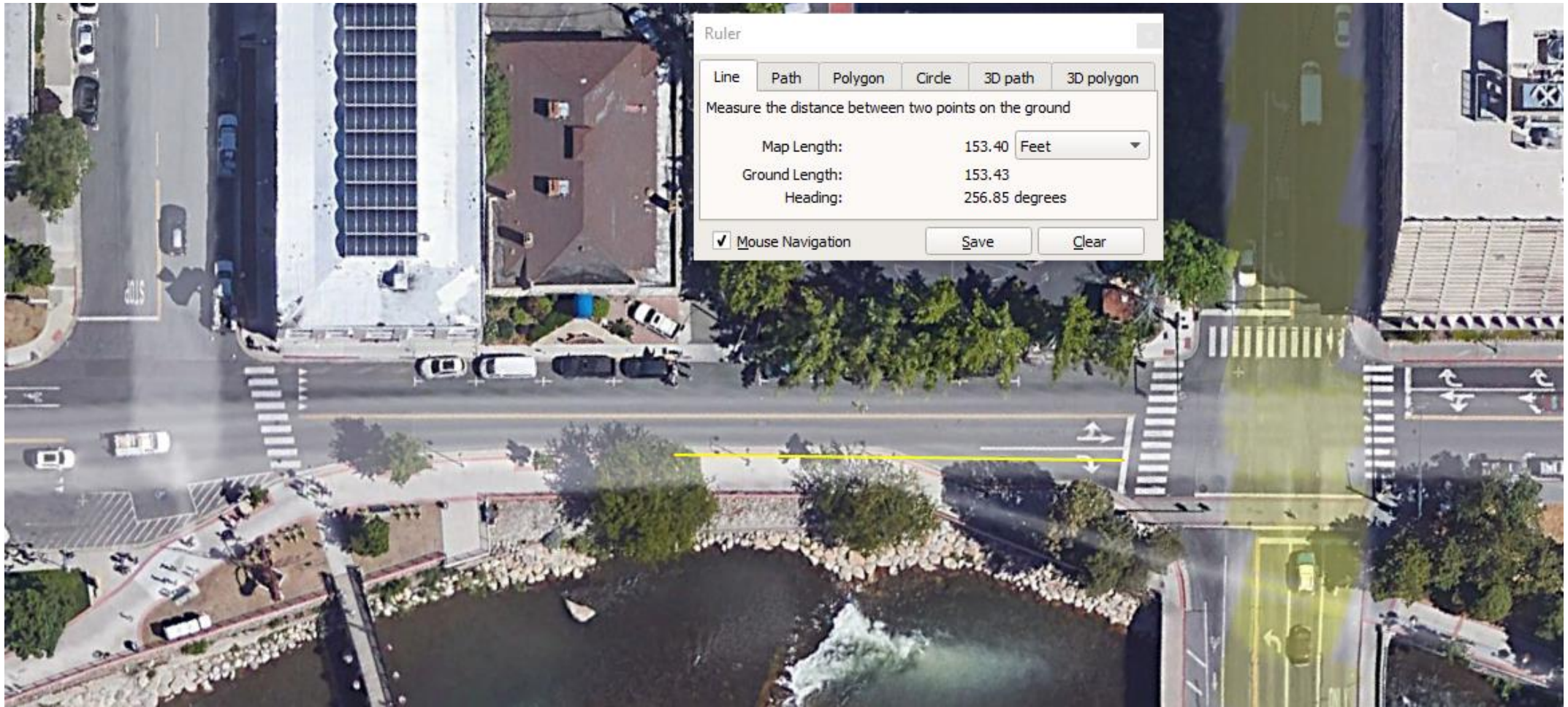
Queue Lengths Only (*Add Deceleration, Taper Length(s)*)

ARLINGTON AVENUE BRIDGES PROJECT

Eastbound Right

Model Results for 150 ft would require lengthening existing 50 ft turn pocket

To include in our project would Un-Do the Riverwalk Improvements done in 2003-ish

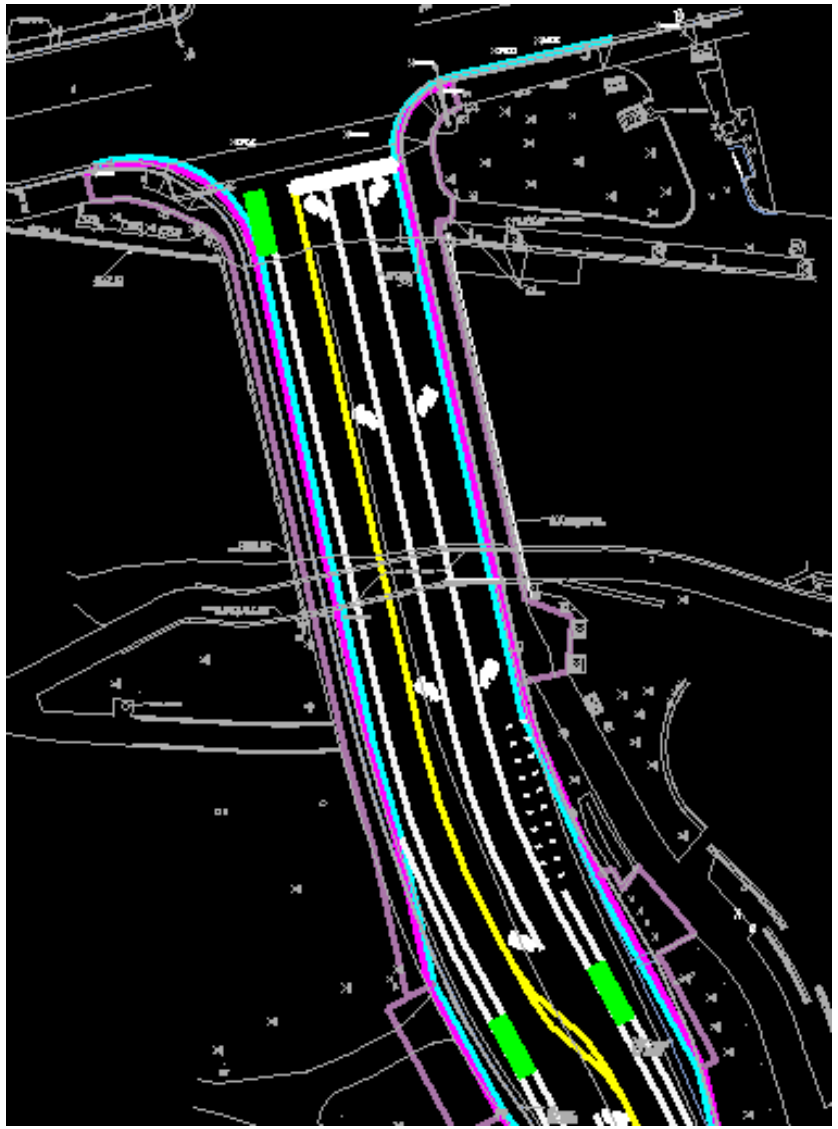


Queue Lengths

95th percentile for year 2050

Queue Lengths Only (*Add Deceleration, Taper Length(s)*)

ARLINGTON AVENUE BRIDGES PROJECT



Northbound Left

Design ~ 280’

Required: 250’ queue min

+ 90’ Stopping Sight Distance

(split available with SB Lt.)

Northbound Left

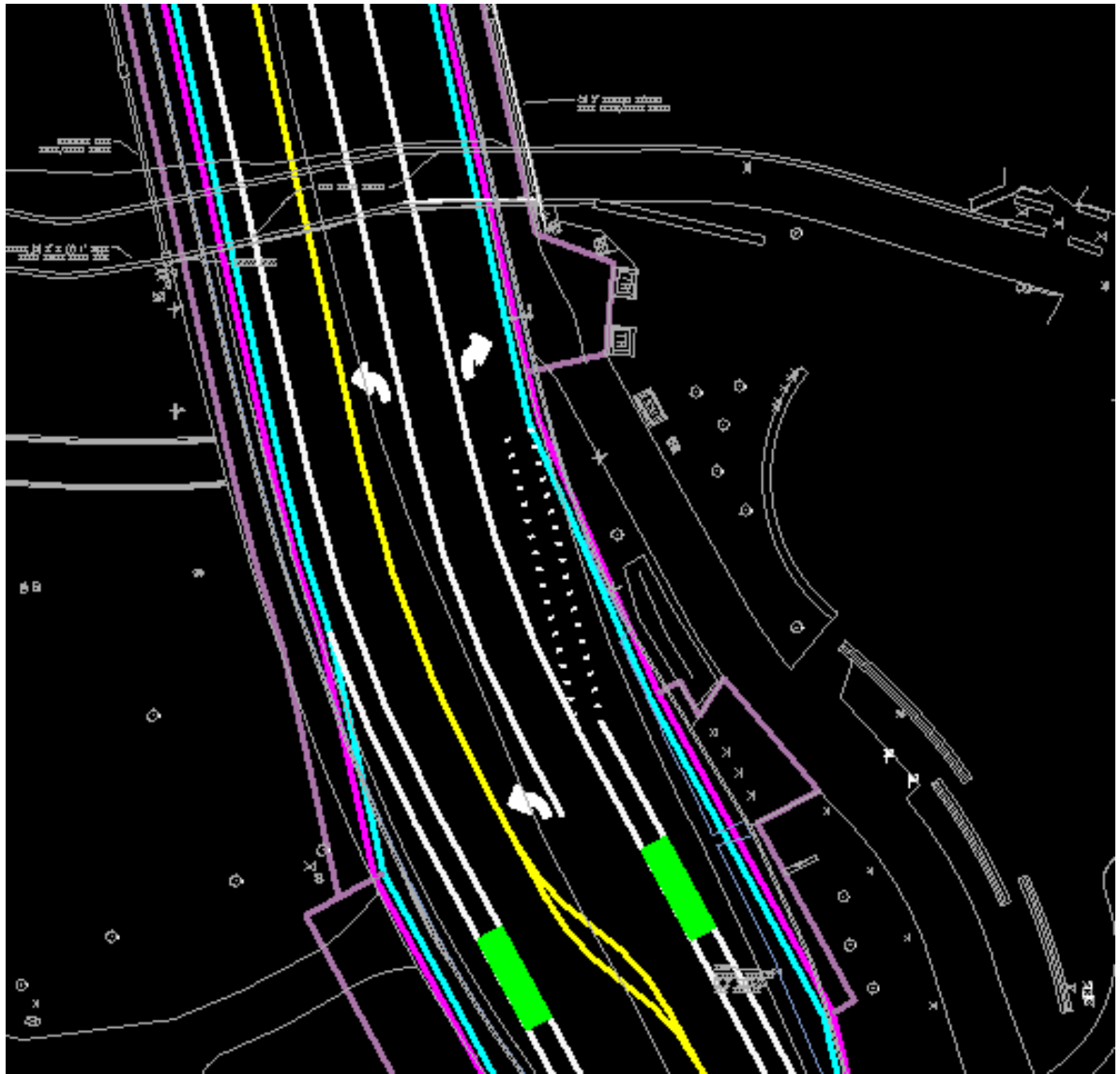
Design ~ 190’

