Interstate 5
Transportation Alternatives Analysis and Operations Model

TRC Meeting #4

December 3, 2009

Meeting Agenda

- Project Status
- Overview of Background/Baseline Conditions
- Summary of System Level Improvement Concepts
- Summary of Interchange Improvement Concepts
- Next Steps

Project Timeline

Historical Population Growth

Ft. Lewis	2000	2009	Net Change	% Change
Military	19,089	30,800	11,711	61.3%
Dependents	29,015	46,816	17,801	61.3%
Totals	48,104	77,616	29,512	61.3%

Counties (incl. cities)	2000	2009	Net Change	% Change
Pierce County	700,820	813,600	112,780	16.1%
Thurston County	207,355	249,800	42,445	20.5%
Totals	908,175	1,063,400	155,225	17.1%

Source: Adapted from April 9, 2009 presentation by Tom Knight, Ft. Lewis Deputy Garrison Commander using multiple sources. This includes 2009 Washington State Population Trends Report and 2012 populations figures based on estimates found in various Comprehensive Land Use Plans.

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Background Conditions - Traffic Growth

	Northbound		Southbound		Combined		Growth – Total & *(Annual)*		
Mainline Section	**2009**	**2030**	**2009**	**2030**	**2009**	**2030**	**NB**	**SB**	**Combined**
South of Mounts Rd	3,615	5,180	5,390	6,740	9,005	11,920	43% *(1.7%)*	25% *(1.1%)*	43% *(1.7%)*
Between Mounts Rd & Center Dr	3,755	5,470	6,220	7,790	9,975	13,260	46% *(1.8%)*	25% *(1.1%)*	46% *(1.8%)*
Between Center Dr & DuPont-Steilacoom Rd	3,825	5,670	5,500	7,380	9,325	13,050	48% *(1.9%)*	34% *(1.4%)*	48% *(1.9%)*
Between DuPont-Steilacoom Rd & 41st Division Dr	3,780	5,630	4,850	6,050	8,630	11,680	49% *(1.9%)*	25% *(1.1%)*	49% *(1.9%)*
Between 41st Division Dr & Berkeley St	4,830	6,910	4,500	5,710	9,330	12,620	43% *(1.7%)*	27% *(1.1%)*	43% *(1.7%)*
Between Berkeley St & Thorne Ln	5,955	7,960	4,300	5,490	10,255	13,450	34% (1.4%)	28% *(1.2%)*	34% *(1.4%)*
Between Thorne Ln & Gravelly Lake Dr	6,750	8,030	4,670	5,430	11,420	13,460	19% *(0.8%)*	16% *(0.7%)*	19% *(0.8%)*
Between Gravelly Lake Dr & Bridgeport Wy	6,345	7,340	4,530	5,070	10,875	12,410	16% *(0.7%)*	12% *(0.5%)*	16% *(0.7%)*
Between Bridgeport Wy & SR 512	6,565	7,390	4,470	4,810	11,035	12,200	13% *(0.6%)*	8% *(0.3%)*	13% *(0.6%)*
North of SR 512	6,645	8,000	5,900	6,010	12,545	14,010	20% *(0.9%)*	2% *(0.1%)*	20% *(0.9%)*

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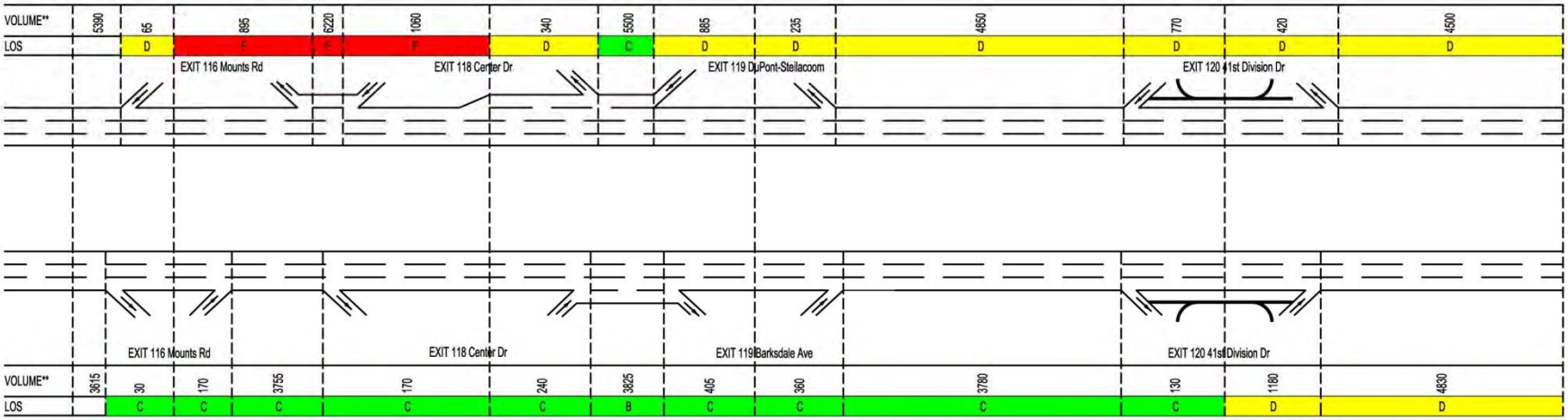
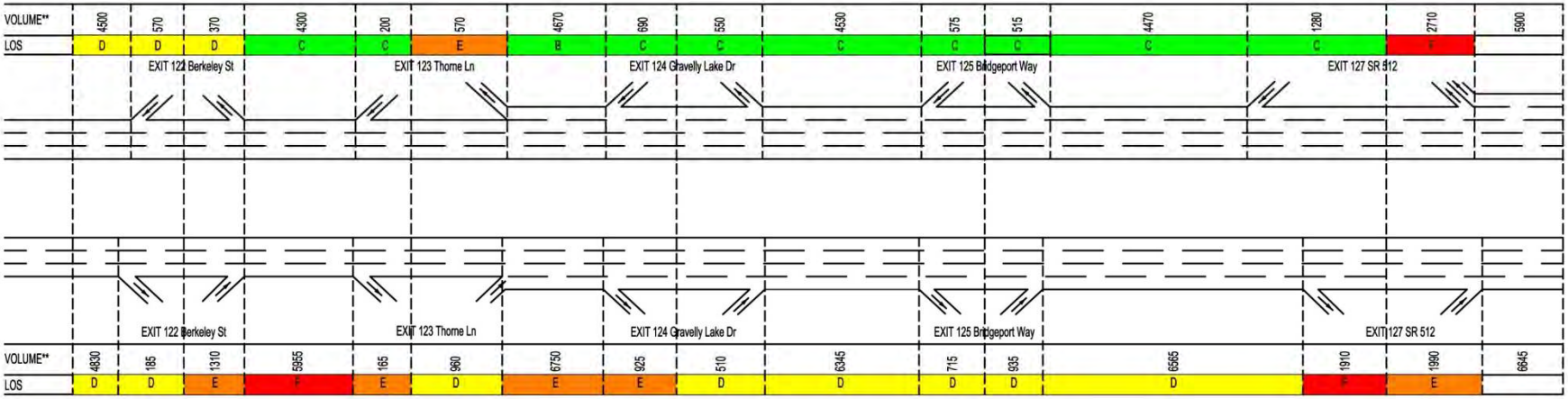
Existing (2009) Corridor PM Peak Hour LOS Summary

