TEAM FLAGSTAFF

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Lone Tree Traffic Interchange

Flagstaff City Council

September 13, 2016

- Design overview & History
- Traffic Impact Analyses
- Questions
  - Design changes and cost estimates over time
  - Role of the interchange in the system

Tonight's Presentation

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General Notes

- WB system TI exit ramps "braided" with New Lone Tree Rd entrance ramp to separate weaving & accelerating traffic from mainline through traffic.
- I-40 EB profile grade follows exst roadway. I-40 WB profile grade elevated 5 ft at exst Lone Tree Rd.
- New Lone Tree Rd depressed under I-40.
- WB I-40 shifted 110' toward median.
- Retaining walls (50,000 SF) required
- Full reconstruction shown for I-40 bridges over exst Lone Tree Rd. Alternative requires 150% more bridge area than the non-TI condition.
- Major impacts to existing utility corridors.

Summary of Alternative Features

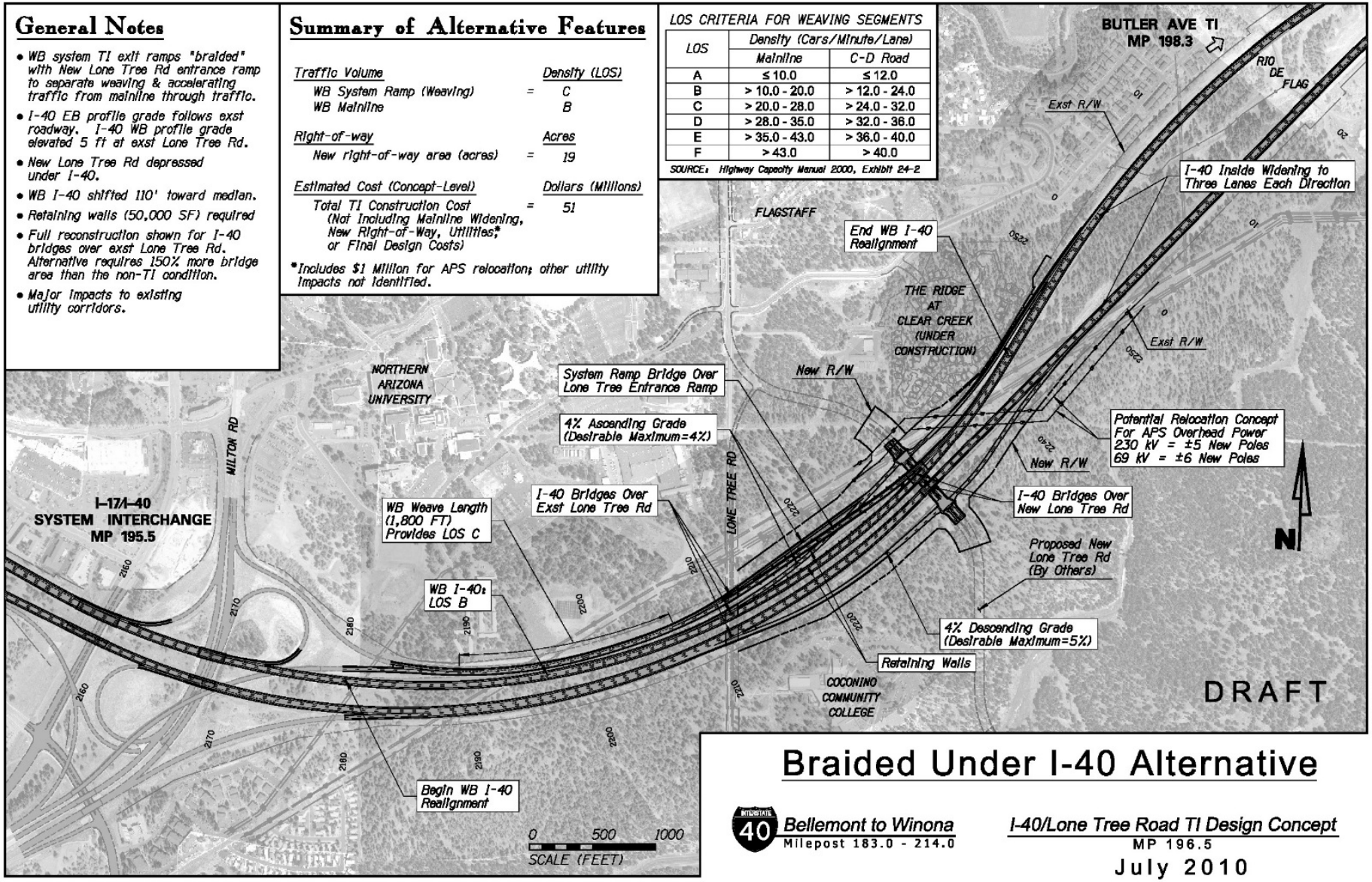
Traffic Volume		Density (LOS)
WB System Ramp (Weaving)	=	C
WB Mainline		B
Right-of-way		**Acres**
New right-of-way area (acres)	=	19
Estimated Cost (Concept-Level)		**Dollars (Millions)**
Total TI Construction Cost (Not Including Mainline Widening, New Right-of-Way, Utilities*, or Final Design Costs)	=	51

*Includes $1 Million for APS relocation; other utility impacts not identified.

