

LARIMER COUNTY: ENGINEERING



THORNTON PROJECT 1041 & COUNTY ROADS

JANUARY 28, 2019



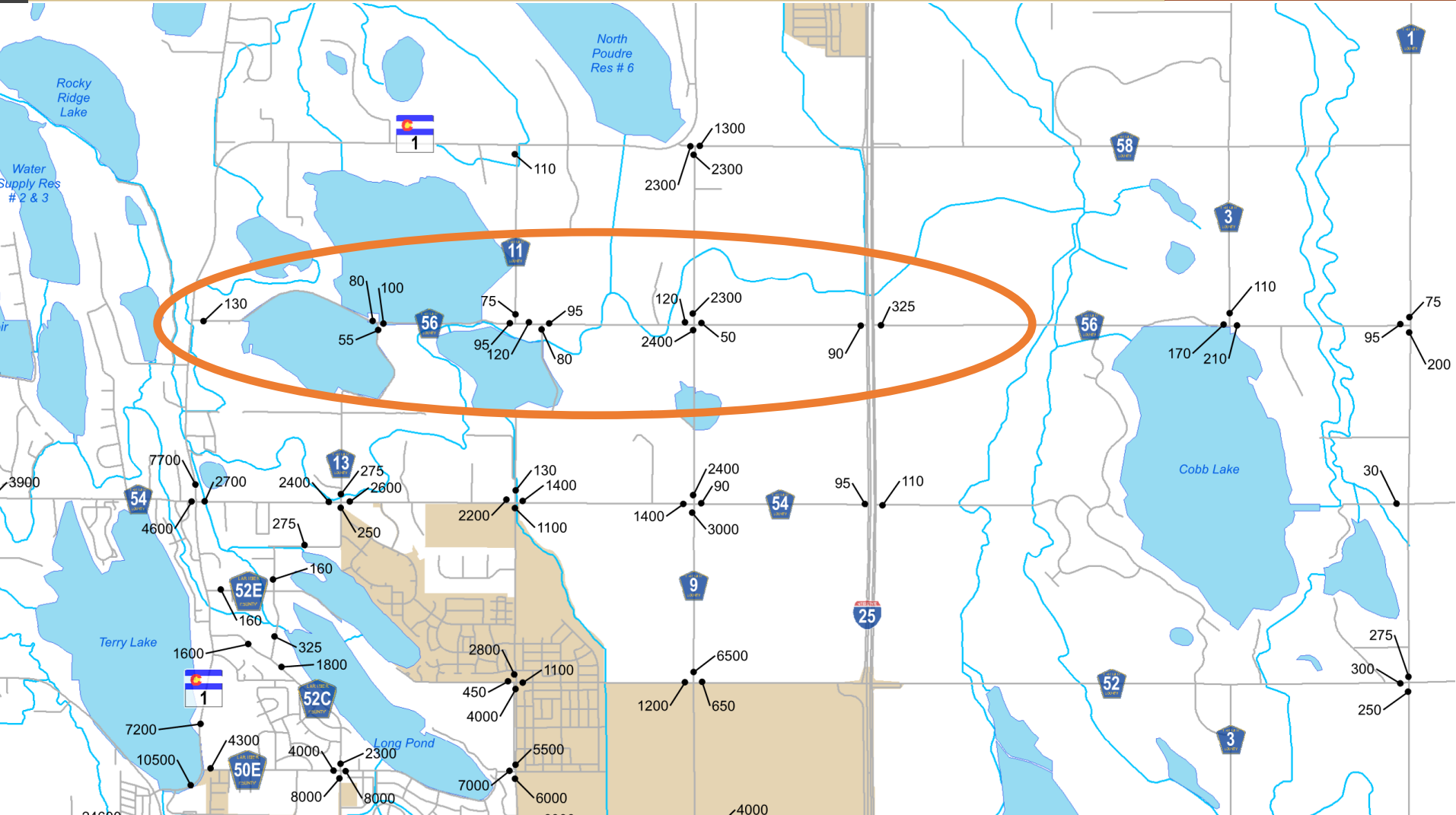
TOPICS

- Traffic Volumes
- Traffic Impacts During Construction
 - Localized – e.g. Driveways & Access Roads
 - Mainline Road System
 - Duration
 - Delays
 - Detours & Lengths
- Additional Cost of County Maintenance