Lakewood I-5: Exit 116-Exit 120



Lakewood I-5: Exit 122-Exit 127

LOS Legend: LOS A to LOS C | LOS D | LOS E | LOS F



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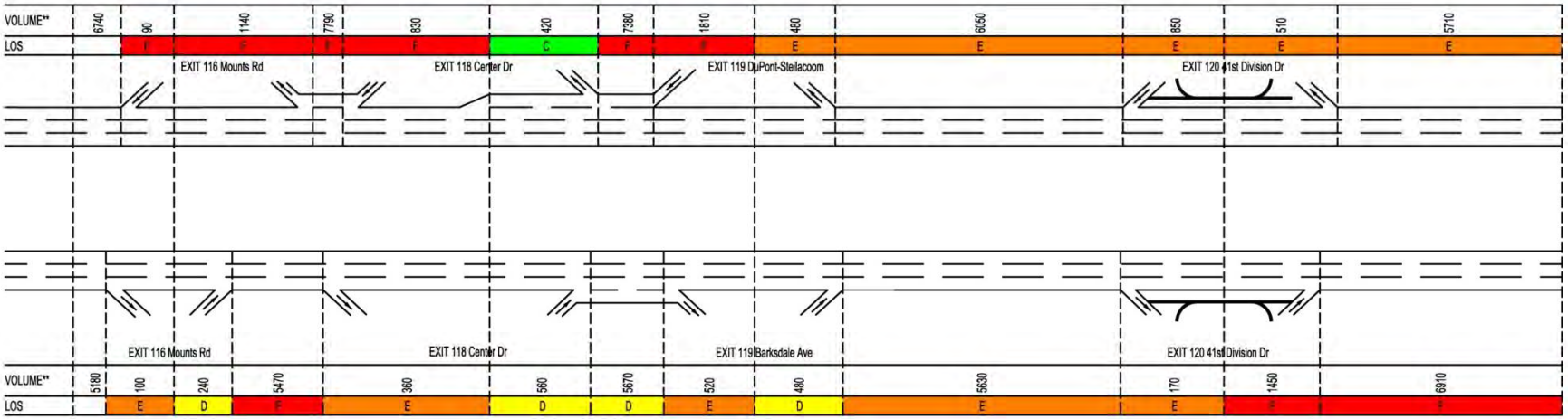
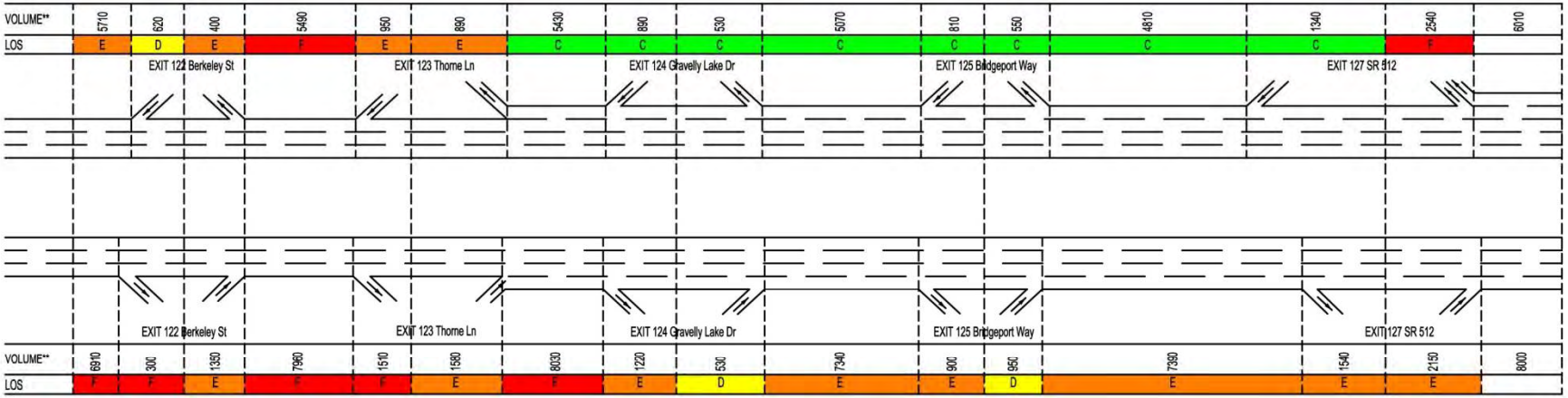
Forecast (2030) Corridor PM Peak Hour LOS Summary

Lakewood I-5: Exit 116-Exit 120



Lakewood I-5: Exit 122-127

LOS Legend: LOS A to LOS C | LOS D | LOS E | LOS F



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Ramp Terminal LOS Summary

Exit No.	Intersection	2009	2030	Focus Area Interchange?
116	SB I-5 Ramps/Mounts Rd	D	F	
	NB I-5 Ramps/Mounts Rd	C	E	
118	SB I-5 Ramps/Center Dr	E	F	
	NB I-5 Ramps/Center Dr	F	-	
119	SB I-5 Ramps/Barksdale Ave	B	F	X
	NB I-5 Ramps/Barksdale Ave	C	F	
120	I-5 Ramps/41st Division Dr	Free-flow	Free-flow	X
122	Union Ave/Berkeley Ave	B	B	X
	SB I-5 Ramps/Berkeley Ave	C	C	
	NB I-5 Ramps/Berkeley Ave	C	C	
123	Union Ave/Thorne Ln	B	C	X
	SB I-5 Ramps/Thorne Ln	D	D	
	NB I-5 Ramps/Thorne Ln	D		
124	Pacific Hwy/Gravelly Lake Dr	B	B	
	SB I-5 Ramps/Gravelly Lake Dr	D	D	
	NB I-5 Ramps/Gravelly Lake Dr	E	F	
125	Pacific Hwy/Bridgeport Way	C	C	
	SB I-5 Ramps/Bridgeport Way	C	C	
	NB I-5 Ramps/Bridgeport Way	B	C	
127	South Tacoma Way/SR 512	C	C	