@ end of bike lane shift

Required: maintain existing 175’

Roadway:
Bike Lane Transition to Sharrow

ARLINGTON AVENUE BRIDGES PROJECT



- 60’ Transition
  - 5’ Dedicated Bike Lane + 11’ Lane to 13’ Sharrow Lane

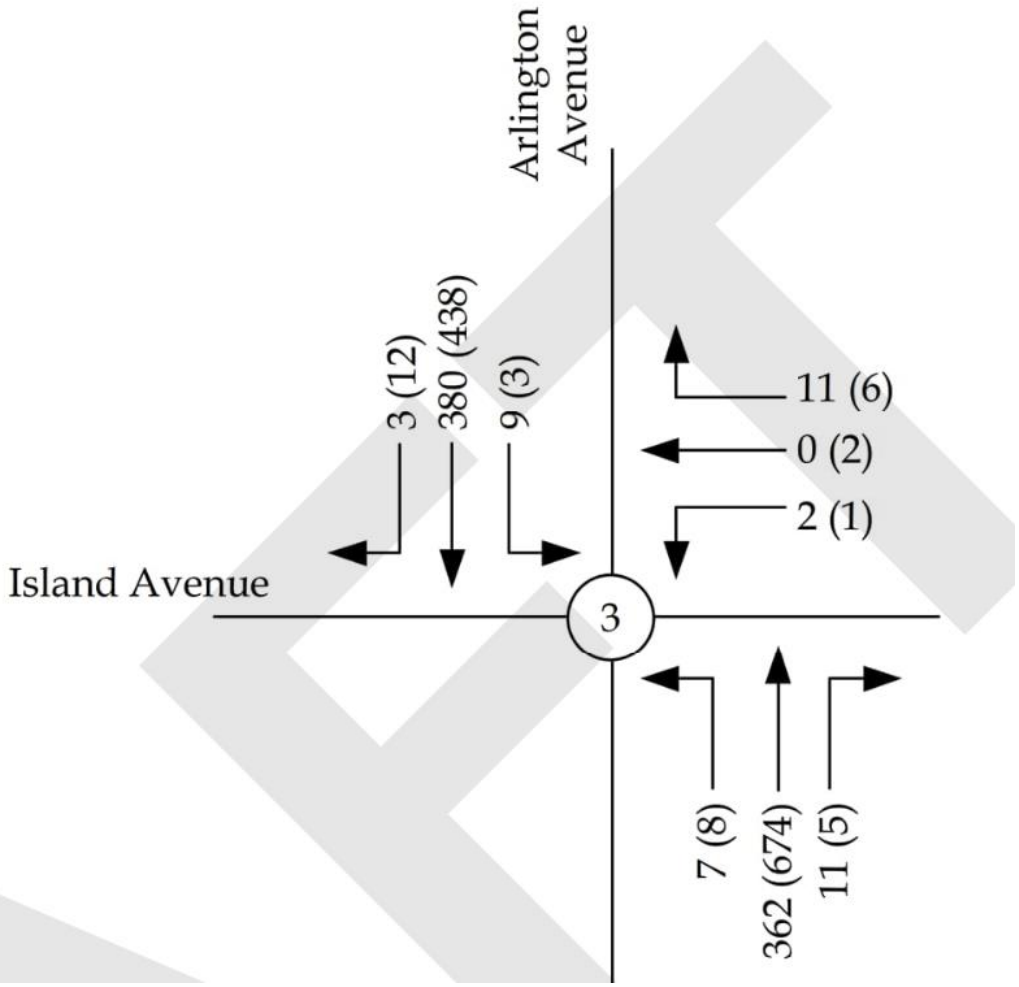
Traffic Counts

Traffic Counts Obtained March 29

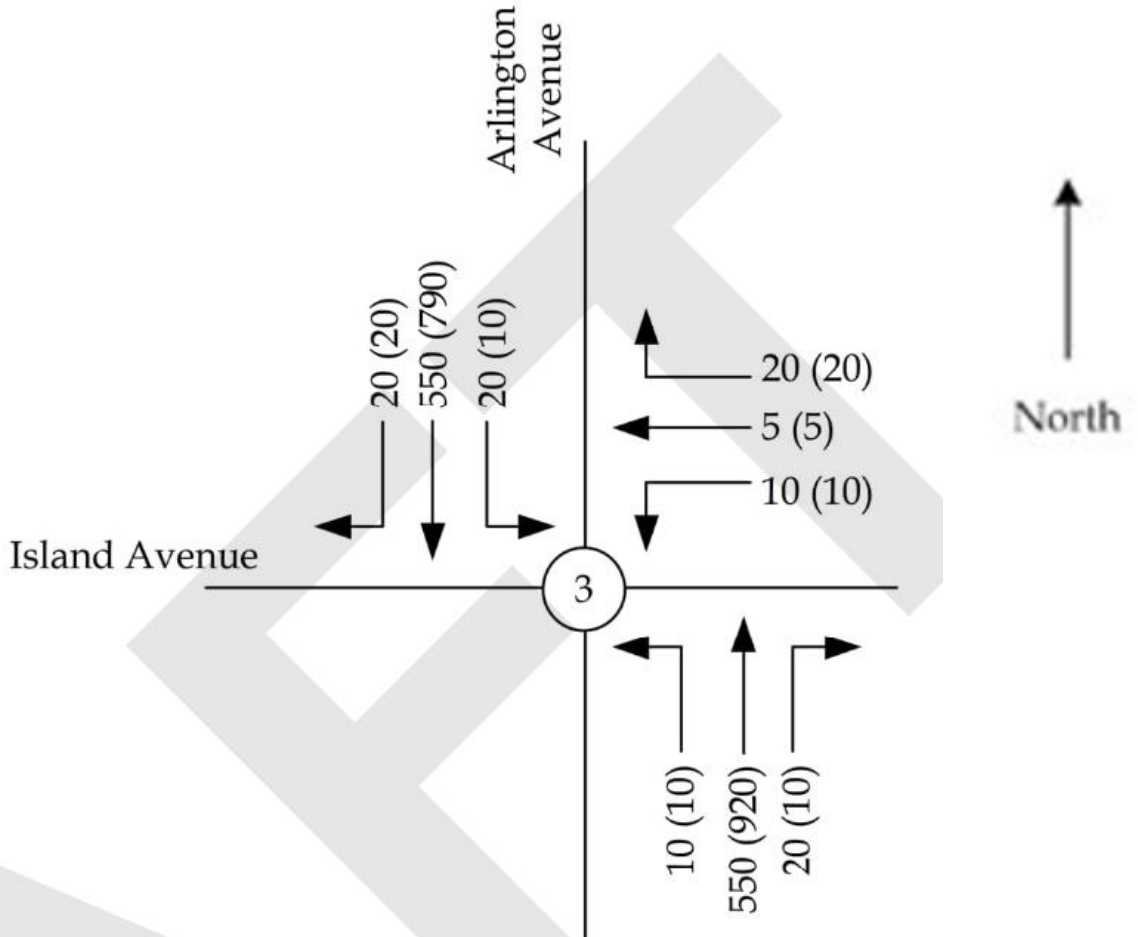
Arlington Ave. & Island Ave. AM Peak Hr. (PM Peak Hr.)

ARLINGTON AVENUE BRIDGES PROJECT

Existing 2022



Future 2050



Queue Lengths

95th percentile for year 2050

Queue Lengths Only (*Add Deceleration, Taper Length(s)*)

ARLINGTON AVENUE BRIDGES PROJECT

Southbound Thru/Right

Southbound Left

50’ min (maximize; split delta with NB Lt)

(model doesn’t account for unsignalized ped crossing)

Existing is ~ 50’

One-Way Westbound

Westbound

Shared Left/Thru/Right

Northbound Left

queue from analysis shorter than existing
(Ext. ~ 75’)

Northbound Thru/Right

Queue Lengths

95th percentile for year 2050

Queue Lengths Only (*Add Deceleration, Taper Length(s)*)

ARLINGTON AVENUE BRIDGES PROJECT

Southbound Left

Design ~ 130’

Required: 50’ queue

+ 90’ Stopping Sight Distance

(split available with SB Lt.)

