

APPENDIX

Project Implementation Matrix

Project Number	Project Name	Evaluation Score	Trigger for Project Need	Project Dependencies	Proposed Timing Based on Technical Need/Work*	Cost (millions)	Funding Opportunity (Bond, ODOT likely list)	Can it be Phased?	ROW Considerations	Next Steps	Proposed Tier** Based on Need and Phasing/ Funding Opportunity
C1	Install Ramp Meters	12	Triggers would be identified in a Concept of Operations. However, merge failures on the Parkway are likely to occur within the next 10 to 15 years or sooner depending on development and other projects.	Need C2a thru C2f (RIRO closures) completed to operate effectively. Need C3c and C3d (Revere and Colorado NB on-ramp acceleration lanes extended) to operate south of Market Street. Concept of Operations will evaluate all other ramps that are substandard to determine whether other roadway improvements are required to accommodate ramp meters.	Medium-term for implementation, short term for concept of operations	\$15	ODOT likely list has \$15 million for Phase 2 metering	North of Powers could be Phase 1		Next step is a Concept of Operations (cost is approximately \$50K). Would likely operate most effectively if implemented together rather than ramp by ramp.	Tier 2
C2a	Close Lafayette Ave. right turn onto Parkway and extend the deceleration lane for the right turn off of the Parkway.	17	Existing safety and operation issues	None	Short-term	\$2	ODOT likely list has \$20 million for RIRO.	No	Will need ROW for Decel. lane.	Advance scoping to consider how to bundle RIROs. Consider moving forward with top locations (such as Lafayette, Hawthorne, Reed Lane and Truman) first. Consider whether they could be done in phases, without final mitigation, and whether all should be done together or broken up. The scoping study could also include the strategy for the corridor.	Tier 1

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C2b	Close Hawthorne Ave. right turn onto Parkway	17	Existing safety and operation issues	C5 (widen shoulders). C3a (extend deceleration lane for right turn off of the parkway)	Short-term	\$1	ODOT likely list has \$20 million for RIRO.	No	Decel. lane should fit in existing ROW	Advance scoping, per C2a.	Tier 1
C2c	Close Truman Ave. RIRO intersection with Parkway	17	Existing geometric deficiencies	None	Short-term	\$1	ODOT likely list has \$20 million for RIRO.	No	Likely no significant ROW impacts	Advance scoping, per C2a.	Tier 1
C2d	Close Reed Ln. RIRO intersection with Parkway	17	Existing geometric deficiencies	None	Short-term	\$1	ODOT likely list has \$20 million for RIRO.	No	Likely no significant ROW impacts	Advance scoping, per C2a.	Tier 1
C2e	Close Badger Rd. RIRO intersections with Parkway	17	S3 is needed Mid-term, triggering the need for this closure	This project is needed for S3 (Powers Interchange). Also, if Badger/Pinebrook overcrossing is located here closure may be required. S7 (frontage road) would not function properly if west RIRO remains open	Short-term	\$1	ODOT likely list has \$20 million for RIRO.	Yes, could be closed one side at a time, but full closure needed for Powers Interchange	Likely no significant ROW impacts	Advance scoping, per C2a.	Tier 1
C2f	Close Pinebrook Blvd. RIRO intersections with Parkway	17	S6 (Murphy Tight Diamond) is needed Short-term, triggering the need for this closure	S6 (Murphy Road Tight Diamond) cannot be completed without C2f, Also, if Badger/Pinebrook overcrossing is located here closure may be required. S7 (north frontage road) would not function properly if west RIRO remained open	Short-term	\$1	ODOT likely list has \$20 million for RIRO.	Yes, could be closed one side at a time, but full closure needed for Murphy tight diamond	Likely no significant ROW impacts	Advance scoping, per C2a.	Tier 1
C2g	Close China Hat Rd. and Ponderosa St. RIRO intersections with Parkway	17	S4 (China Hat Overcrossing)	S4 (China Hat Overcrossing) would likely require closure. Development Driven.	Development Driven	\$1	ODOT likely list has \$20 million for RIRO.	Yes, Ponderosa and China Hat could be closed separately, but both need to be closed for China Hat	Likely no significant ROW impacts	Advance scoping, per C2a.	Tier 2