LOS CRITERIA FOR WEAVING SEGMENTS

LOS	Density (Cars/Minute/Lane)	
	Mainline	C-D Road
A	≤ 10.0	≤ 12.0
B	> 10.0 - 20.0	> 12.0 - 24.0
C	> 20.0 - 28.0	> 24.0 - 32.0
D	> 28.0 - 35.0	> 32.0 - 36.0
E	> 35.0 - 43.0	> 36.0 - 40.0
F	> 43.0	> 40.0

SOURCE: Highway Capacity Manual 2000, Exhibit 24-2



Braided Under I-40 Alternative

Bellemont to Winona
Milepost 183.0 - 214.0

I-40/Lone Tree Road TI Design Concept
MP 196.5
July 2010

- **Growth Management Guide 2000** – COF, 1987
- **I-40 & Lone Tree Interchange Concept Design Study** – ADOT, May 1993
- **Regional Land Use and Transportation Plan** – COF, November 2001
- **Flagstaff Urban Mobility Study** – ADOT, January 2004
- **Lone Tree Corridor Study** – COF, March 2006
- **P&Z approval**, LTC Specific Plan – **October 22, 2008**
- **Council retreat**, Lone Tree Corridor update – **November 14, 2008**

History

- **Council adopted as a Minor Amendment – November 18, 2008**
  - Resolution 2008-65, declaration of LTCS as a public record
  - Resolution 2008-67, LTCS as a Minor Amendment of the RLUTP
- **Flagstaff Pathways: 2030 Regional Transportation Plan** - Flagstaff MPO, December 2009
- **I-40 Design Concept Report -** ADOT, 2011
- **Flagstaff Regional Plan 2030: Place Matters** – COF, August 2014

History

- Without Widening I-40

Criterion	Diamond Under I-40	Diamond Over I-40	Braided Ramps Under I-40	Braded Ramps Over I-40
Level of Service	E in 2015 (opening) F in 2026.	E in 2015 (opening) F in 2030.	B-C in 2015 (opening) through 2040.	B-C in 2015 (opening) through 2040.
Safety / Conflicts *(lowest number is best)*	14,339 (11 times lowest)	8,058 (6 times lowest)	2,352 (1.8 times lowest)	1,305 (lowest)
Estimated R/W	19 acres	15 acres	19 acres	18 acres
Estimated Construction Cost	$34,000,000	$35,000,000	$66,000,000	$66,000,000

Lone Tree T.I. Construction Costs

(c. 2010)

Data Source: ADOT Draft I-40 DCR/LTTI analysis

- With Widening I-40

Criterion	Diamond Under I-40	Diamond Over I-40	Braided Ramps Under I-40	Braded Ramps Over I-40
Level of Service	C in 2015 (opening) D in 2021. E in 2040.	C in 2015 (opening) D in 2025 through 2040.	B-C in 2015 (opening) through 2040.	B-C in 2015 (opening) through 2040.
Safety / Conflicts *(lowest number is best)*	4,082 (3.1 times lowest)	2,686 (2.1 times lowest)	1,683 (1.3 times lowest)	1,305 (lowest)
Estimated R/W	19 acres	15 acres	19 acres	18 acres
Estimated Construction Cost	$62,000,000	$63,000,000	$82,000,000	$82,000,000

Lone Tree T.I. Construction Costs

(c. 2010)

Data Source: ADOT Draft I-40 DCR/LTTI analysis

- Impact on Milton Road and System – reduced volumes on Milton and reduced delay across the system

Street Section	No-Build Volume	Build Volume	% Difference
"Old" Lone Tree from I-40 - J.W.P	18,000	13,000	-28%
Milton from Sitgreaves - Butler	54,000	48,000	-11%
Milton from Butler - Route 66	55,000	53,000	-4%
Milton from Route 66 - Plaza Way	48,000	45,000	-6%
Milton from Plaza Way - Forest Meadows	46,000	43,000	-7%
Lake Mary from High Country - Forest Meadows	27,000	21,000	-22%
Pine Knoll from Lone Tree - San Francisco	14,000	12,000	-14%
Fourth Street from Future J.W.P - Butler	21,000	17,000	-19%
System Performance	**No-Build**	**Build**	**% Difference**
Vehicle Miles Traveled	4251509	4176000	-2%
Congested Vehicle Hours Traveled	135985	123163	-9%
Veh. Hours of Congestion Delay	46529	35633	-23%

Benefits

- TIA indicates Lone Tree Road at or near capacity
  - Lone Tree at 70% capacity
  - Increase traffic on Beulah, Milton, and east Butler.
- Distribution patterns without Lone Tree corridor components are different
  - Majority of traffic distributes along Butler
  - 30% of project traffic heads west on J.W.P into Woodlands Village.

Juniper Point Phase I Conclusions

- Commitments and/or Contributions
  - Pine Canyon
  - Woods at Clear Creek
  - Pinnacle Pines
  - Aspen Sawmill
  - NAU
  - Juniper Point

Additional Background