Relocate RRFB to north side of Island Avenue

DRAFT: LOS

ARLINGTON AVENUE BRIDGES PROJECT

Table 2: Intersection Traffic Analysis Results (Delay and LOS)

Intersection	Approach/ Intersection	Delay in seconds (LOS)							
		Year 2022 – Existing Conditions		Year 2030 – Future Conditions		Year 2040 – Future Conditions		Year 2050 – Future Conditions	
		AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
Arlington Avenue and W 2nd Street (Signalized)	Entire Intersection	12.6 (B)	15.5 (B)	12.6 (B)	12.8 (B)	13.2 (B)	14.2 (B)	14.2 (B)	22.9 (C)
Arlington Avenue and W 1st Street (Signalized)	Entire Intersection	13.7 (B)	14.5 (B)	13.9 (B)	15.3 (B)	14.3 (B)	16.7 (B)	15.1 (B)	38.2 (D)
Arlington Avenue and Island Avenue (Stop-Controlled)	Critical Approach	12.5 (B)	17.9 (C)	13.3 (B)	20.8 (C)	14.9 (B)	26.6 (D)	20.8 (C)	59.9 (F)
Arlington Avenue and Eloise Avenue (Stop-Controlled)	Critical Approach	11.2 (B)	12.1 (B)	11.7 (B)	12.9 (B)	12.6 (B)	14.4 (B)	13.2 (B)	18.5 (C)
Arlington Avenue and Court Street (Stop-Controlled)	Critical Approach	18.4 (C)	26.4 (D)	21.7 (C)	38.7 (E)	28.4 (D)	99.9 (F)	40.2 (E)	> 500 (F)
Arlington Avenue and Ridge Street (Stop-Controlled)	Critical Approach	14.7 (B)	29.0 (D)	16.4 (C)	43.0 (E)	19.9 (C)	115.9 (F)	27.7 (D)	224.4 (F)
Arlington Avenue and Liberty Street (Stop-Controlled)	Critical Approach	18.0 (C)	37.7 (E)	22.2 (C)	77.4 (F)	36.0 (E)	219.2 (F)	124.7 (F)	> 500 (F)
Arlington Avenue and California Avenue (Signalized)	Entire Intersection	19.9 (B)	35.3 (D)	21.7 (C)	45.2 (D)	25.7 (C)	71.6 (E)	31.7 (C)	75.6 (E)

DRAFT: Speed & LOS

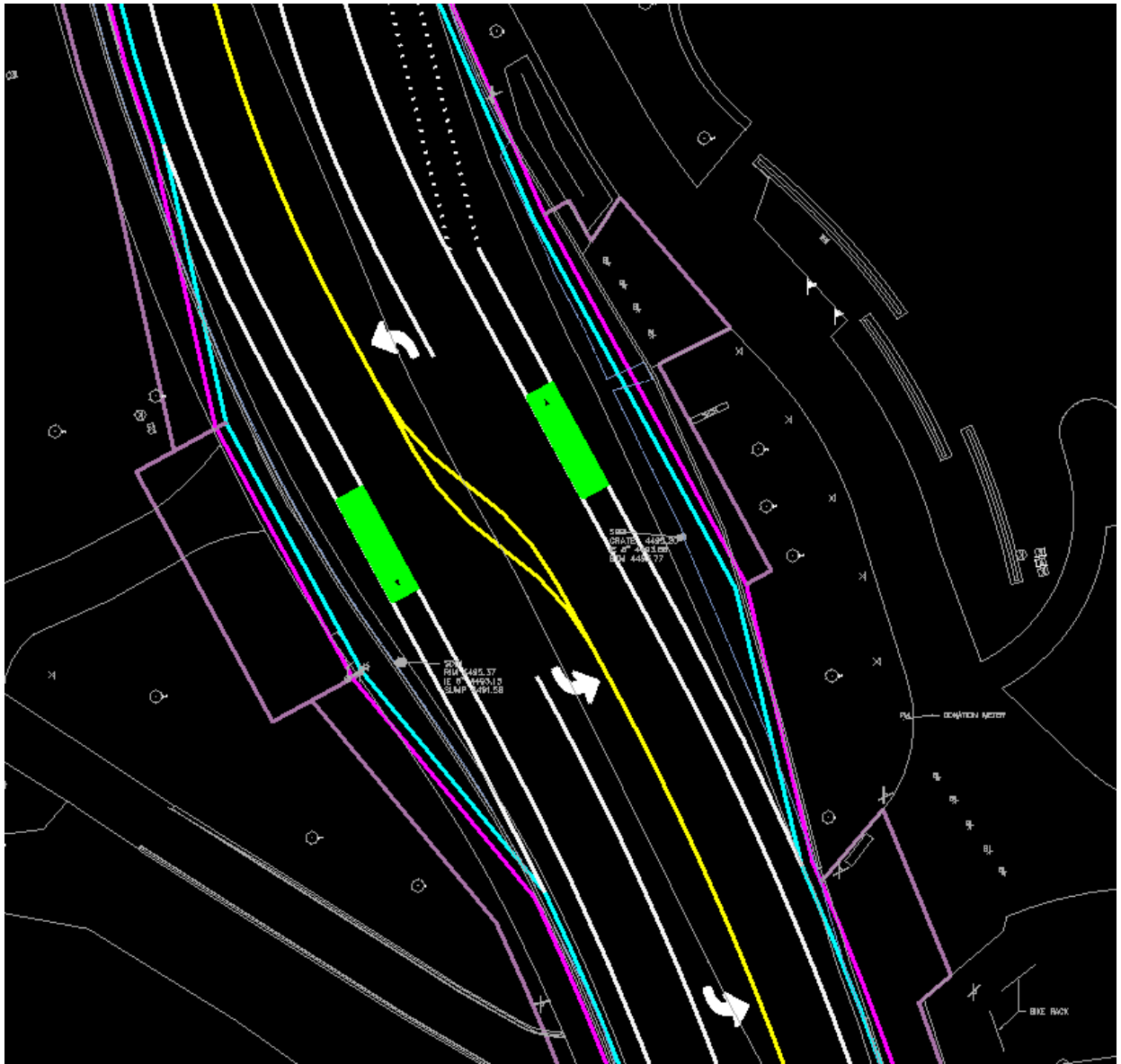
ARLINGTON AVENUE BRIDGES PROJECT

Table 3: Arterial Traffic Analysis Results (Speed and LOS)

Arterial	Arterial Speed in mph (LOS)							
	Year 2022 – Existing Conditions		Year 2030 – Future Conditions		Year 2040 – Future Conditions		Year 2050 – Future Conditions	
	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
Northbound Arlington Avenue between California Avenue and W. 2nd Street	13.8 (C)	11.8 (D)	14.6 (C)	13.8 (C)	14.5 (C)	12.3 (D)	13.7 (C)	9.8 (D)
Southbound Arlington Avenue between W. 2nd Street and California Avenue	11.8 (D)	10.6 (D)	12.2 (D)	10.2 (D)	11.8 (D)	8.6 (E)	11.5 (D)	8.1 (E)

Roadway: Current Design
Maintenance / Transit / Loading Zones

ARLINGTON AVENUE BRIDGES PROJECT

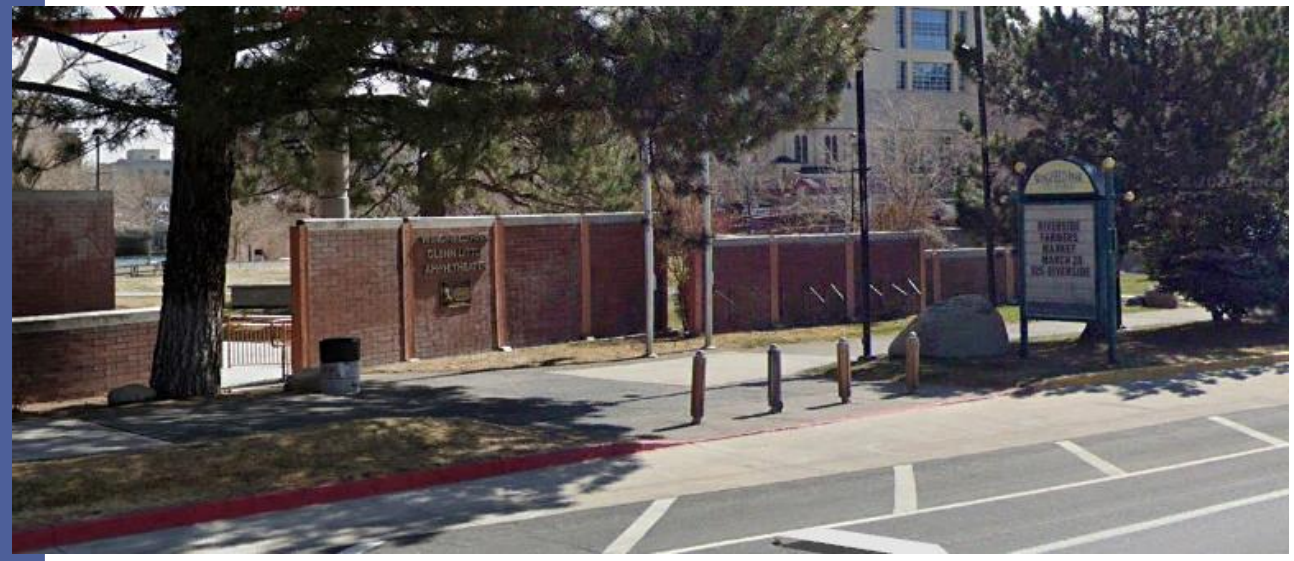


- West side
  - 50’ w/ 50’ transitions
  - Transit / Maintenance Access
  - 8’ SW and additional 8’ staging
  - 12’ lane stripe to face curb
  - Maintain depressed curb access
- East side @ Amphitheater
  - 75’ w/ 50’ transition
  - Transit / Loading Zone / Maintenance Access
  - 5’ sidewalk adj to road
  - Maintain ext. separated path
  - 11’ lane stripe to lip gutter
- East side existing maintenance access
  - Maintain depressed curb access

Maintenance Access

ARLINGTON AVENUE BRIDGES PROJECT

- Existing Access From Arlington Into Park – To be Maintained
- Ensure Bus Stop amenities don't preclude access