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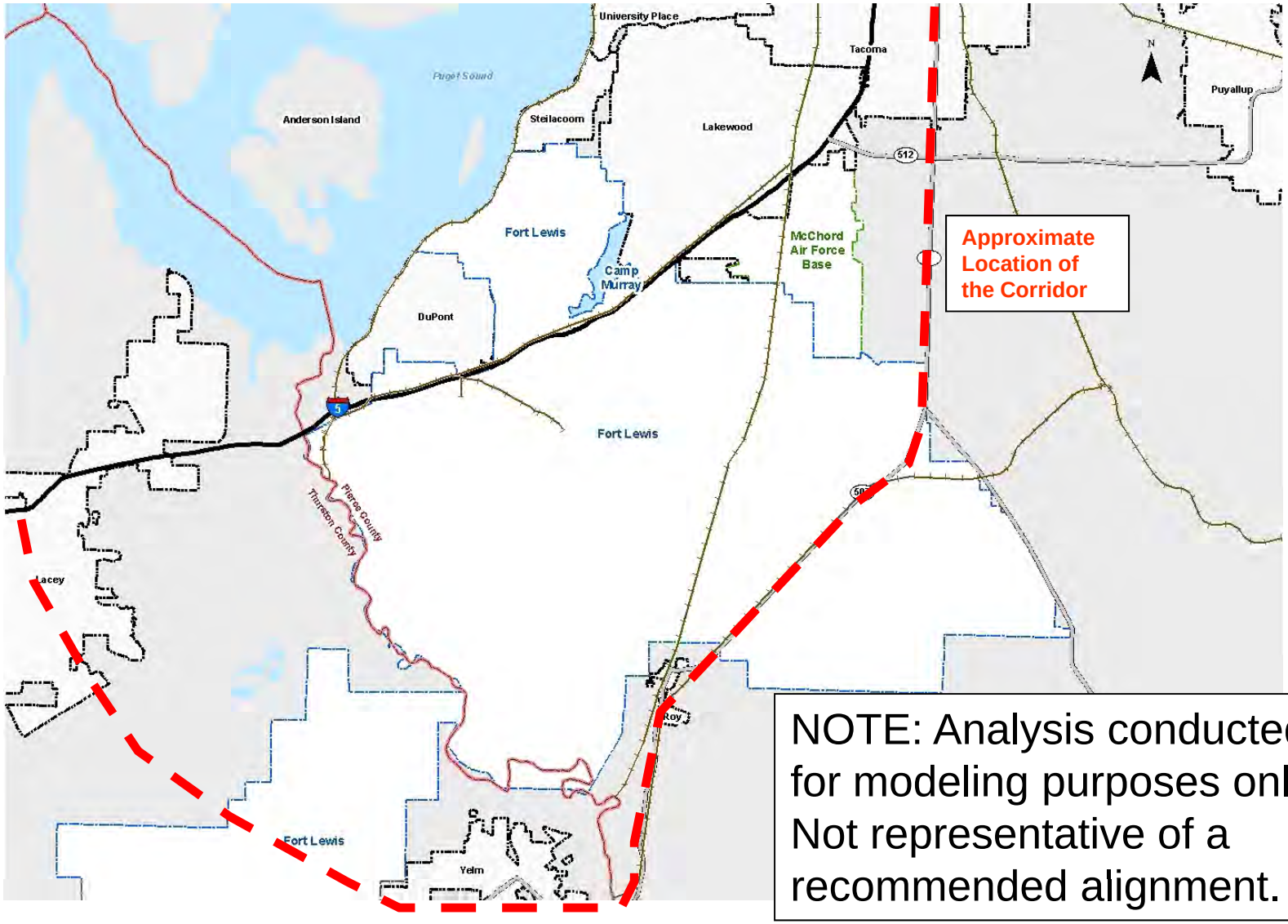
System Concepts

Concepts that were evaluated:

- ITS Improvements
- Demand Management
- Transit Improvements
- I-5 Mainline Improvements
- New Parallel Corridor

Parallel Corridor Overview



NOTE: Analysis conducted for modeling purposes only. Not representative of a recommended alignment.

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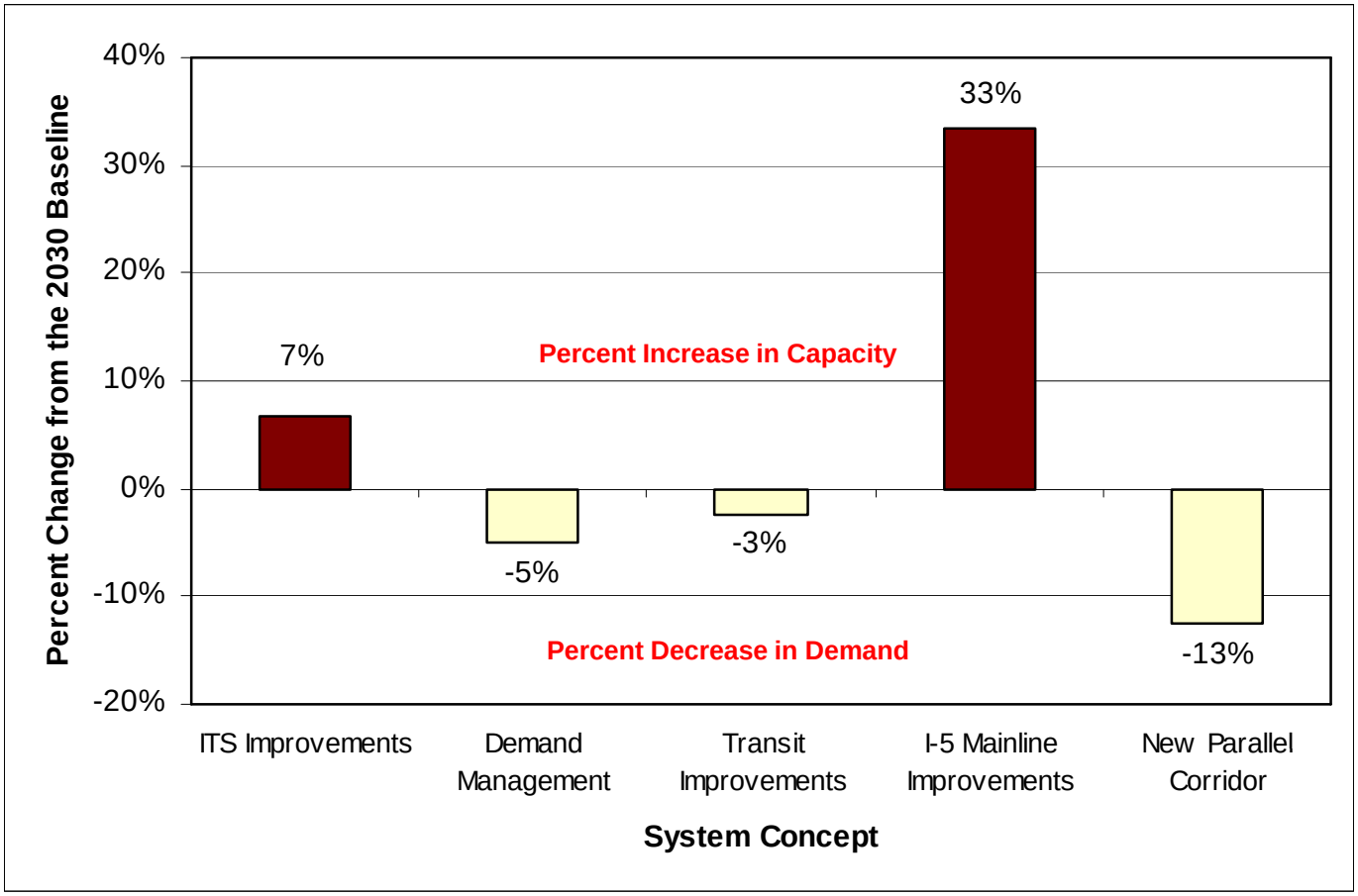
Comparison of System Concepts

Percent Change from the 2030 Baseline PM Peak Hour



*Based on 2030 forecast demand and capacity of I-5 in the northbound direction between Berkeley Street and Thorne Lane interchanges.