CR 56 EXISTING TRAFFIC VOLUMES

- Gravel surfaced roadways
- Relatively low traffic volumes
- West of I-25: Traffic volumes are 50 to 130 ADT
 - 2% to 5% of the volumes on Douglas Road
- East of I-25: Traffic volumes are 200 to 325 ADT

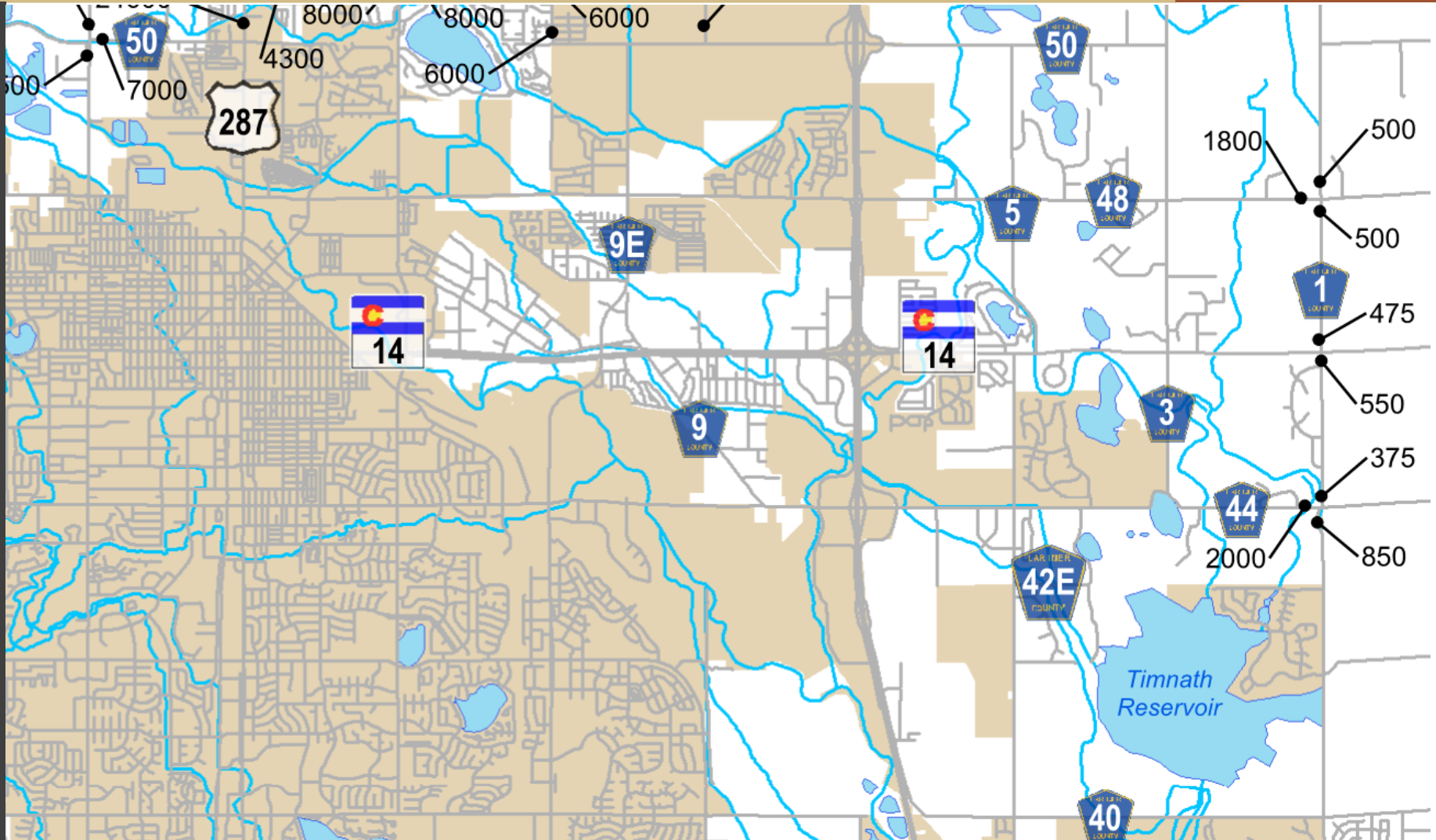
TRAFFIC COUNTS



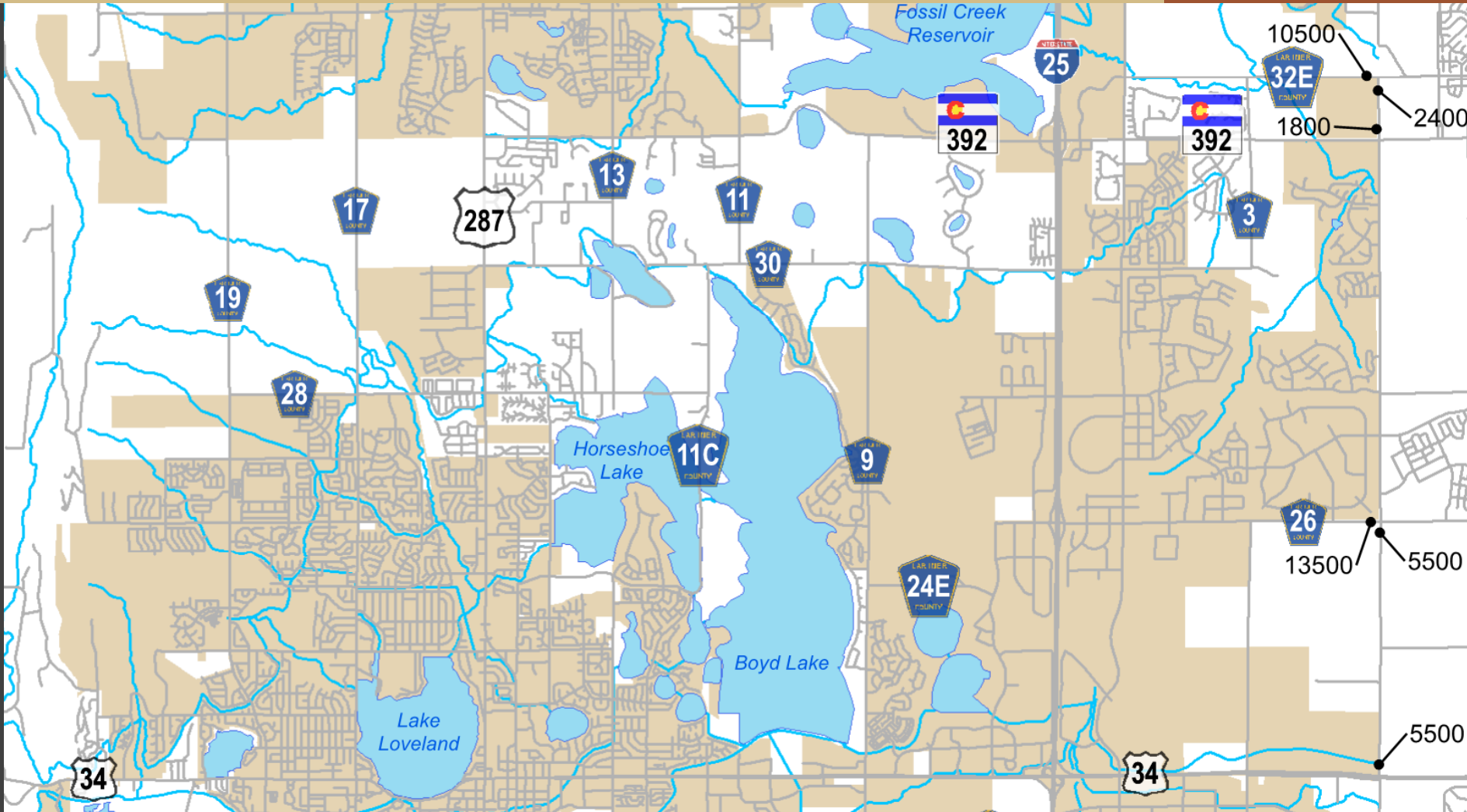
CR 1 EXISTING TRAFFIC VOLUMES

- Gravel surfaced roadways north of SH 14
- 200 ADT immediately south of LCR 56
- 500 ADT north of SH 14
- Traffic volumes on LCR 1 south of LCR 38 (Harmony Road) reflect the surrounding levels of urbanization in Timnath and Windsor
- North of SH 392, traffic volume exceeds 2,000 ADT
- South of the Windsor town limits at LCR 26, traffic counts show 5,500 ADT