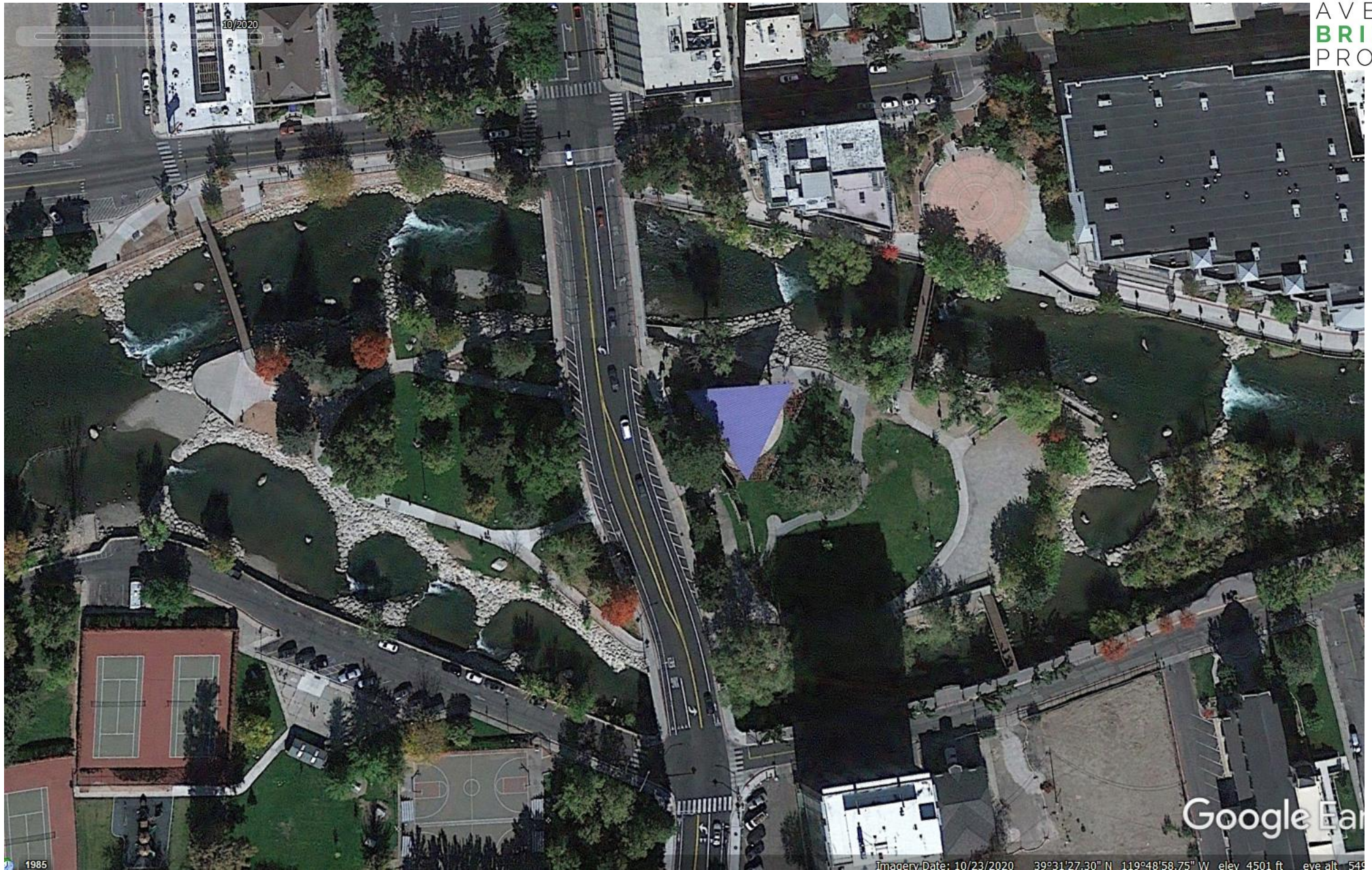


Roadway: Prior to Road Diet

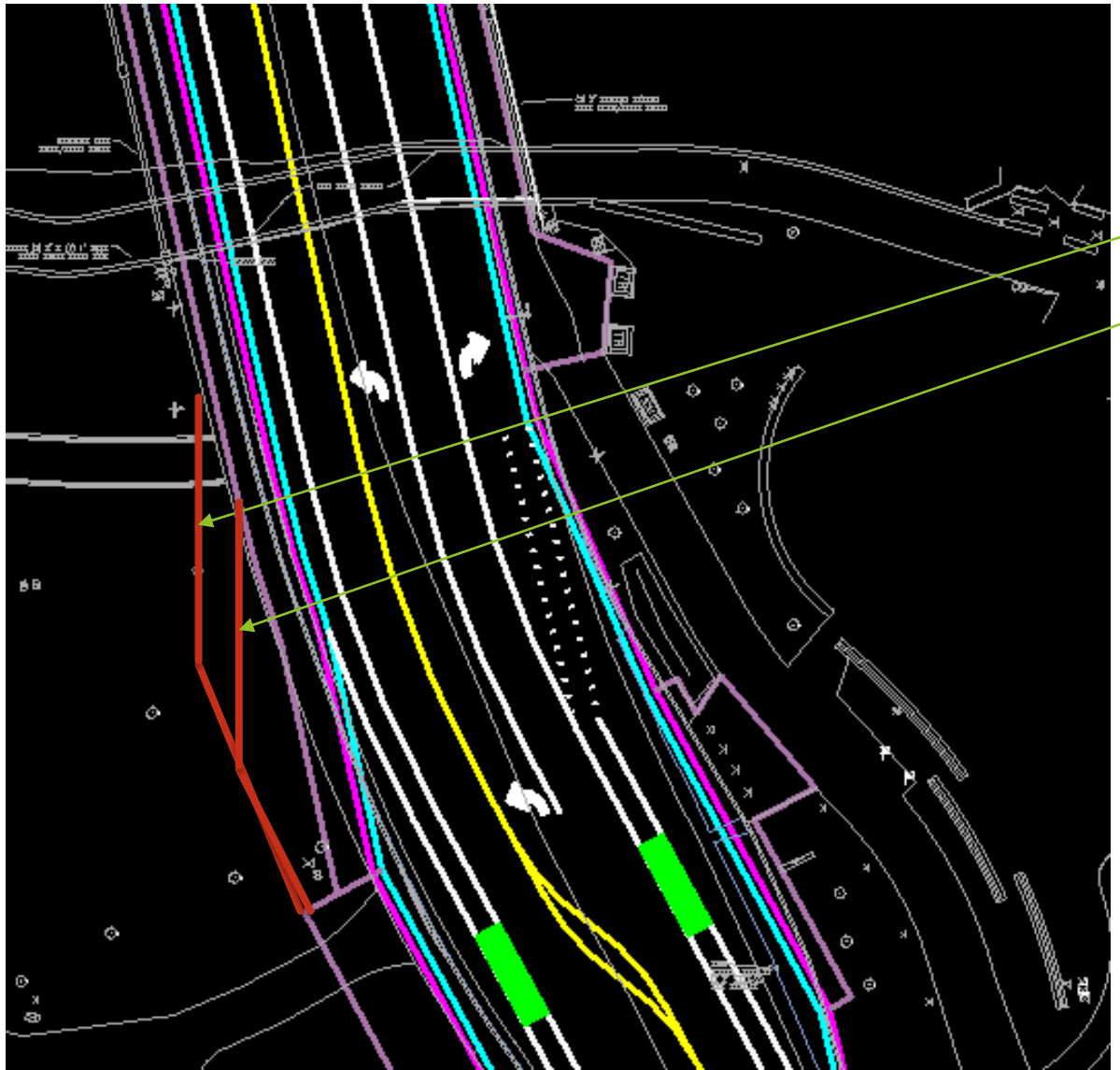
ARLINGTON AVENUE BRIDGES PROJECT

Roadway: Current

ARLINGTON AVENUE BRIDGES PROJECT



Roadway:
Provide Additional Loading Zone on West?



- Provide Additional 50’
  or additional 25’ (avoid SW connection)
  of Loading Zone / Transit Stop?
- Don’t impact bridge

North Bridge Design

- North Bridge Width
- Existing SD Facilities at North Abutment
- Sharrow Lane

Roadway Discussion/Questions

Hydraulics

ARLINGTON AVENUE BRIDGES PROJECT

1997 Flood
Arlington Avenue Looking Northwest

Photo Credit:
National Weather Service

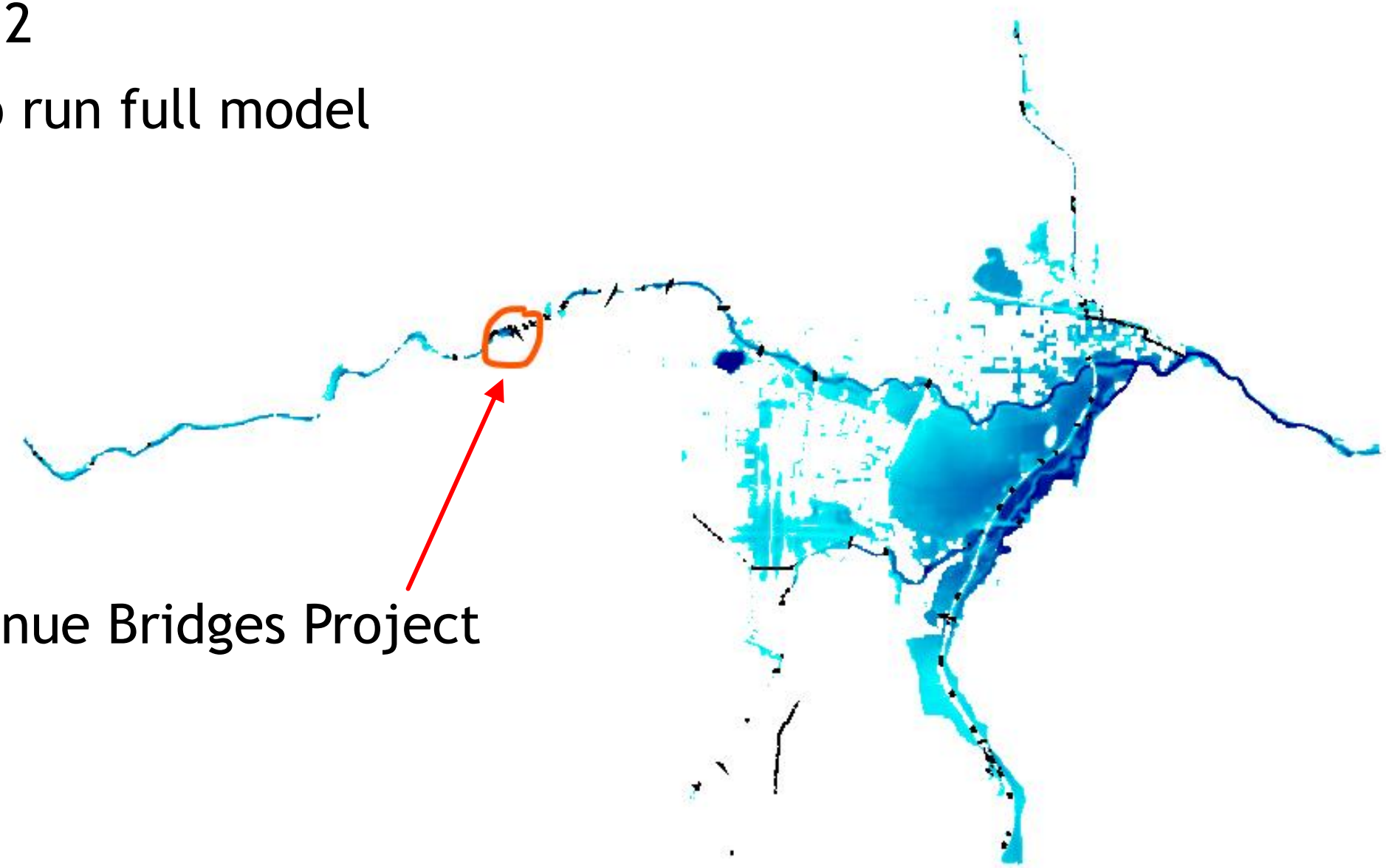
Hydraulics:

ARLINGTON AVENUE BRIDGES PROJECT

- Design Criteria:
  - Required to Analyze 2 events:
    - 14,000 cfs per CTWCD for 408 Permit
    - 100-year storm per FEMA requirements (City of Reno, TRFMA)

TRFMA 100-Yr Model Extents:

- HEC-RAS 6.2
- 16 hours to run full model



Arlington Avenue Bridges Project

Hydraulics:

ARLINGTON AVENUE BRIDGES PROJECT

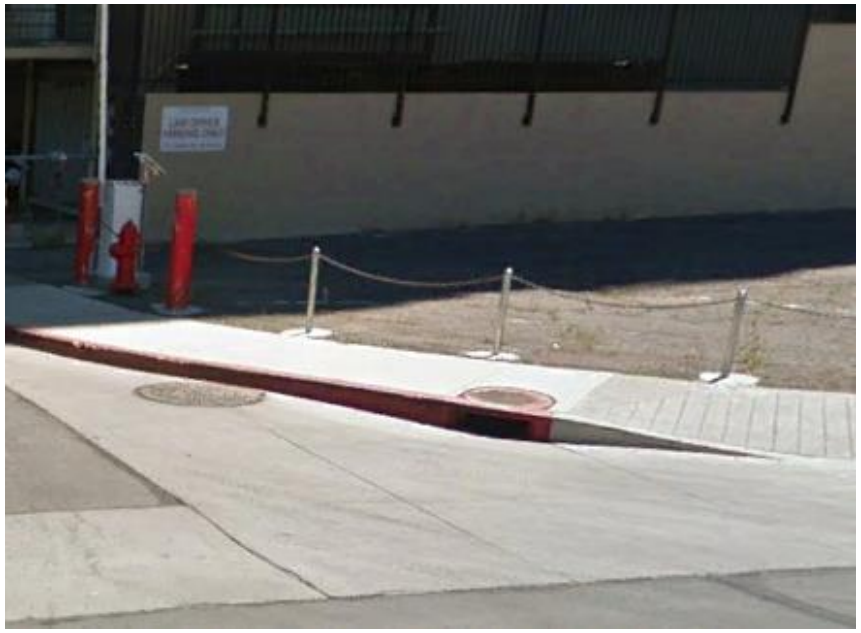
- On-Site Design Criteria:
  - 5-Year Storm Event
  - ½ Adjacent Travel Lane
  - No Pressure Flow
  - Minimum Pipe Size = 12-inch

  - Inlets require oil/water separator as Truckee River is part of the MS4 Permit

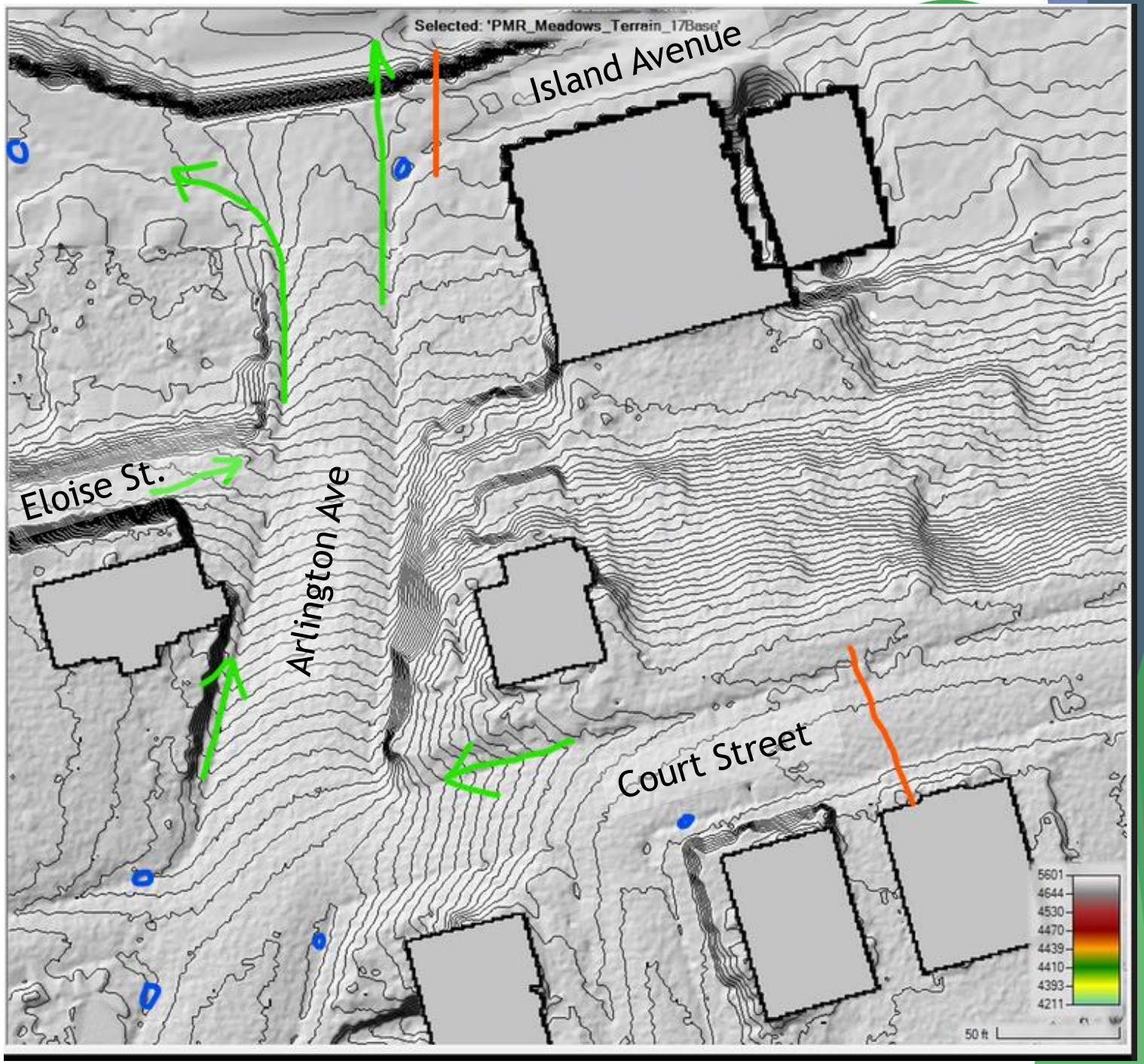
Hydraulics:

Existing Inlets

- SE corner of Arlington/Island



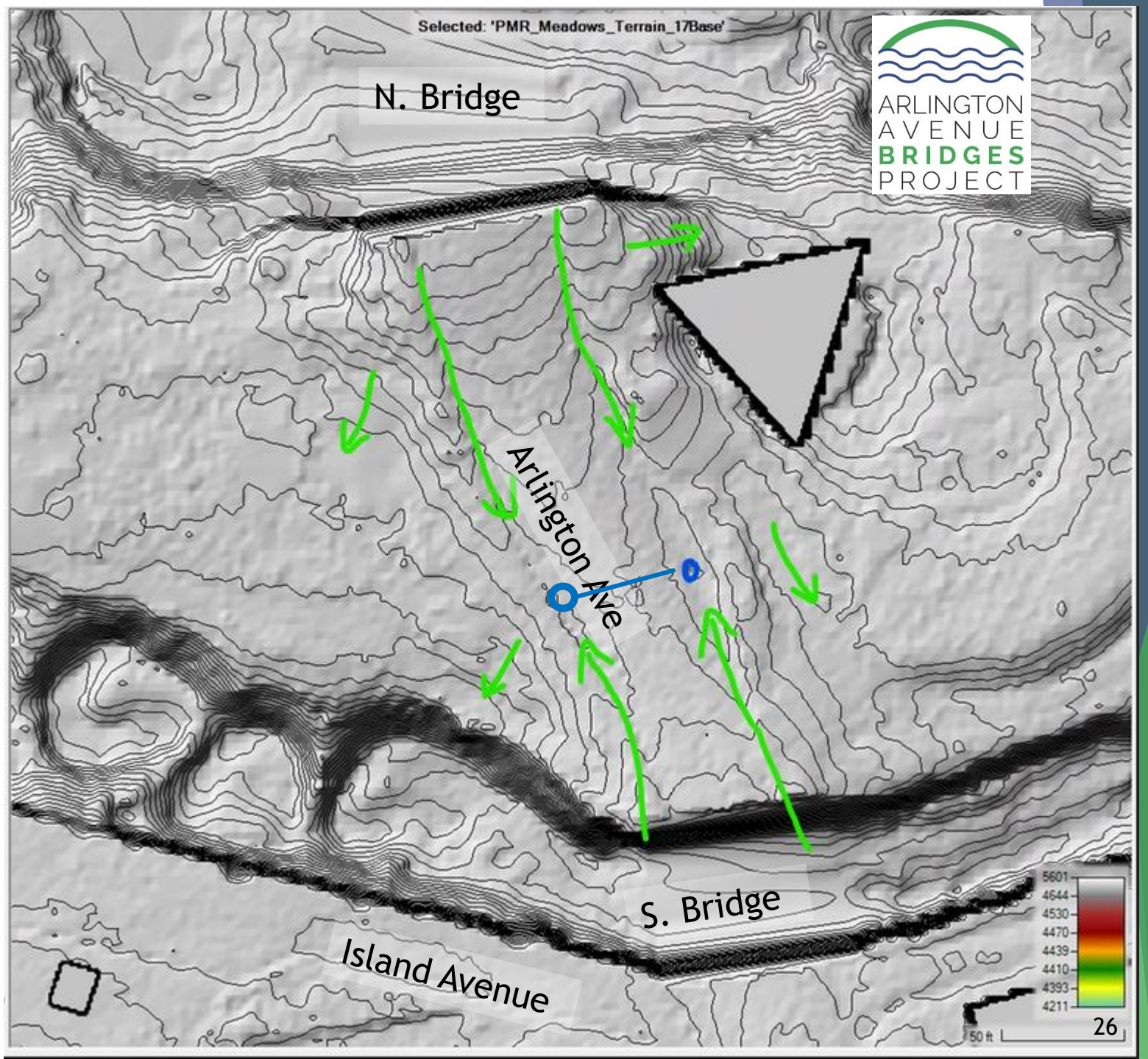
Key:
Blue dots: catch basins
Green arrows: flow directions
Orange lines: high points



Hydraulics:

Existing Inlets

- Mid-Block Arlington Ave.