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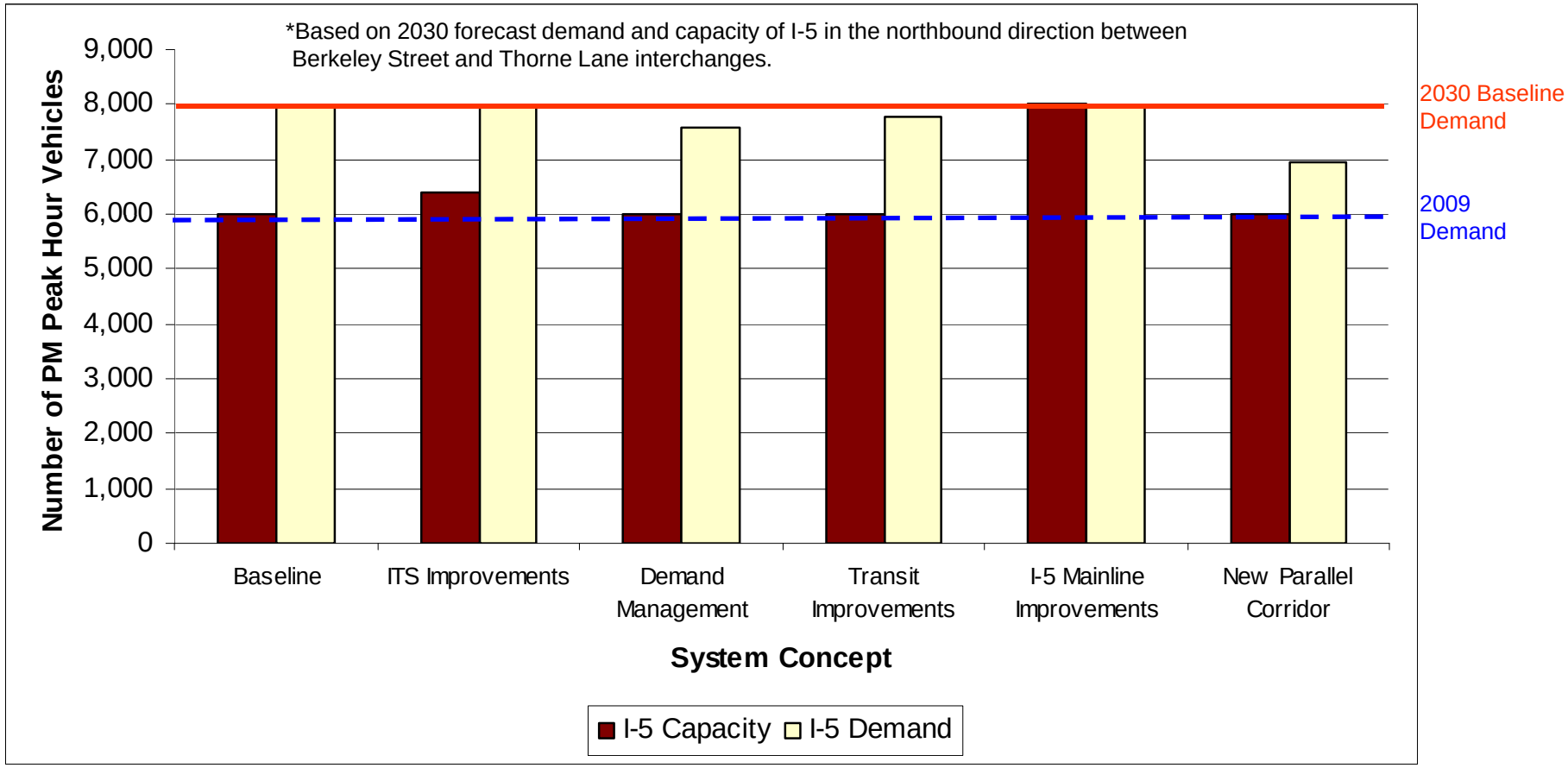
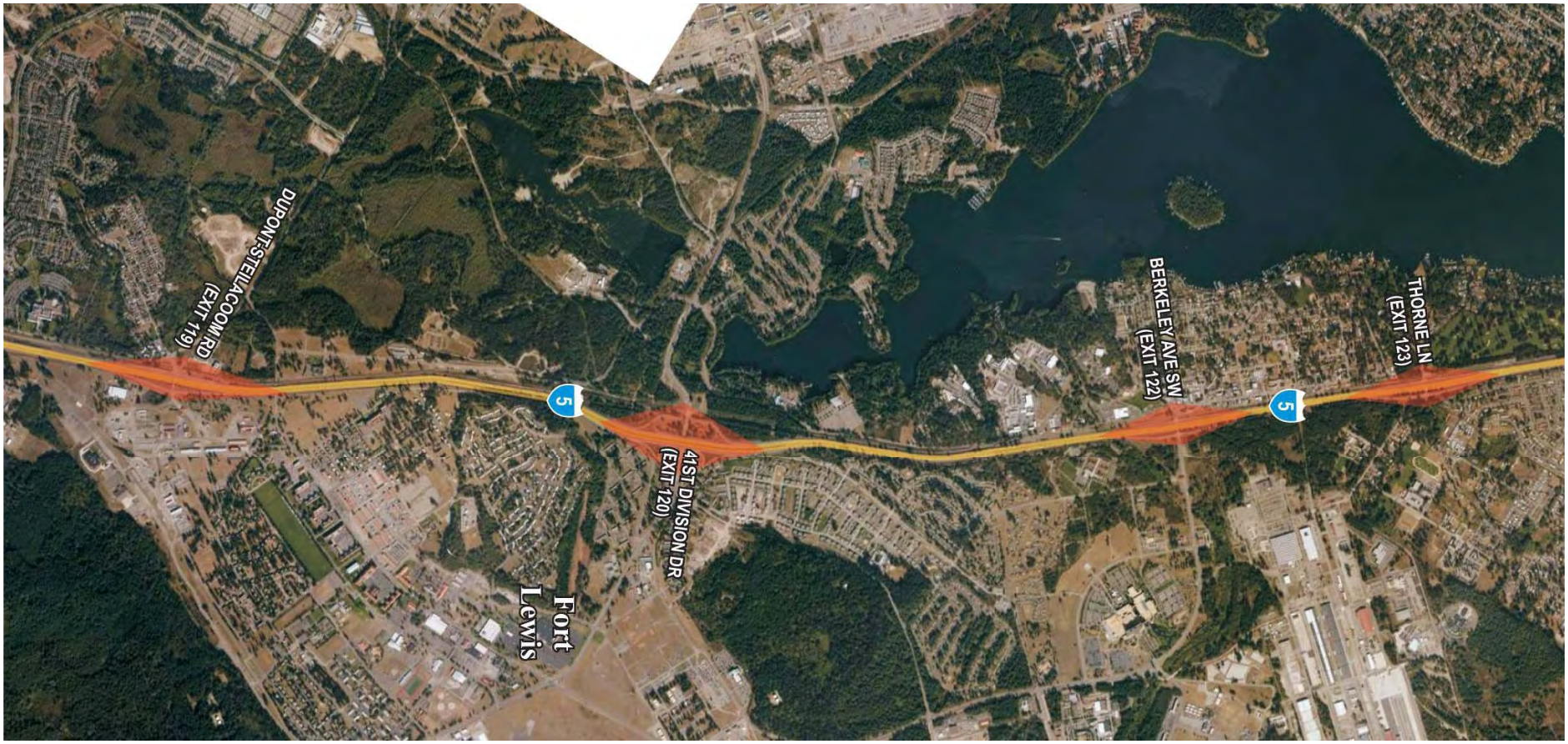
Comparison of System Concepts