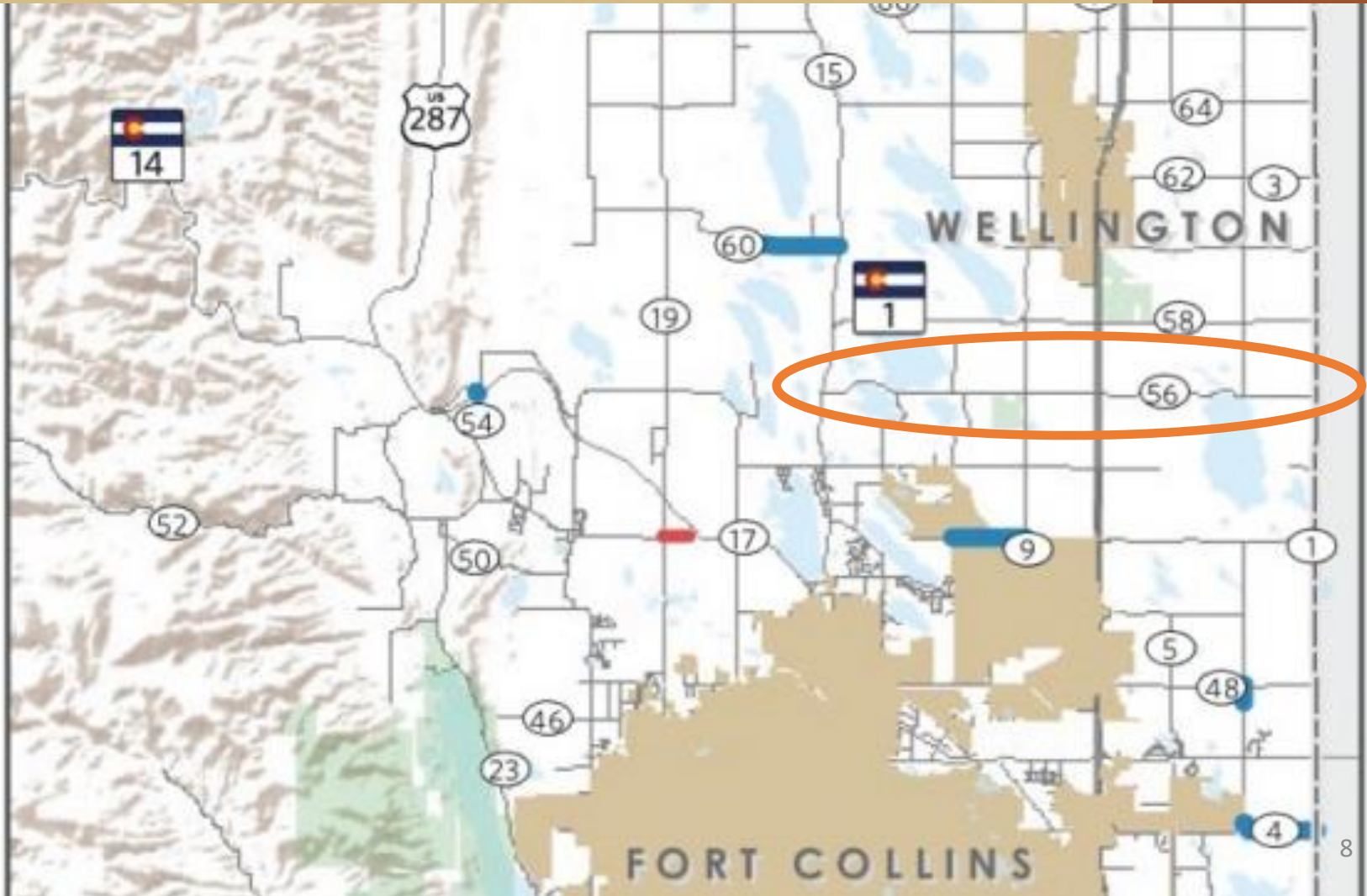
TRAFFIC COUNTS



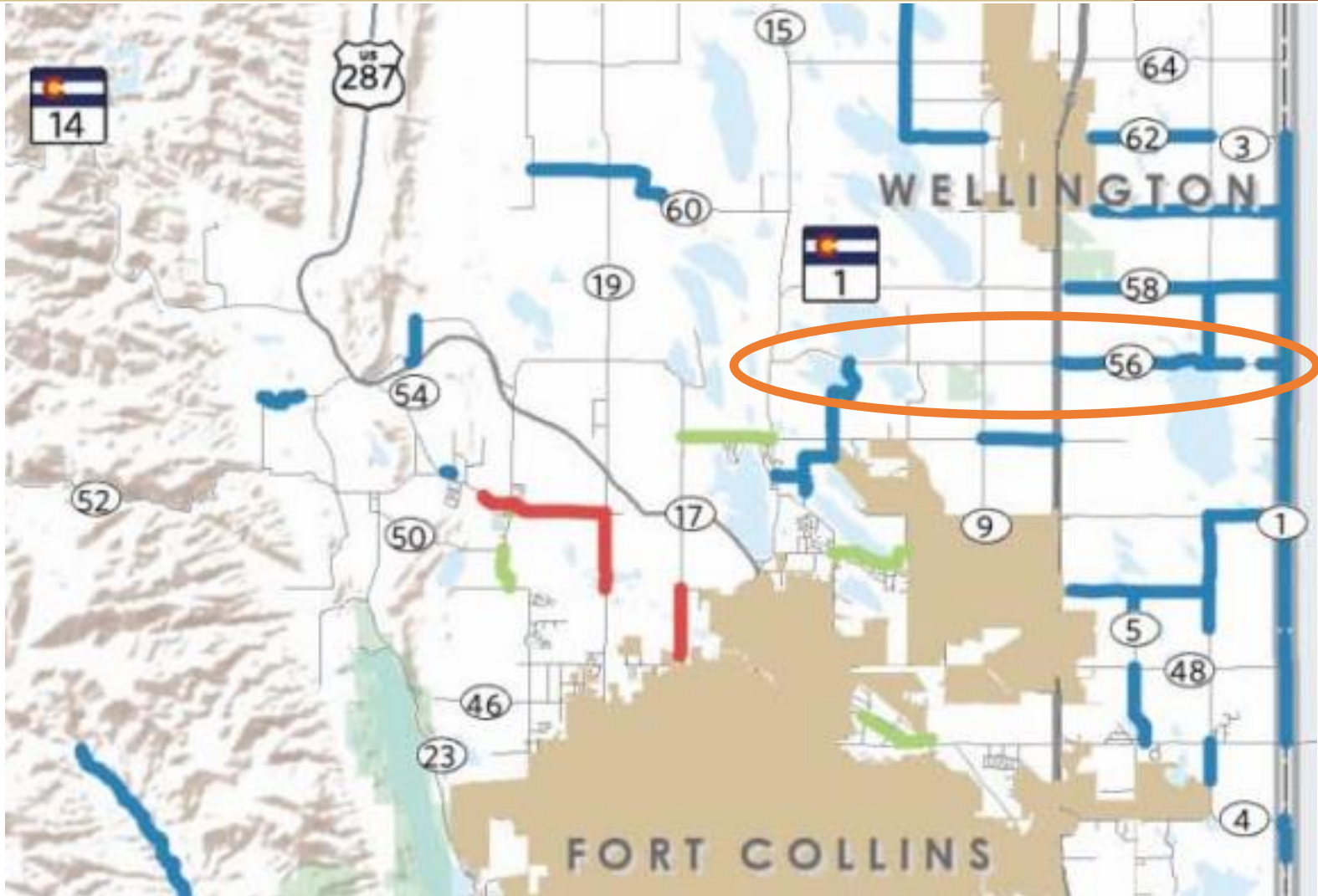
TRAFFIC COUNTS



SHORT-TERM CAPACITY NEEDS



LONG-TERM CAPACITY NEEDS



TURNBERRY (CR 11) ALIGNMENT

- Thornton willing to dedicate right-of-way on Thornton-owned property
- Necessary to improve future alignment of Turnberry (CR 11) north of Douglas Road to CR 56



WORK LOCATIONS IN RIGHT-OF-WAY



Length: ~1,150 ft
 1 Pipe
 Pipe Installation: 8 Days
 Surface Restoration (Gravel): 5 Days
 2 Pipes
 Pipe Installation: 13 Days
 Surface Restoration: 5 Days

Crossing
 1 Pipe
 2 Days
 2 Pipes
 5 Days

POTENTIAL IMPACT COSTS

1. Delay Related User Cost Calculation

- Formula used by the federal government
- Cost per vehicle mile
- Average user wage
- Length of detour
- Detour travel time
- Duration of closure