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								Overcrossing project			
C2h	Close Rocking Horse Rd. RIRO intersection with Parkway	17	Development build out south of Ponderosa (within the UGB)	S5 is needed to determine access plan for this location. Also dependent on S6 and S8. Development Driven.	Development Driven	\$1	ODOT likely list has \$20 million for RIRO.	No	Likely no significant ROW impacts	Consider timing for closure in S5 (Baker/Knott IAMP) and S6 (Murphy interchange).	Tier 2
C3a	Extend Southbound right turn deceleration lane at Hawthorne Avenue	7	Existing geometric deficiency, safety issues	Needed to maintain Parkway exit access at Hawthorne. Consider pairing with Lafayette and City overcrossing project, but it has independent safety need and needs to be addressed in the short term.	Short-term	\$1	ODOT likely list has \$20 million for RIRO.	No	Likely no significant ROW impacts		Tier 1
C3b	Extend southbound deceleration lane to Reed Market Rd	7	Existing geometric deficiency	None	Short-term	\$0.5		No	Likely no significant ROW impacts		Tier 1
C3c	Extend Revere Avenue northbound on-ramp acceleration lane	7	Existing geometric deficiency	None	Short-term	\$1-3		No	Likely no significant ROW impacts		Tier 2
C3d	Extend acceleration lane for Colorado Ave northbound on-ramp	7	Existing geometric deficiency	Could allow for more aggressive ramp metering strategies on this ramp	Long-Term	\$3-5	ODOT likely list has \$4.3 million for Colorado/US 97 intersection improvement	No	Could re-purpose some of the space on the Franking overcrossing to fit in the extended acceleration lane		Tier 2
C4a	Active Transportation Crossing Improvements: Cooley Rd	16	Existing gaps in low stress bike/ped network	Dependent on Phase 1 of FEIS (Infra grant)	Short-term	\$3***	Infra grant	No		Coordinate with Infra grant design.	Tier 1
C4b	Active Transportation Crossing Improvements: Butler Market Rd	16	Existing gaps in high priority low stress bike/ped network	Could be combined with TSP Butler Market Rd Intersection Improvements project (M1)	Short-term	\$.2*** (Buffered Bike Lane)	Could be part of a potential Bond project. ODOT likely list has \$6.18 M for Butler	No		Coordinate with TSP improvements.	Tier 1

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							Market/US 20/US 97 improvements				
C4c	Active Transportation Crossing Improvements: Olney Ave	16	Existing gaps in high priority low stress bike/ped network	Could be combined with the ultimate "Z" project (Revere/Wall/Portland)	Short-term	\$2***	Part of a Bond project	No		Coordinate with TSP improvements.	Tier 1
C4d	Active Transportation Crossing Improvements: Greenwood Ave	16	Existing gaps in high priority low stress bike/ped network	None	Short-term	\$2-10***	Part of a Bond project	No		Conceptual design and analysis	Tier 1
C4e	Active Transportation Crossing Improvements: Hawthorne Crossing	16	Existing gaps in high priority low stress bike/ped network	Design could impact C2b.	Short-term	\$11.5***	Part of a Bond project	No		Develop feasible design.	Tier 1
C4f	Active Transportation Crossing Improvements: Franklin Ave	16	Existing gaps in high priority low stress bike/ped network	None	Short-term	\$6-12***	Part of a Bond project	No		Conceptual design and analysis	Tier 1
C4g	Active Transportation Crossing Improvements: Canal/Garfield undercrossing	16	Existing gaps in high priority low stress bike/ped network	None	Short-term	\$1.25***		No		Conceptual design	Tier 2
C4h	Active Transportation Crossing Improvements: Badger/Pinebrook Overcrossing	16	Existing gaps in high priority low stress bike/ped network	None	Short-term (Development driven)	\$5-10***	TSP has identified this as a location for a grade separate bike/ped connection	No		Conceptual design to determine optimal location (Badger vs Pinebrook)	Tier 2
C4i	Active Transportation Crossing Improvements: Murphy Rd	16	Existing gaps in high priority low stress bike/ped network	None	Short-term	\$5-10 million		No		Conceptual design	Tier 1
C4j	Active Transportation Crossing	16	Existing gaps in high priority low stress bike/ped network	S4. Development Driven.	Short-term - Development Driven	\$0 (include in interchange)	Likely developer or City funded	No		Conceptual design for S4	Tier 2