2030 I-5 Mainline Capacity versus Demand



Focused Study Area



Exit 119 – DuPont-Steilacoom Concepts

Existing/Baseline Conditions & Deficiencies

- Gate traffic egress causes failure of interchange
- Close proximity to the at-grade rail crossing will further impact interchange
- Overpass is structurally deficient

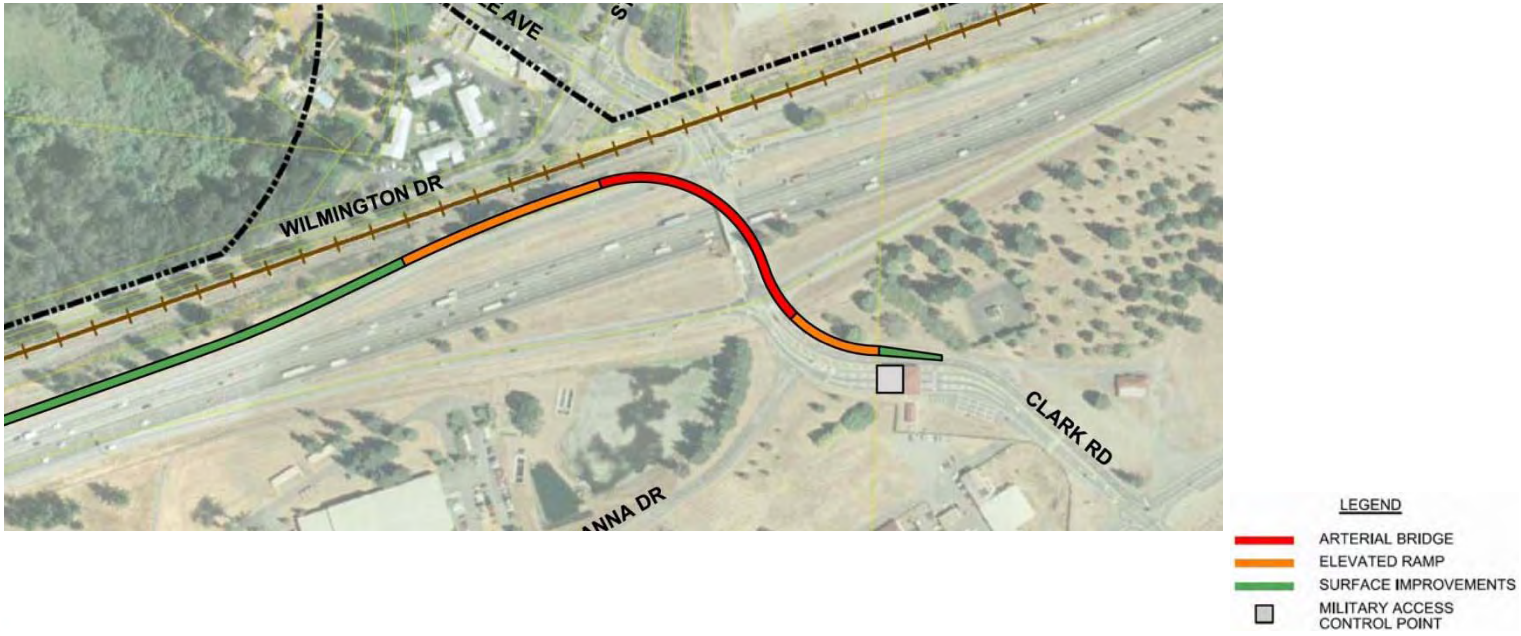
Exit 119 – DuPont-Steilacoom Concepts

Concept A Benefits

- Continuous flow for high volume movement
- Acceptable operations
- No additional I-5 mainline improvements

Concept A Limitations

- Does not address structural deficiency
- At-grade rail conflict
- Location of Fort Lewis Access Control Point (Gate)



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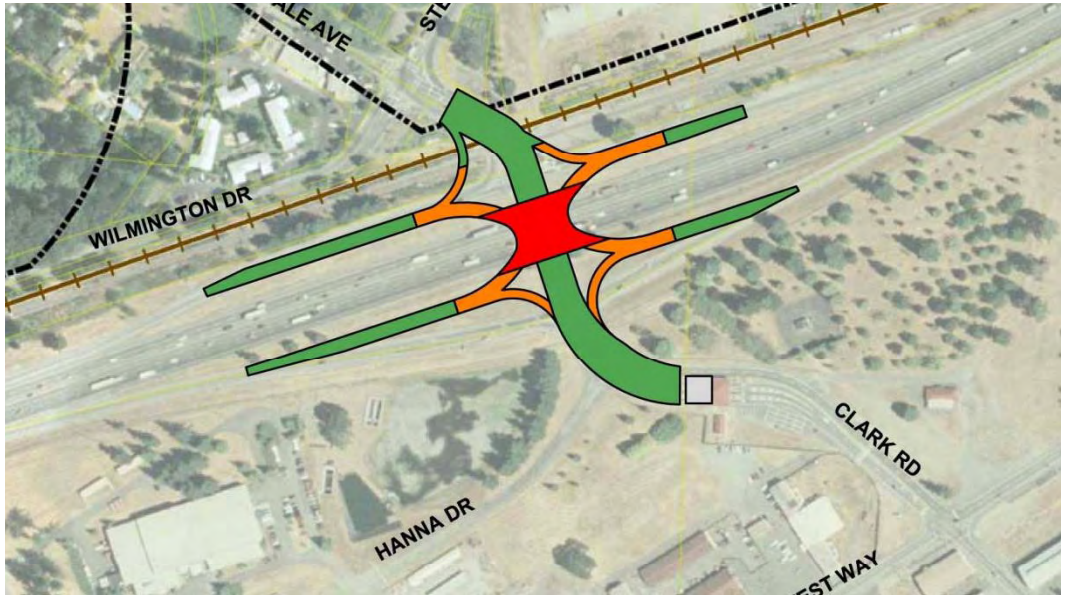
Exit 119 – DuPont-Steilacoom Concepts

Concept B Benefits

- Consolidates ramp terminals, adds turn lanes
- Improved separation from at-grade rail crossing
- Addresses structural deficiency

Concept B Limitations

- Does not eliminate conflict with at-grade rail crossing
- Construction phasing impacts to DuPont and Fort Lewis



