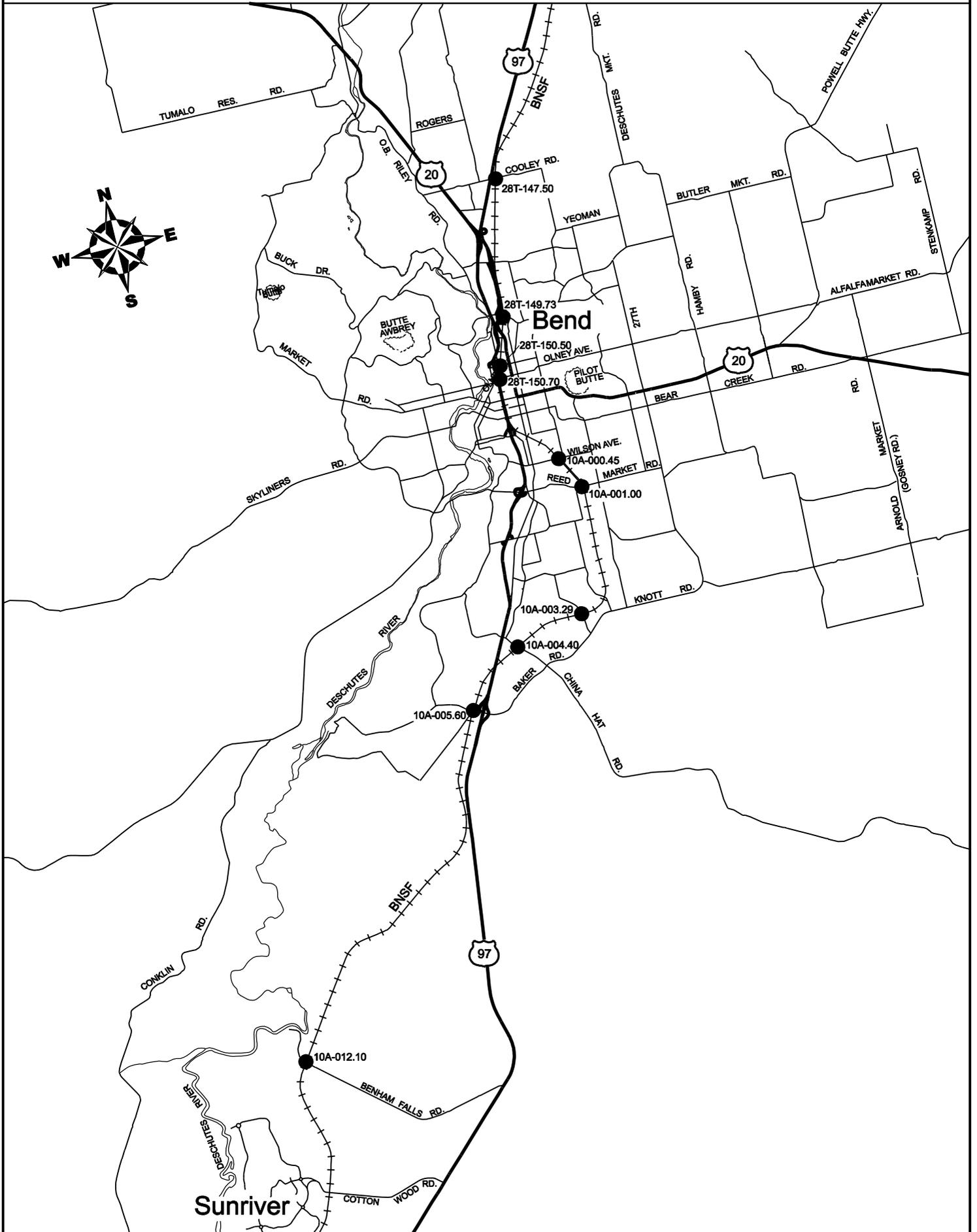


CENTRAL DESCHUTES COUNTY AT-GRADE RAIL CROSSINGS



Crossing 28T-147.50

Cooley Rd., Bend -- Undercrossing

RATIONALE: Cooley Rd. intersects US97 about 400 feet to the west of the RR. This intersection is about the same grade as the existing RR crossing, however Cooley Rd is at least 10 feet lower about 300 feet toward the east. The west approach of an overcrossing would require US97 to be raised significantly, or one could include both the RR and US97 under the overcrossing. An overcrossing would impact several city streets. The notes from the 3/11/08 meeting with City of Bend indicated that an undercrossing is needed under both the RR and US97. This type of undercrossing has not been considered previously, but may be feasible. It would require significant blasting of rock, since the rock appears to be close to the surface. This undercrossing would also impact the local streets. Raising the RR grade is an option but would require significant length of walls parallel to RR. Additional review of the options should be performed. During our site visit, it was mentioned that ODOT may be considering a new interchange at this location. ODOT is estimating the cost and impacts of a crossing at this location.

**US 97/Cooley Road Mid-Term Intersection Improvements
Planning Phase - Order of Magnitude**

**Alternative H-1: Relocated Signalized US 97/Cooley Rd.
Construction Costs**

*Cooley
RR Bridge Only*

Item	Quantity	Unit	Unit Cost	Cost
1 US 97 Seven lane section w median	3,500	LF	\$ 1,150.00	\$ 4,025,000.00
2 Utility relocations	1	LS	\$ 1,500,000.00	\$ 1,500,000.00
3 Cooley Road Six lane section w/o median	600	LF	\$ 550.00	\$ 330,000.00
4 Cooley Road Six lane section w/ median	950	LF	\$ 600.00	\$ 570,000.00
5 Cooley Road Three lane section w/ median	950	LF	\$ 460.00	\$ 437,000.00