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	Improvements: China Hat Rd Overcrossing					improvement project)					
C4k	Active Transportation Crossing Improvements: Baker Rd/Knott Rd	16	Existing gaps in high priority low stress bike/ped network	S5 (IAMP)	Short-term	Unknown. Further investigate as part of IAMP project.		No		Coordinate with outcomes from IAMP.	Tier 2
C4l	Active Transportation Crossing Improvements: Robal Rd	16	Existing gaps in low stress bike/ped network	FEIS (and Infra grant)	Medium-term	\$1***	Infra grant	No		Coordinate with Infra grant design	Tier 1
C4m	Active Transportation Crossing Improvements: Empire Blvd	16	Existing gaps in low stress bike/ped network	Stand-alone Empire Blvd project that includes at least some level of the FEIS improvements	Medium-term	\$1.7***(Share d Use Path)	ODOT likely list has \$10 million for US 97/Empire widening, bridge and signal	No	INFRA grant coordination.	Identify Empire Blvd project (3 rd to SB Ramp terminal)	Tier 2
C4n	Active Transportation Crossing Improvements: Revere Ave	16	Existing gaps in low stress bike/ped network	Project M2 could accomplish this improvement	Medium-term	\$.9 (Shared Use Path)		No		Refine M1 conceptual design	Tier 2
C4o	Active Transportation Crossing Improvements: Aune Ave	16	Existing gaps in low stress bike/ped network	Dependent on TSP Aune Extension project	Medium-term	\$.6 ⁱ	Part of a Bond project	No		Develop Aune Extension conceptual design	Tier 1
C4p	Active Transportation Crossing Improvements: Wilson Ave	16	Existing gaps in low stress bike/ped network		Medium-term	\$.86 ⁱⁱ		No		Conceptual design	Tier 3
C4q	Active Transportation Crossing Improvements: Reed Market Rd	16	Existing gaps in low stress bike/ped network	Dependent on the outcomes of S1	Medium-term	\$1.45 ⁱⁱⁱ	There is a Bond project for Reed Market interchange improvements, but this project doesn't appear to be included.	No		Complete S1	Tier 2

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C4r	Active Transportation Crossing Improvements: Powers Rd	16	Existing gaps in low stress bike/ped network	Dependent on S3 (Powers Road Interchange)	Medium-term	Included in Powers Interchange improvement		No		Refine Conceptual design for S3	Tier 1
C5	Shoulder width improvements at strategic locations in corridor	10	Existing geometric deficiencies and travel time reliability issues	Increases the benefit of C8 (Incident Management)	Short-term	\$2-\$10		Yes, this should be studied and priorities established. Phasing can be implemented by segment	Either purchase ROW or consider modifying median to accommodate wider shoulders at locations where ROW is tight	Study corridor to determine which locations this should be completed based on operational issues/needs and available ROW. This could be bundled with RIRO study.	Tier 2
C6	Weather warning system	15	Existing travel time reliability and seasonal crash trends	Could be bundled with C7 and C11 (other TSMO projects)	Short-term	\$0.005-\$0.45 per sign		Yes, not all signs have to go up at the same time		Concept of Operations. ODOT should coordinate with the County and MPO as this is also part of the Deschutes County ITS Plan.	Tier 2
C7	Variable speed signs	13	Existing travel time reliability and seasonal weather impacts	Could be bundled with C6, C8, and C1.	Short-term	\$0.5-\$1.5 per sign		No, corridor is not very long, would make the most sense to do these all together		Concept of Operations. ODOT should coordinate with the County and MPO as this is also part of the Deschutes County ITS Plan.	Tier 2
C8	Incident management	16	Travel time reliability impacts from crashes	Could be bundled with C11. More effective if implemented with C5.	Short-term	\$0.05-\$0.5 per year		No		Concept of Operations. ODOT should coordinate with the County and MPO as this is also part of the Deschutes County ITS Plan.	Tier 2
C9	Enhanced signal operations at ramp terminals	12	Queuing, particularly at Powers	Should be coordinated with ODOT's ongoing ATC conversion plan. Note that this could include freight and transit signal priority as interim solutions.	Short-term	\$0.05-\$0.5		Yes, could follow the implementation of ATC controllers		Complete ATC conversion plan and obtain additional radar funding.	Tier 1

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C10	Traveler information signing	8	Existing condition is confusing to out of town drivers	Could be included as part of the Infra grant for improved wayfinding from Robal to Division.	Short-term/On-going	\$0.002-\$0.03 per location		No		Incorporate into the near-term Infra Grant project in the Cooley – Empire area, which may change local circulation.	Tier 1
C11	Roadside Traveler Information Dissemination	8	Special event impacts and existing travel time reliability	Could be bundled with C6 and C7.	Short-term	\$0.05-\$0.5		No		ODOT should coordinate with the County and MPO as this is also part of the Deschutes County ITS Plan.	Tier 1
N1	FEIS Projects (including auxiliary lane projects)	20	Existing congestion and safety issues	Infra grant is Phase 1 of this work.	Infra grant work is Short-term, full FEIS is long-term	~\$130 Short-term (Phase 1), ~\$150 long term (Phase 2)	HB 2017, Infra grant. ODOT likely list has \$30 million for North Parkway phase 2.	Yes, Infra grant portion is Phase 1		Infra grant is Phase 1	
M1	Butler Market Road Intersection Improvements	14	Ramp terminal fails to meet existing mobility target and westbound Butler Market queuing issues exist, exact trigger needs to be determined through a more detailed study. Includes roundabouts (or signals) at SB off ramp and at 4th Avenue	Needs signal upgrades at 3 rd /Butler Market, Access refinement between ramp terminal and 3 rd , Re-alignment of west leg at Division St/3 rd	Mid-term	\$10	Bond Project.	Potential phasing to be evaluated.	Minimal ROW impacts		Tier 1
M2	Revere Avenue Lane Reconfiguration	11	Addresses existing geometric and bike/ped needs	Could be combined with a larger “Z” project that extends to Portland/Wall	Short-term	\$0.5-\$2	TSP	No	Likely no significant ROW impacts		Tier 2
M3	Colorado Avenue Signal (or roundabout) at NB ramp	18	Addresses existing operational need	None	Short-term	\$2	ODOT likely list has \$4.3 million for Colorado/US 97 intersection improvement	No	Potential impacts to rail properties due to westbound right turn lane		Tier 1
M4	Colorado Avenue Improvement to SB ramp intersection	Study	Study should occur in the Short-term to prevent Core Area solutions from	None, study can happen any time. TSP findings are sufficient	Study – Short-term	Unknown	ODOT likely list has \$4.3 million for Colorado/US 97	No		Conduct study	Tier 2