LEGEND
- ARTERIAL BRIDGE
- ELEVATED RAMP
- SURFACE IMPROVEMENTS
- MILITARY ACCESS CONTROL POINT

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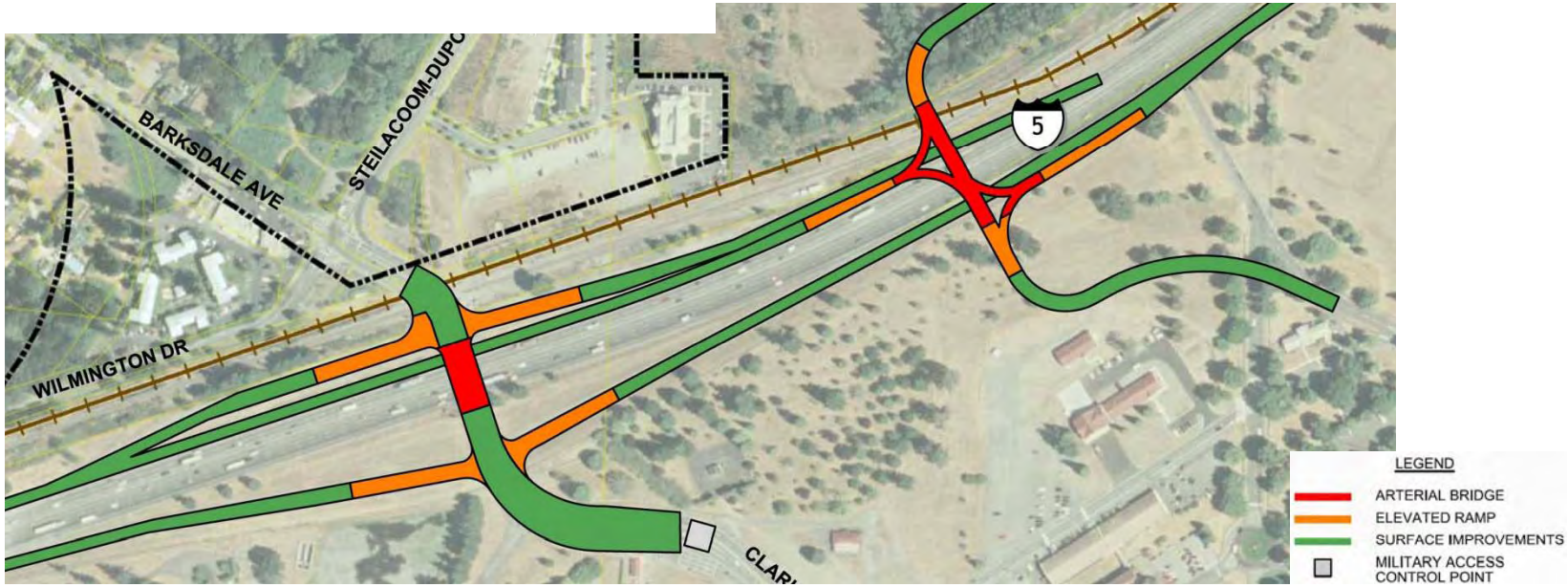
Exit 119 – DuPont-Steilacoom Concepts

Concept C Benefits

- Continuous flow for high volume movement
- Enhances Fort Lewis on-base circulation
- Interchange operates acceptably with free-flow military egress

Concept C Limitations

- Does not improve conflicts with the at-grade rail crossing.
- Requires on-base right-of-way
- Impacts military access control point
- Construction phasing impacts



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Exit 120 – 41st Division Concepts

Existing/Baseline Conditions & Deficiencies

- SB I-5 to North Fort movement experiences congestion
- At-grade rail crossing conflicts with queues from the North Fort access gate
- Mainline congestion will create vehicle queuing onto the interchange on-ramps

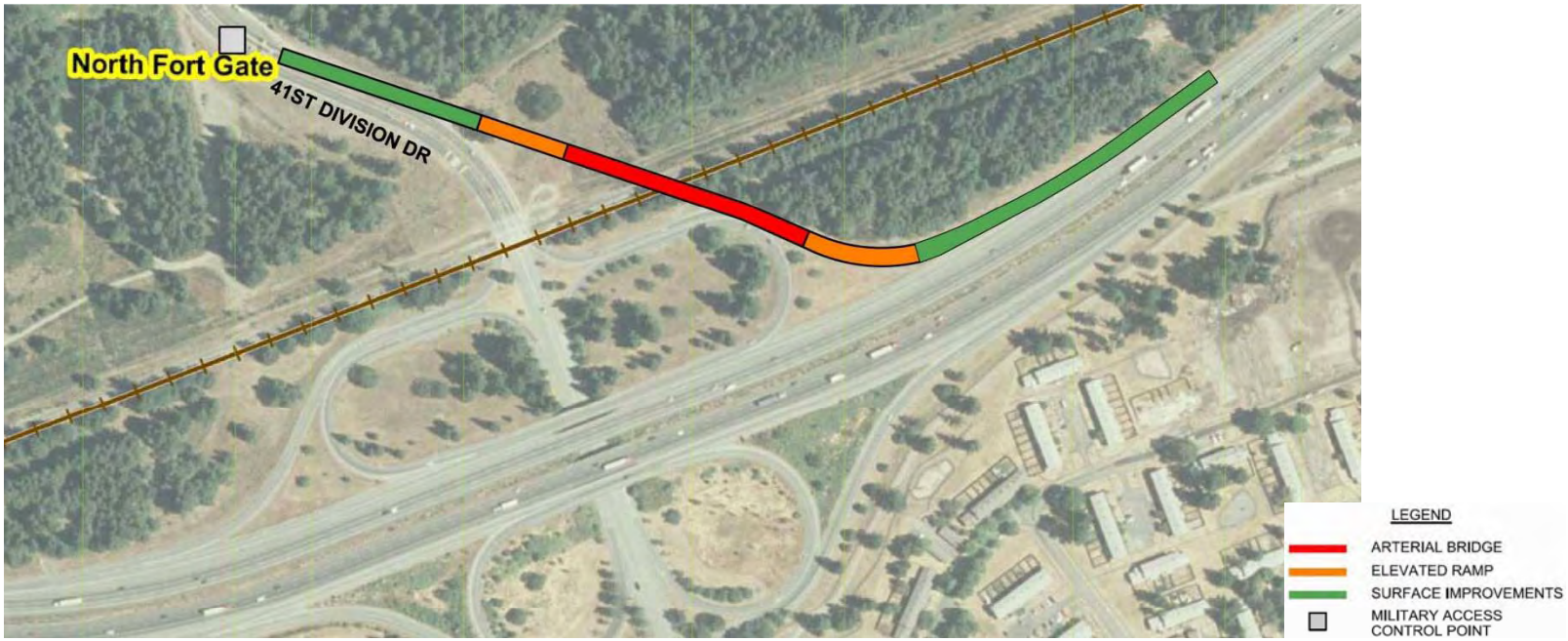
Exit 120 – 41st Division Concepts

Concept A Benefits

- Conflict with the rail crossing minimized
- Avoid impact from future rail activity