Key:
Blue dots: catch basins
Green arrows: flow directions
Orange lines: high points

Hydraulics

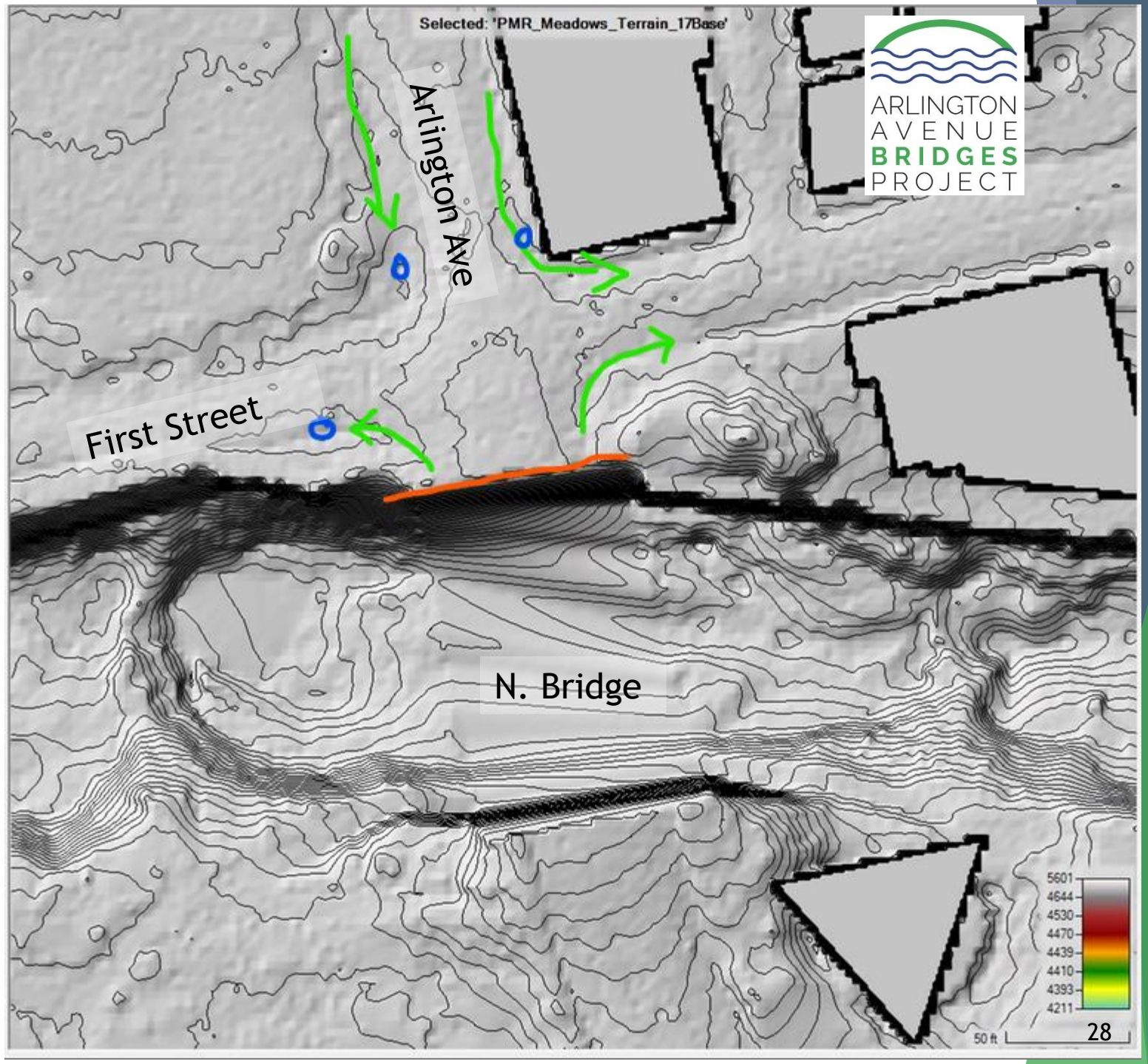
ARLINGTON AVENUE BRIDGES PROJECT

- On-Site Drainage
  - Two Existing Inlets Mid-Block Arlington

Hydraulics:

Existing Inlets

- First St. / Arlington Ave.



Key:
Blue dots: catch basins
Green arrows: flow directions
Orange lines: high points

Hydraulics:

ARLINGTON AVENUE BRIDGES PROJECT

Existing Inlets

SW corner of Arlington Ave/First St

Inlet along First Street w/in Rt Turn Lane

Hydraulics:

ARLINGTON AVENUE BRIDGES PROJECT

Existing Inlets

NW corner of Arlington Ave/First St

NE corner of Arlington Ave/First St

Hydraulics:

ARLINGTON AVENUE BRIDGES PROJECT

Drainage Report Format

TMRDM lists required drainage submittals as a Technical Study (to include a Flood Plain Study).

Exceptions subsection allows the COR to approve or modify the requirements, as appropriate.

Recommendation:

Hydraulic Design Memorandum

* Replacement of two existing inlets mid-block Arlington
* Hydraulic modeling for the two bridges

Hydraulics

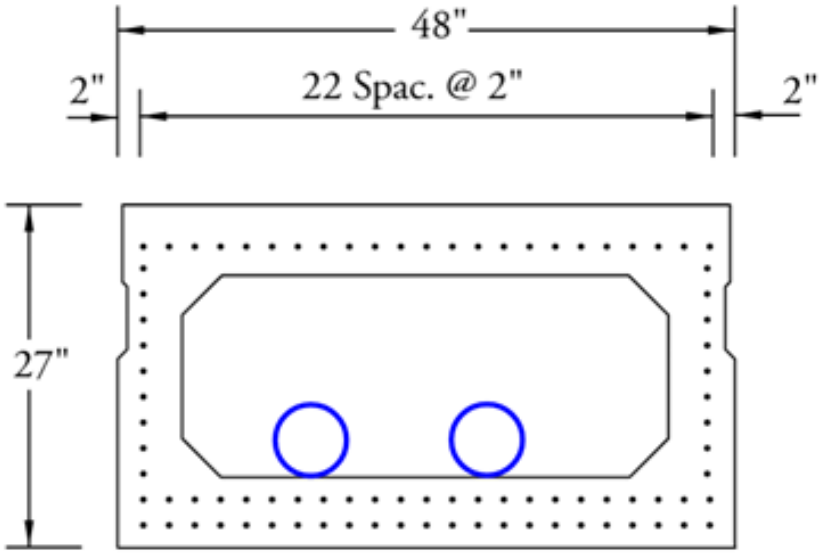
- Open Discussion

ARLINGTON AVENUE BRIDGES PROJECT

Utilities

- Preliminary cross section for side-by-side PC/PS box beams
- Fabricated with conduits in the inner void space for utilities
- Access at bridge ends to push/pull utilities through
- Not subject to floatation/uplift