6 US 97 Three lane ramp section	600	LF	\$ 500.00	\$ 300,000.00
7 US 97 Five lane ramp section	1,200	LF	\$ 900.00	\$ 1,080,000.00
8 New Traffic Signal	4	EA	\$ 250,000.00	\$ 1,000,000.00
9 Retaining Walls	-	SF	\$ 75.00	\$ -
10 Hwy 97 Bridge	14,720	SF	\$ 128.00	\$ 1,884,160.00
11 Railroad Bridge	8,000	SF	\$ 200.00	\$ 1,600,000.00
12 Underpass Excavation	1	LS	\$ 1,200,000.00	\$ 1,200,000.00
13 Utility relocations	1	LS	\$ 1,500,000.00	\$ 1,500,000.00
<i>Sub-Total</i>				\$ 15,426,160.00

*1,600,000
1,200,000*

Temporary Construction Costs

14 Relocate railroad crossing	1	EA	\$ 300,000.00	\$ 300,000.00
15 Cooley Road Three lane section	1,700	LF	\$ 200.00	\$ 340,000.00
16 Temporary Traffic Signal	1	EA	\$ 250,000.00	\$ 250,000.00
17 US 97 Five lane section w/o median	2,900	LF	\$ 600.00	\$ 1,740,000.00
18 Temporary Rail 'Shoe-Fly'	1,525	LF	\$ 150.00	\$ 228,750.00
<i>Sub-Total</i>				\$ 2,858,750.00

*300,000
340,000
250,000
1,158,750
2,858,750*

RR Portion of Shoe-Fly

Subtotal

Additional US 97 Widening South to US 20 (Partial Construction w/ Overlay)

19 US 97 One lane widening	400	LF	\$ 150.00	\$ 60,000.00
20 US 97 Two lane widening	1,600	LF	\$ 300.00	\$ 480,000.00
21 US 97 Three lane widening	1,050	LF	\$ 400.00	\$ 420,000.00
22 New Traffic Signal	1	EA	\$ 400,000.00	\$ 400,000.00
23 Robal Road One lane widening	300	LF	\$ 100.00	\$ 30,000.00
24 Robal Road Two lane widening	300	LF	\$ 150.00	\$ 45,000.00
25 4" Overlay	24,500	SY	\$ 15.00	\$ 367,500.00
<i>Sub-Total</i>				\$ 1,802,500.00

Additional Construction Costs

26 Construction Surveying	2.0%			\$ 401,748.20
27 Mobilization	8.0%			\$ 1,606,992.80
28 Erosion Control	2.0%			\$ 401,748.20
29 Contingency and Engineering	40.0%			\$ 8,034,964.00
<i>Sub-Total</i>				\$ 10,445,453.20
Construction Cost				\$ 30,532,863.20