Concept A Limitations

- Only addresses SB off-ramp at-grade crossing
- Limited system benefit



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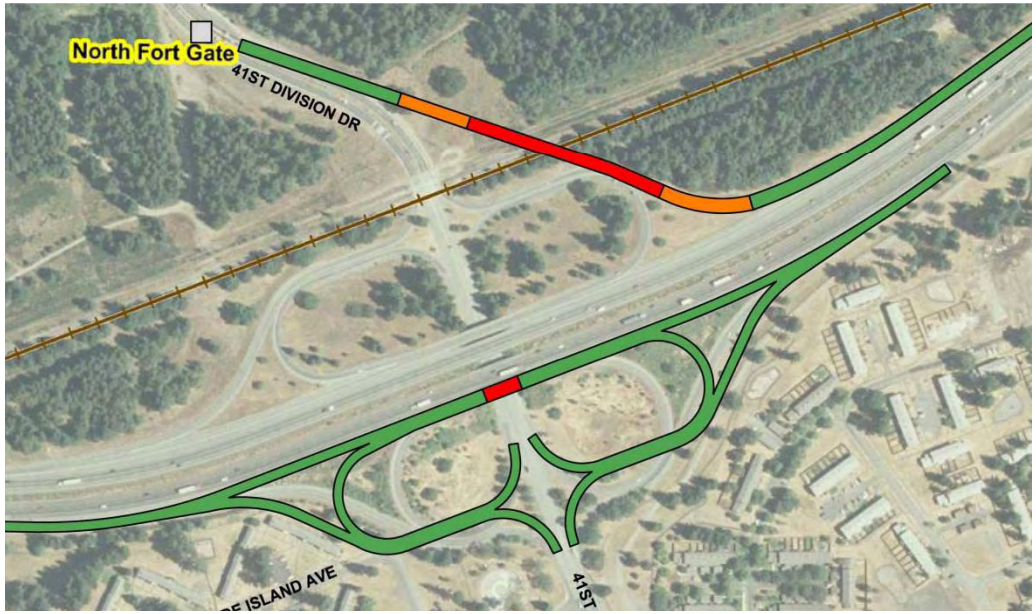
Exit 120 – 41st Division Concepts

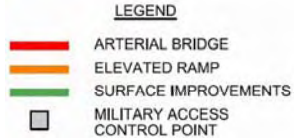
Concept B Benefits

- Conflict with the rail crossing minimized
- Avoid impact from future rail activity
- Improved capacity for the NB collector-distributor lanes.

Concept B Limitations

- Only addresses SB off-ramp at-grade crossing
- Limited system benefit
- Additional right-of-way from base





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Exit 122 – Berkeley Concepts

Existing/Baseline Conditions & Deficiencies

- Poor SB I-5 off-ramp (AM) and NB I-5 on-ramp (PM) operations
- Close spacing: ramps terminals, adjacent intersection, & at-grade rail crossing.
- Queues onto Fort Lewis & into the Union/Berkeley
- Traffic diversion through Tillicum neighborhood
- Overpass is functionally obsolete.
- Mainline congestion causes vehicle queuing onto the interchange on-ramps

Exit 122 – Berkeley Concepts

Concept A Benefits

- Removes SB on/off ramp volumes from the interchange
- Improves ramp terminal operations

Concept A Limitations

- Does not address spacing
- Does not address obsolete structure.
- Does not address mainline congestion

LEGEND
- ARTERIAL BRIDGE
- ELEVATED RAMP
- SURFACE IMPROVEMENTS
- MILITARY ACCESS CONTROL POINT

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Exit 122 – Berkeley Concepts

Concept B Benefits

- Eliminates at-grade rail crossing conflict.
- Removes SB on/off ramp volumes from the interchange
- Improves ramp terminal operations
- Replaces functionally obsolete structure.

Concept B Limitations

- Does not address spacing with adjacent intersection.
- Impacts to adjacent properties, local circulation improvements within Tillicum.
- Required NB I-5 auxiliary lane
- May require gate relocation

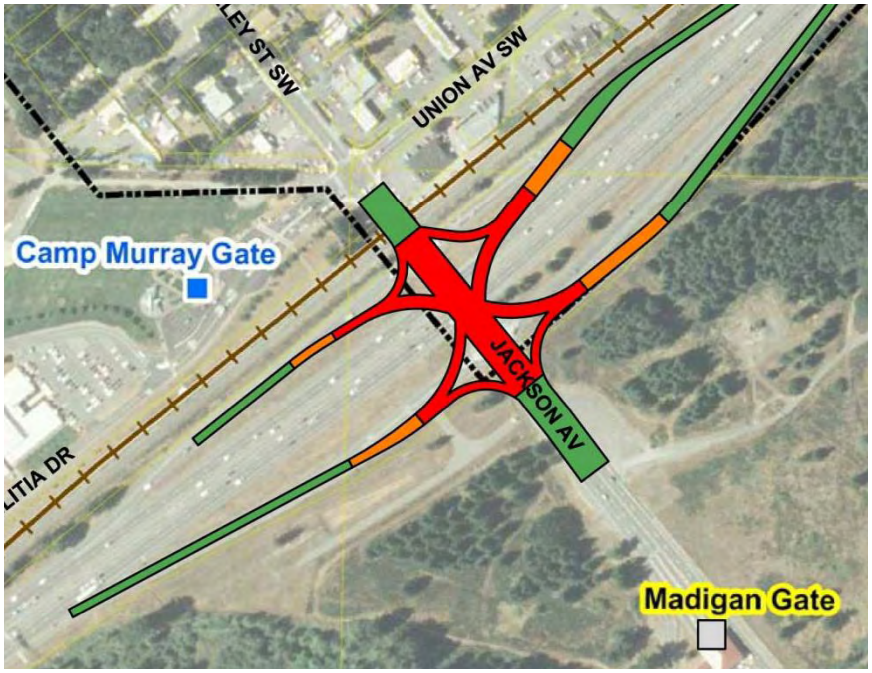
Exit 122 – Berkeley Concepts

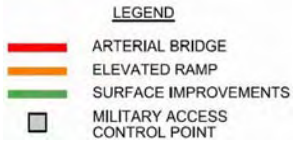
Concept C Benefits

- Consolidates ramp terminals , adds turn lanes
- Improved spacing
- Forecast queues acceptable

Concept C Limitations

- Does not eliminate at-grade rail crossing conflict
- Construction phasing impacts





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Exit 123 – Thorne Concepts

Existing/Baseline Conditions & Deficiencies

- Congestion and operational issues between Thorne Lane and Berkeley Street
  - Reduction in lanes from 4 to 3 and large on- and off-ramp vehicle movements
- Overpass is functionally obsolete.