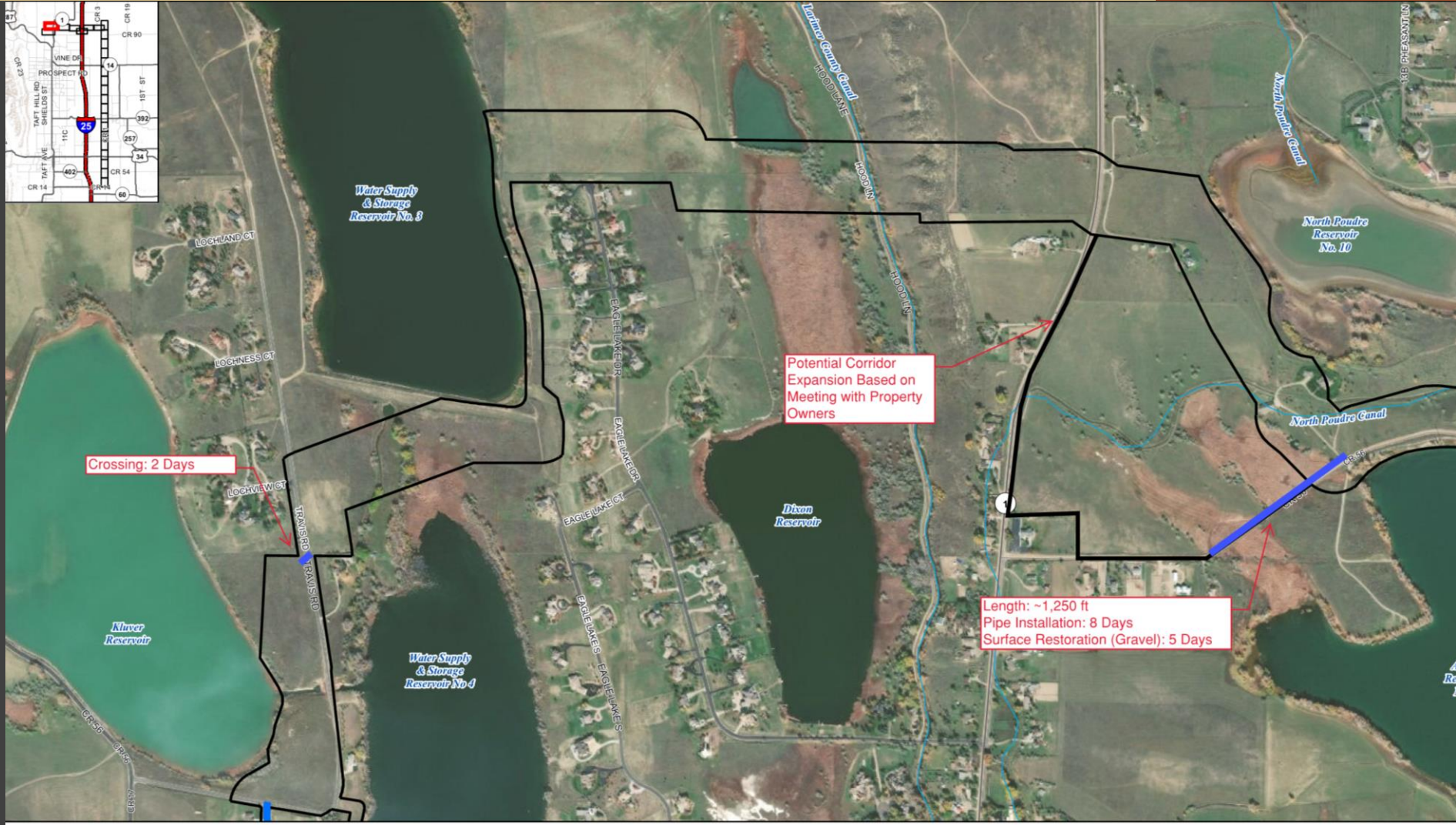
2. Additional County Road Maintenance Cost

- Miles of gravel County roads on detour routes
- Construction necessitates additional cycle of maintenance
- Cost per mile of maintenance

THORNTON PIPELINE ROUTE

- 18 perpendicular crossings of public right-of-way
 - Assumed full closure with detour
- Approx. 3.25 miles (17,350 lineal feet) of pipeline construction running longitudinally within mainline County road right-of-ways
 - Various locations along LCR 56
 - Along a portion of County Line Road (LCR 1) north of CR 32E
 - Assumed 75% of duration was one-lane
 - Assumed 25% of duration was full closure with detour