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			precluding interchange solutions	to support a study at this location.	Ultimate Solution – Mid-term		intersection improvement. Note that Aune extension is a Bond project.				
S1	Reed Market Refinement Study from Bond Street to 3rd Street	Study	Existing operation needs on Reed Market	None, study can happen any time. TSP findings are sufficient to support a study at this location.	Study – Short-term Implementation of study recommendations will start Short-term as well. (Reed Market/3rd solutions is Short-term.)	\$.15-5, depending on scope.	Outcomes from the study are potential Bond Projects. ODOT likely list has \$10.5 including study.	The solution identified by the Refinement Study could likely be phased.	Solutions will likely require some ROW acquisition, particularly north of the northbound ramp terminal.	Complete Refinement Study	Tier 1
S2	Dedicated left turn lane Reed Market Rd and 3rd St (Through the TSP)	12	Existing operation needs on Reed Market	Ultimate solutions would be identified by S1	Short-term	\$5	CIP project	No	Likely requires some ROW acquisition		Tier 1
S3	Powers Road Interchange	14	Existing needs can be partially addressed through S6	S6 is recommended for completion 1 st , requires C2e.	Immediate need. ROW acquisition - Short-term Construction - Mid-term	\$24.7	ODOT likely list for \$26.5	Potentially (overcrossing, then interchange) but only if Murphy tight diamond interchange is completed		Refine preliminary design and begin ROW acquisition.	Tier 1
S4	China Hat Overcrossing	19	Build out of the “Thumb” will trigger this need	Dependent on C2g and S6	Development Driven	\$12.5	Likely developer or City funded	No	Likely requires some ROW acquisition.		Tier 2
S5	IAMP at Baker Rd/Knott Rd interchange	Study	Need a plan to serve growth near this interchange	Study can happen any time but improvements are needed now.	Short-term			IAMP may identify a phased set of solutions			Tier 1
S6	Murphy Tight Diamond Interchange	17	Needed for development of the Urban Renewal District around Murphy Road, provide some relief to exiting operations issues at Powers	Requires C2f (Pinebrook Boulevard RIRO closure) to be completed	Short-term	\$11.9	Bond Project or Urban Renewal funding	No	Likely requires some ROW acquisition.	ODOT to develop a detailed coordination plan with City of Bend for implementation of Murphy and Powers Road Interchange projects	Tier 1

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S7	Murphy North Frontage Road	16	Triggered by growth south of Murphy Road (SE Area Plan)	Dependent on C2f and C2g (Pinebrook and China Hat RIRO closures)	Development Driven	\$15.2	Likely partially developer funded.	Yes, improvements to Blakely first, then new construction south of Pinebrook.	Requires some ROW acquisition	.	Tier 2
S8	Murphy South Frontage Road	13	Triggered by growth south of Murphy Road (SE Area Plan)	Dependent on S6 (Murphy Tight Diamond), S4 (China Hat Overcrossing), and C2h (Rocking Horse Road Closure) to function effectively.	Development Driven	\$10.6	City responsibility likely partially developer funded through properties in the Murphy Refinement Plan.	Yes, could build connection from Murphy tight diamond to Murphy Road first, then extension to Ponderosa as development increases	Likely would require minimal ROW acquisition	Could be built in phases based on development	Tier 2

* Short-term = 0-10 years, medium-term = 11-15 years, long-term = 16-20 years.

** Tier 1= Short-term, Tier 2= Medium-term, Tier 3= Long-term

***Planning level estimate from City of Bend. Does not include ROW.

ⁱ Estimate from City of Bend bond

ⁱⁱ Planning level estimate from City of Bend to be updated after scoping for RIRO closure of Truman.

ⁱⁱⁱ Planning level estimate from City of Bend to be updated after Reed Market study.