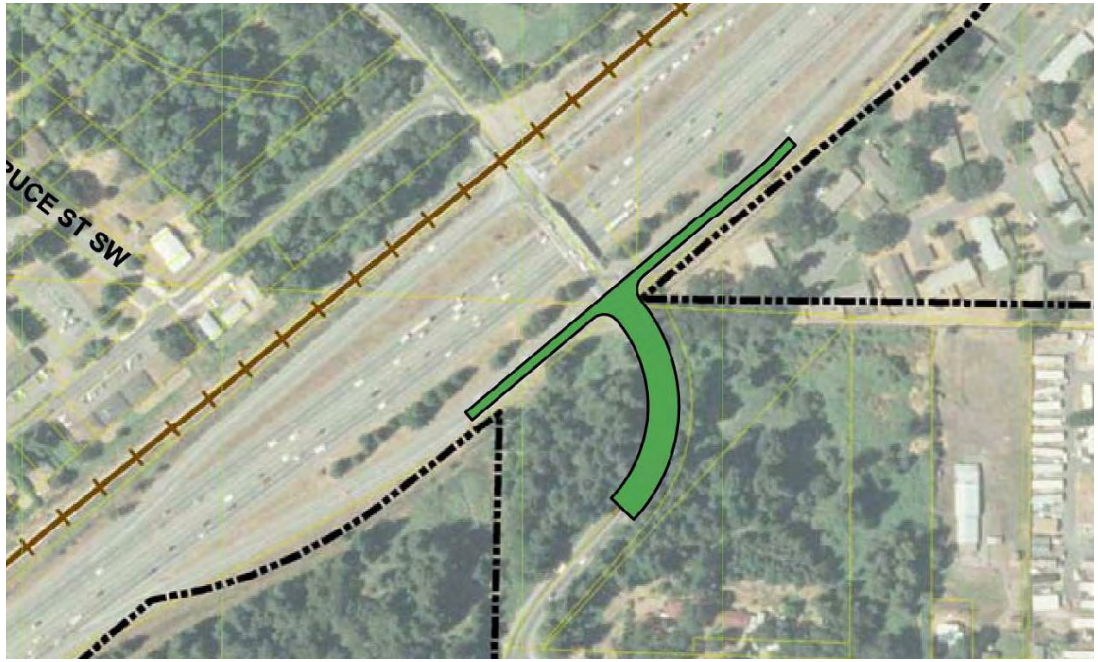
Exit 123 – Thorne Lane Concepts

Concept A Benefits

- Short-term operational improvements

Concept A Limitations

- Unable to be phased with Cross-Base Highway
- Does not address mainline operational issues



LEGEND

- ARTERIAL BRIDGE
- ELEVATED RAMP
- SURFACE IMPROVEMENTS
- MILITARY ACCESS CONTROL POINT

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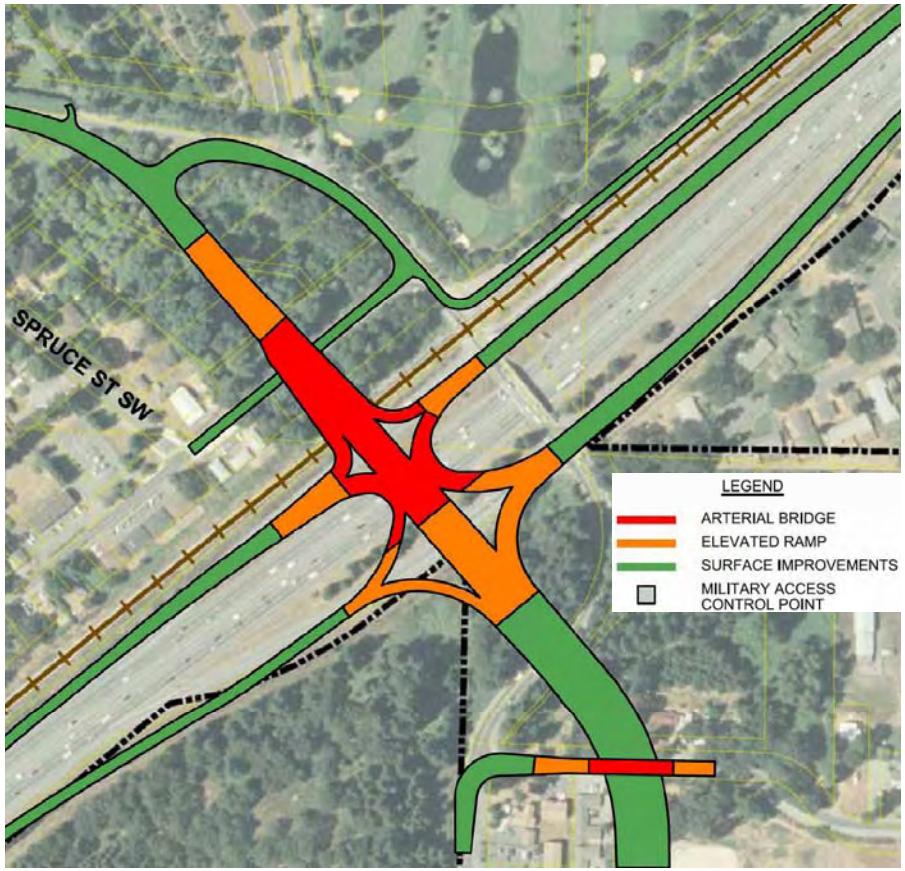
Exit 123 – Thorne Lane Concepts

Concept B Benefits

- Consolidates ramp terminals, adds turn lanes
- Improves spacing with adjacent intersection
- Consistent with Cross-Base Highway design

Concept B Limitations

- Dependent on construction of new highway
- Does not address mainline operational issues



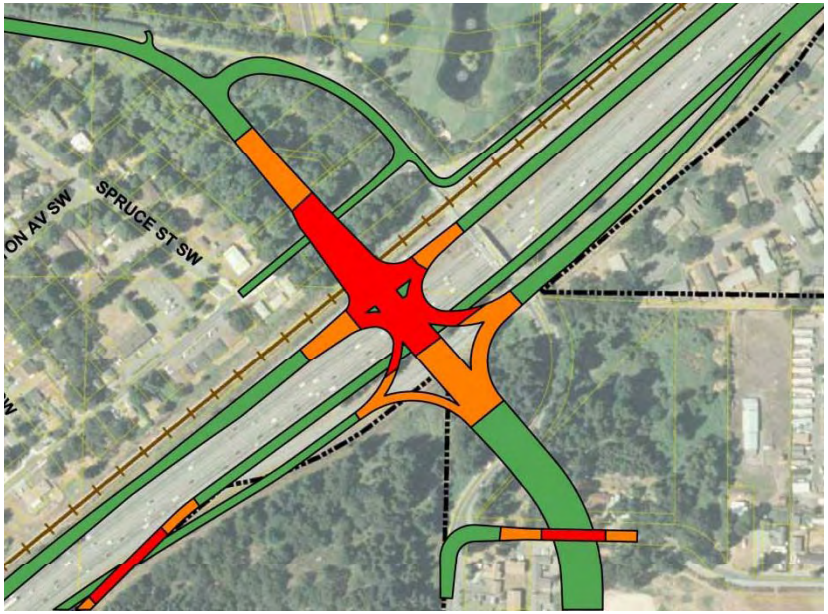
Exit 123 – Thorne Lane Concepts

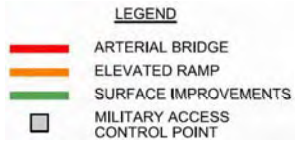
Concept C Benefits

- Consolidates ramp terminals, adds turn lanes
- Improves spacing with adjacent intersection.
- Addresses mainline operational issues

Concept C Limitations

- Dependent on construction of new highway
- Differs from Cross-Base Highway interchange design





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Next Steps
Tier III Screening Summary

Category	Focus Areas
Preservation	Structural Deficiencies
Safety	existing accident rates and high accident locations, at-grade rail crossings, etc
Mobility	Capacity improvements on the arterial streets and interface with I-5 mainline movements
Environment	Impact on sensitive areas
Stewardship	Benefit/Cost ratio, construction feasibility, etc