WORK LOCATIONS IN RIGHT-OF-WAY



Crossing: 2 Days

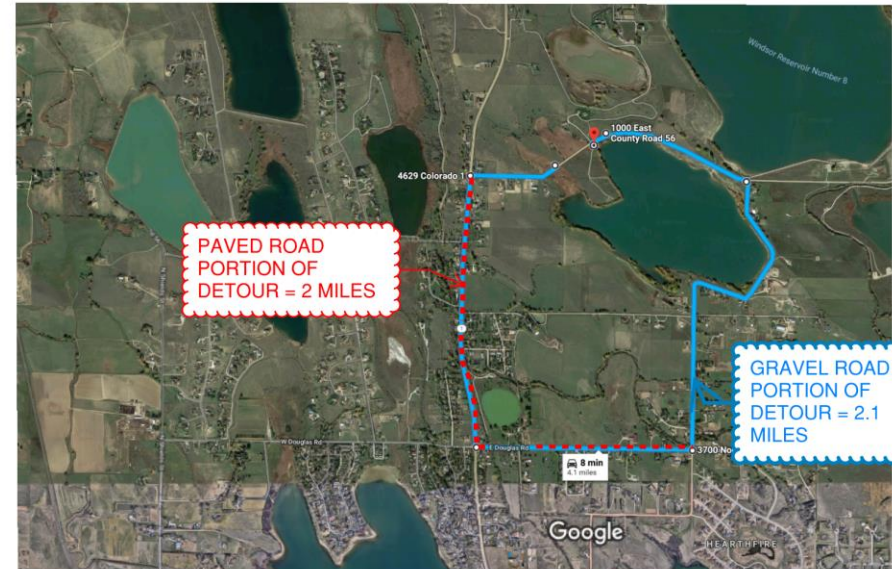
Potential Corridor Expansion Based on Meeting with Property Owners

Length: ~1,250 ft
Pipe Installation: 8 Days
Surface Restoration (Gravel): 5 Days

IMPACT COST CALCULATION



WORK SITE DETAIL



DETOUR ROUTE

Imagery ©2019 Google, Map dat

 via E Co Rd 56 8 min
 8 min without traffic 4.1 miles

ROAD USER DELAY/DETOUR AND ROAD MAINTENANCE IMPACT COST FACTORS

Construction Location	Construction Duration (days)	Construction Duration for total closure (days)	Construction Duration for one lane work (days)	Round Trip Detour Length (miles)	Length of Larimer County's, Gravel Road within the detour route (miles)	Round Trip Detour Time (minutes)	ADT (vehicles)	USER COST	ROAD AND BRIDGE COST (\$5500/MILE)	TOTAL COST (USER + ROAD AND BRIDGE)
County Road 56 At the North west Corner of Annex Reservoir 8	13	3	10	8.2	2.1	18.00	130	\$6,042.33	\$11,550.00	\$17,592.33

POTENTIAL TRAFFIC IMPACT COSTS

- Summing up the calculated vehicle and user cost for each work site in public right-of-way resulted in total user delay costs of **\$992,335**
 - This amount represents user cost for all vehicles, including vehicles operated by residents of Weld County
 - Only considered work locations in unincorporated right-of-way
 - The estimated amount is not adjusted to reflect user costs of Larimer County residents only