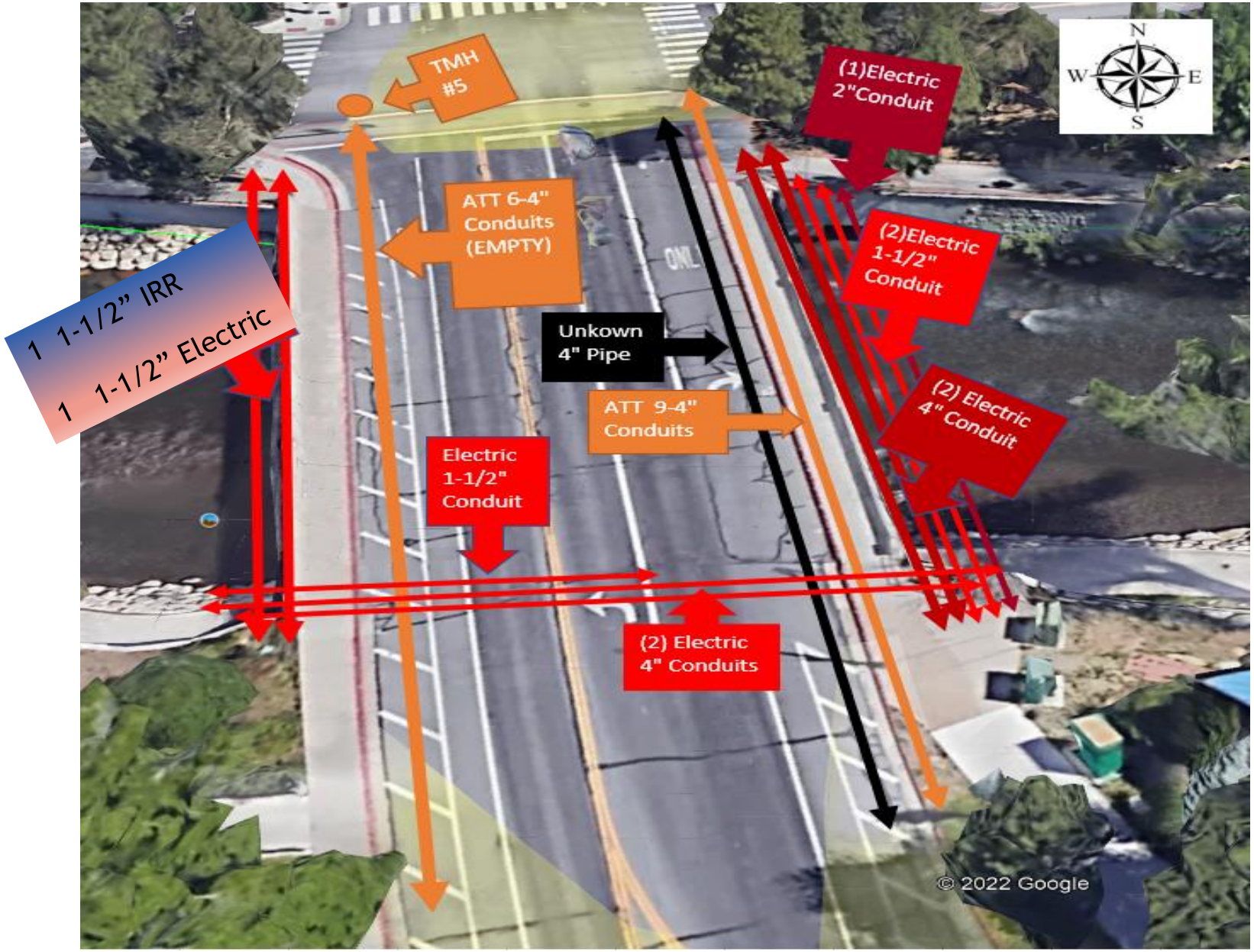
ARLINGTON AVENUE BRIDGES PROJECT



Type BI-48

Utilities

- North Bridge – Existing



Utilities

ARLINGTON AVENUE BRIDGES PROJECT

Utilities

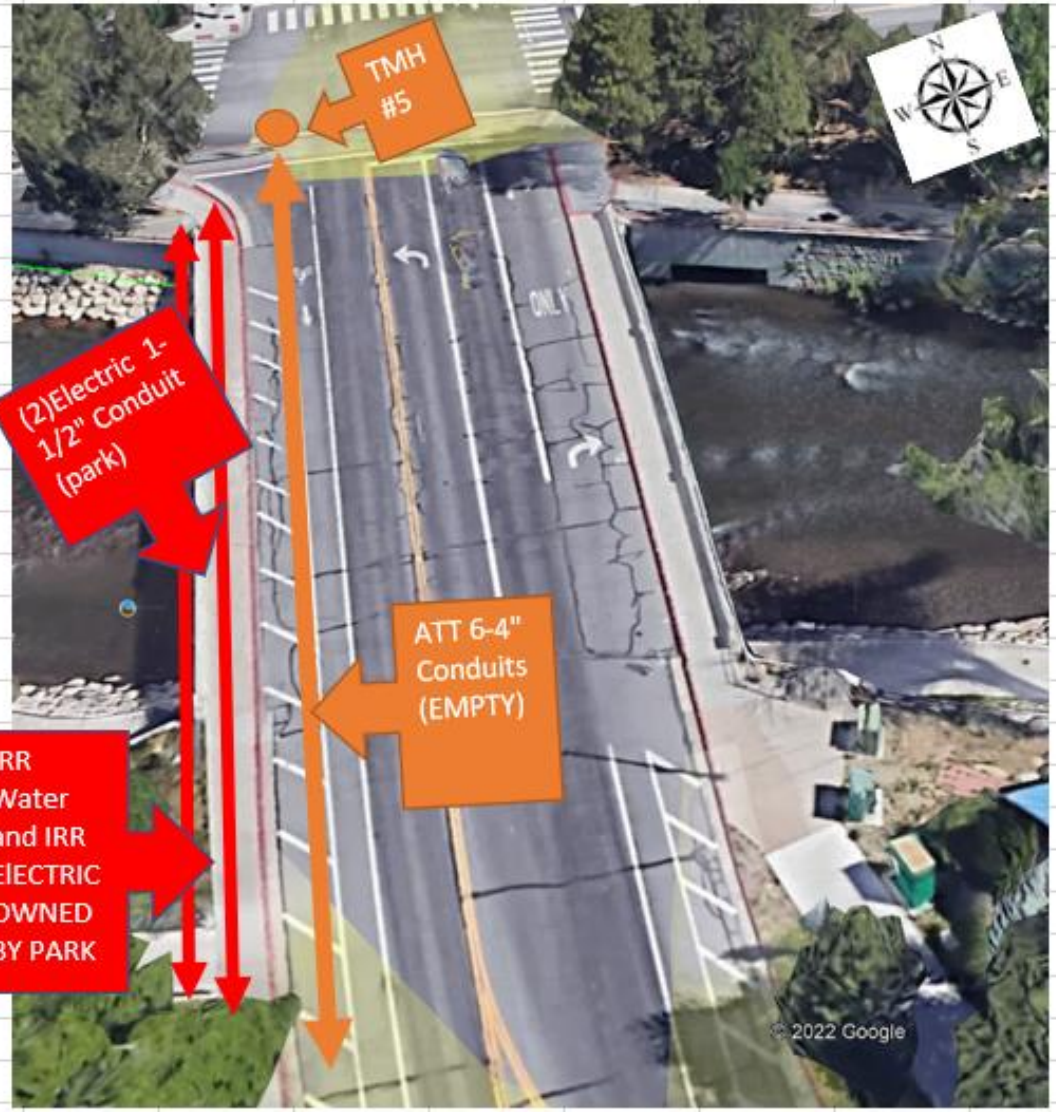
ARLINGTON AVENUE BRIDGES PROJECT

Utilities

- North Bridge – Existing West Side and Along Path on South Abutment

Utilities

- North Bridge – Existing Underneath



Utilities

- North Bridge – Existing West Side and Along Path on South Abutment

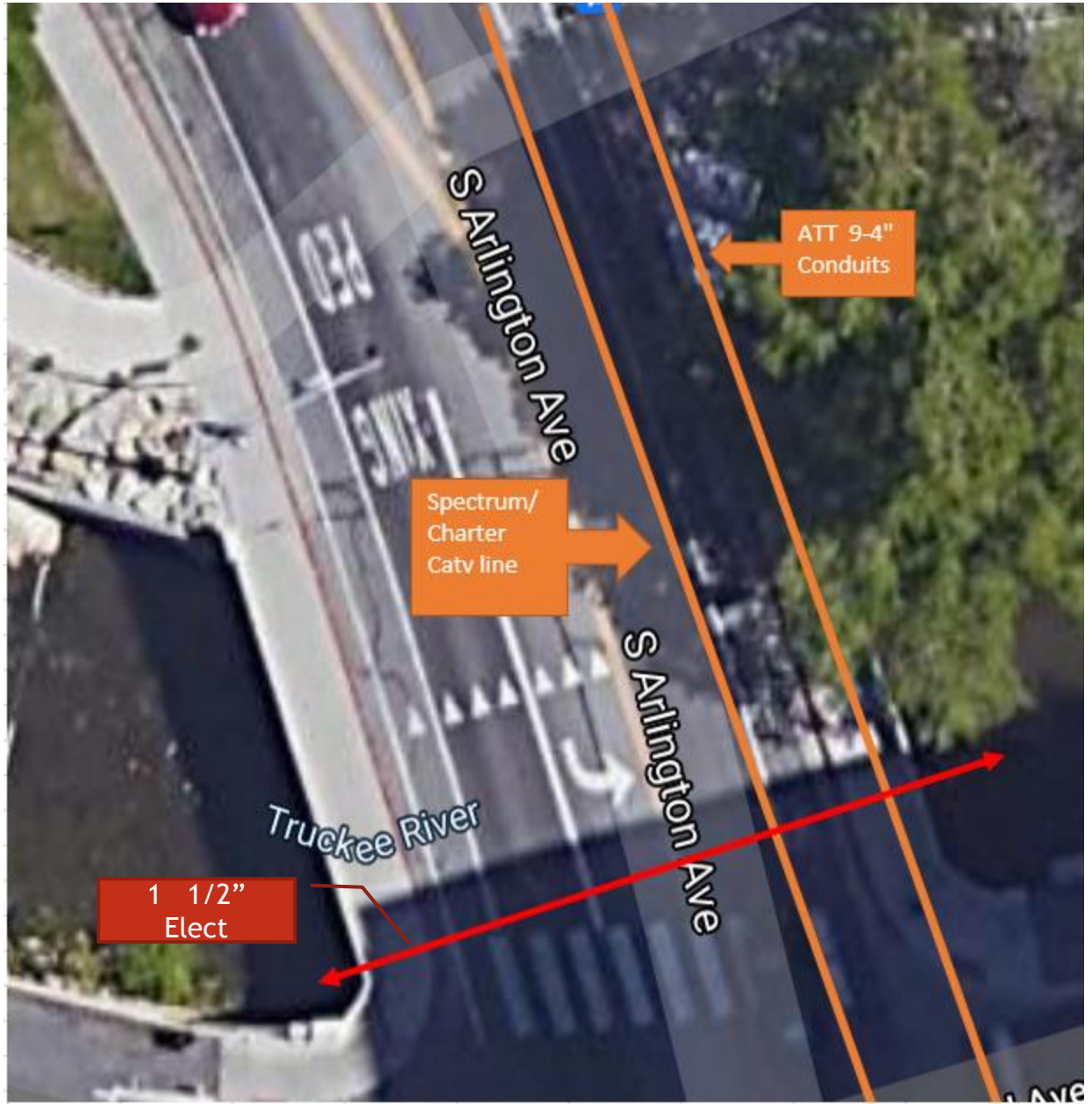
Utilities

- South Bridge

ARLINGTON AVENUE BRIDGES PROJECT

Utilities

- South Bridge



Utilities

- South Bridge

ARLINGTON AVENUE BRIDGES PROJECT

Environmental Updates

ARLINGTON AVENUE BRIDGES PROJECT

- Section 408 Permit
  - Geotech Boring for North Bridge Pier requires 408 Permit – Submitted and Review Fees Paid
  - Overall 408 Permit Application
    - Coordination w/ NDOT for Programmatic Agreement for Section 106 (Cultural) – NDOT working with Tribes
    - Section 7 (Endangered Species) – Biological – coordinating with Fish and Wildlife

- Section 4(f)
  - Met with City to discuss existing 4(f) facilities
  - Need to determine 4(f) applicability of whitewater park; discuss with FHWA
  - Discuss construction staging/4(f) clearance options

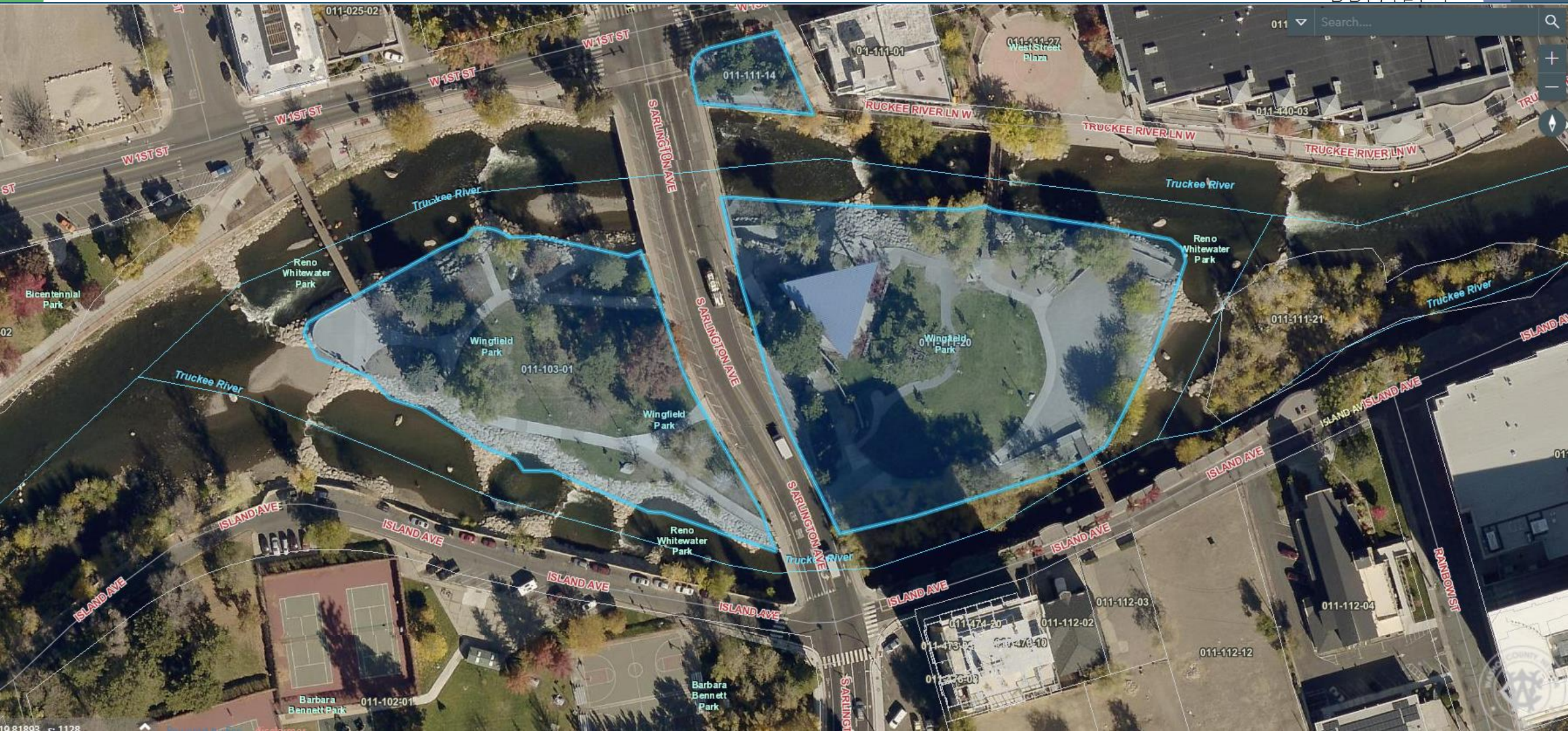
- NEPA
  - preparing resource technical memos after 30% design

Right of Way

3 City of Reno Parcels

Assume Right of Entry - No Temp Easements

ARLINGTON AVENUE BRIDGES PROJECT



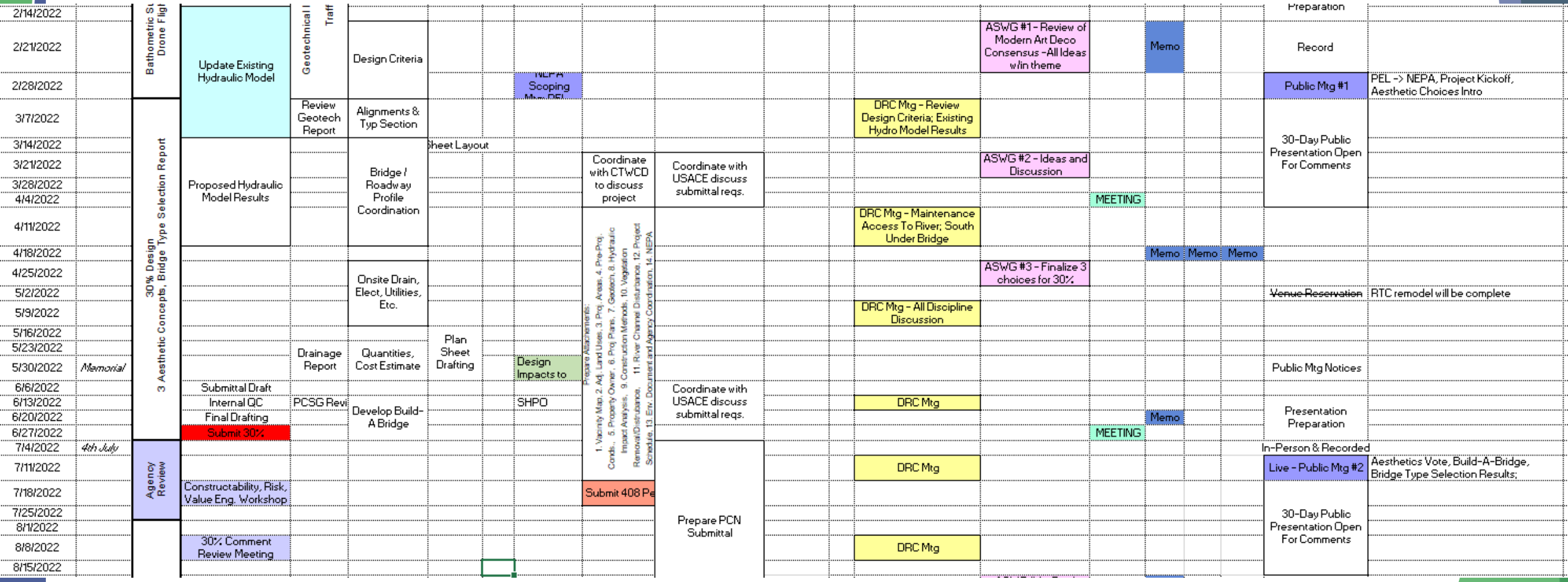
Project Schedule

6/27 - Submit 30% Plans to Agency

6/27 to 7/29 Agency Review

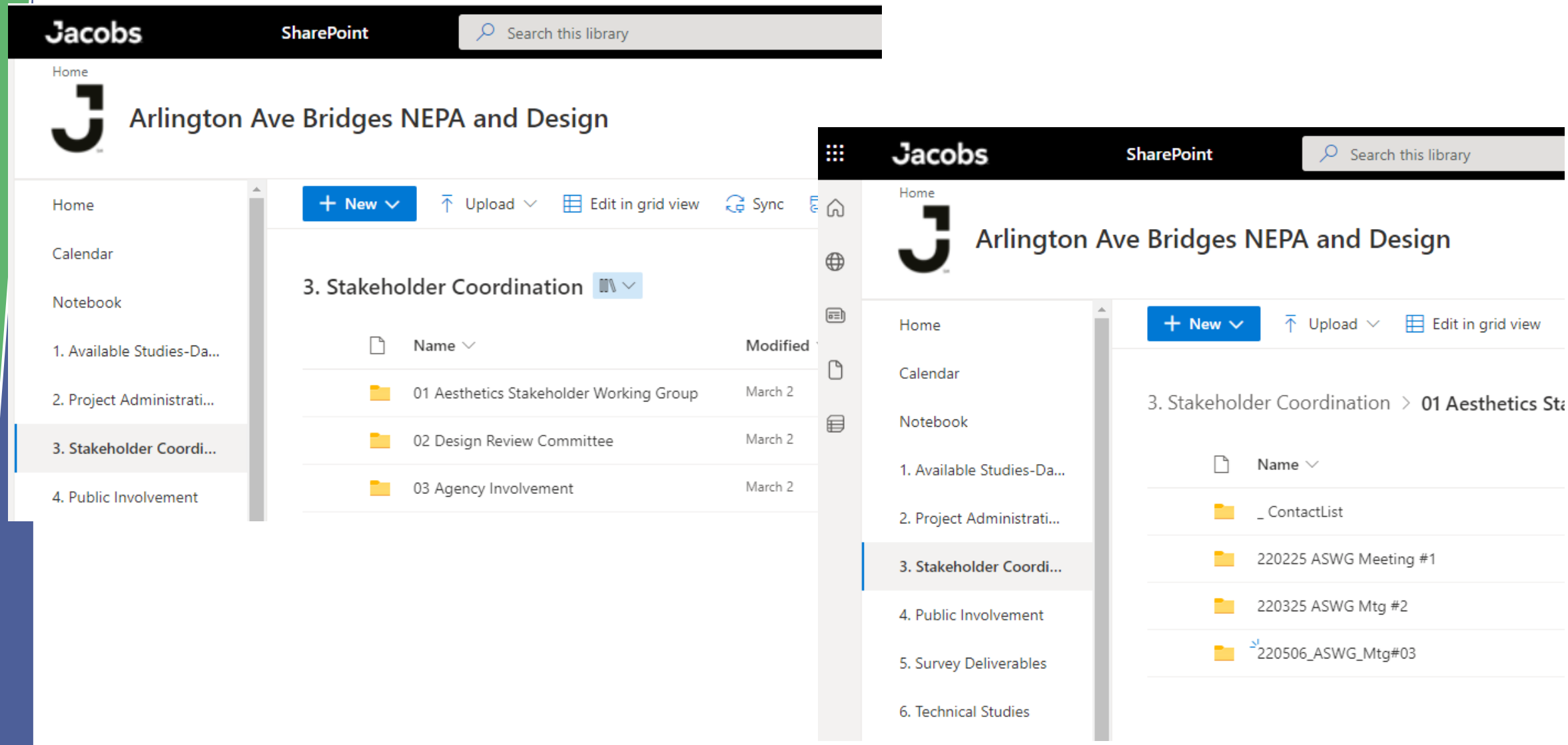
Mid July – Public Meeting – In Person

ARLINGTON AVENUE BRIDGES PROJECT



Housekeeping

- SharePoint Site for Meeting Notes, Etc.



Thank You for Participating!

jtortelli@rtcwashoe.com

ARLINGTON AVENUE BRIDGES PROJECT

U.S. Department of Transportation
Federal Highway Administration

US Army Corps of Engineers

Building A Better Community
Through Quality Transportation.
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