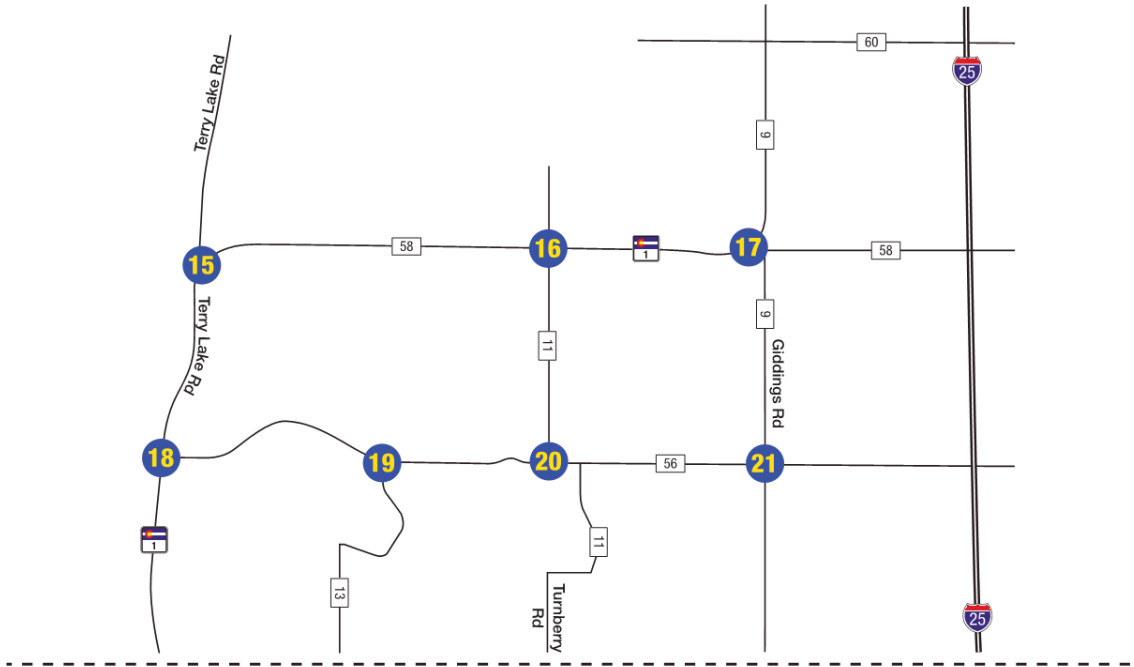
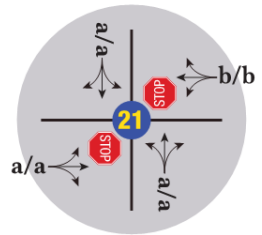
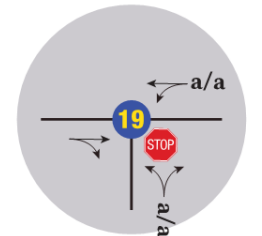
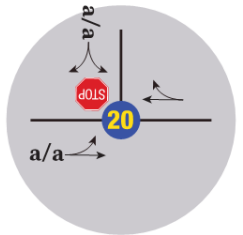
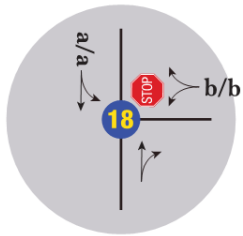
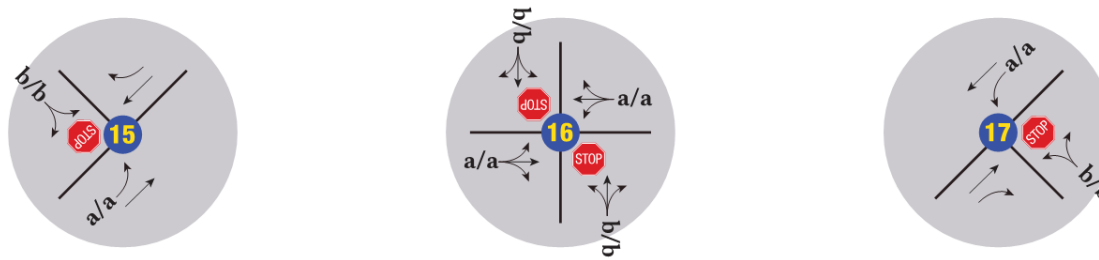
ADDITIONAL COUNTY MAINTENANCE

- The total miles of gravel roads impacted by the detours = 36.55 miles
- Cost per mile per maintenance cycle = \$5,500/mile
- Total estimated maintenance cost = **\$201,250**

IMPACT MITIGATION



- Each work area will be addressed via a County right-of-way work permit
- Stringent roadway restoration requirements are recommended as a condition of the 1041 permit review
- Staff's opinion that the \$1 million offered by Thornton to offset impacts to the Larimer County traveling public and the Larimer County road system is equitable

QUESTIONS?



Matchline - See Figure 3



LEGEND

- X/X = AM/PM Peak Hour Signalized Intersection Level of Service
- x/x = AM/PM Peak Hour Critical Movement Level of Service
-  = Stop Sign
-  = Traffic Signal

CR 56 DETOUR OPTIONS



LEGEND

-  = Detour Options
-  = Construction Area

NOTE: Drawing Not to Scale

CR 56 DETOUR OPTIONS

Table 4. Temporary Improvement Recommendations

Location	Temporary Improvement Recommendation
<i>Larimer County Road 56 Alignment</i>	
No improvements are recommended	
<i>Douglas Road Alignment</i>	
Country Club Road/Gregory Road Intersection	Consider the installation of a temporary traffic signal.
SH 14/Shields Street Intersection SH 14/SH 1 Intersection SH 1/Gregory Road Intersection	Adjust traffic signal timing parameters as necessary to reflect traffic volume and pattern changes.

TRAFFIC VOLUMES