*50%
2,424,375 EAC*

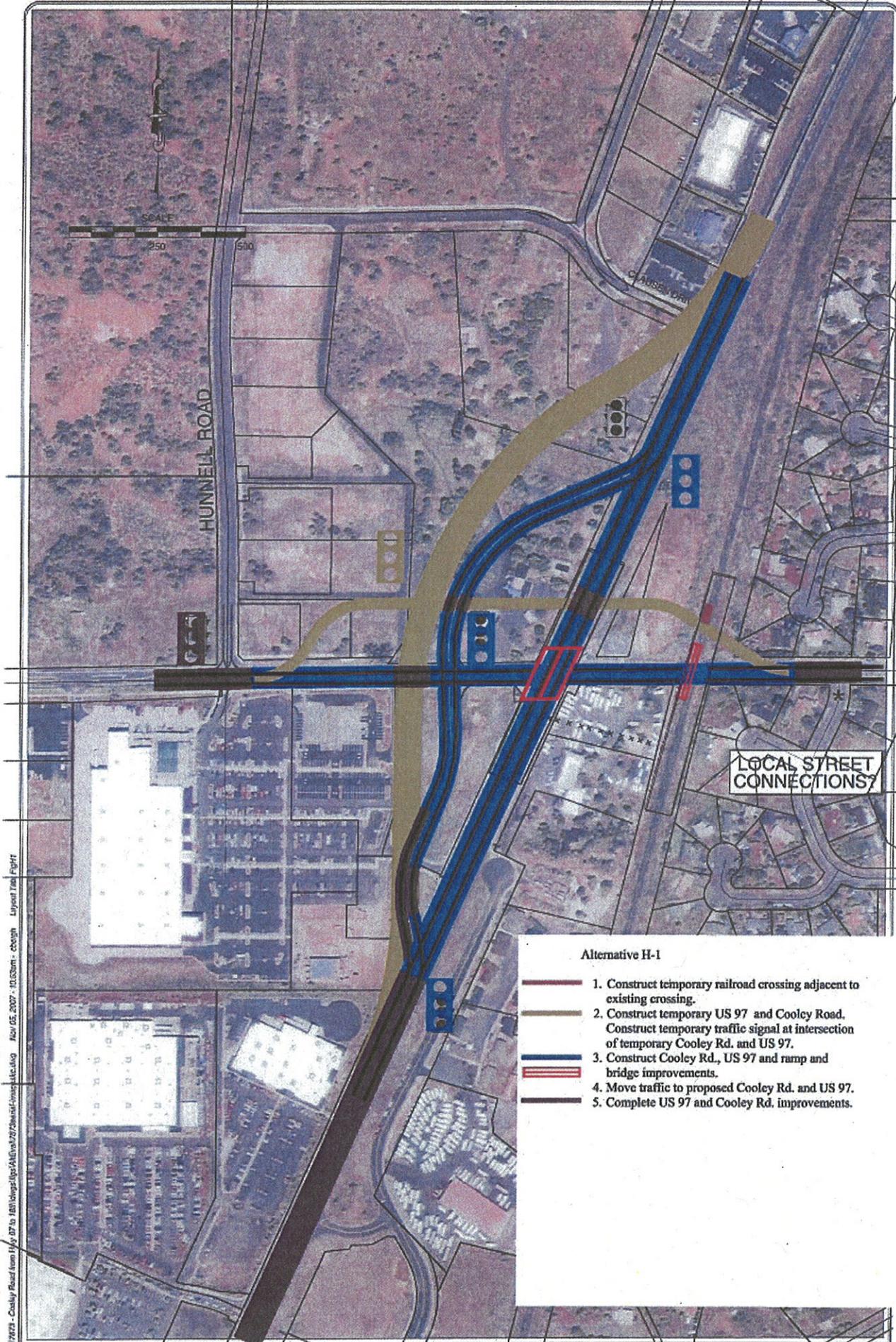
Right of Way Costs

30 New Right of Way Required	206,475	SF	\$ 20.00	\$ 4,129,500.00
31 Temporary construction easement	240,000	SF	\$ 1.50	\$ 360,000.00
32 New Right of Way Required (Robal Int.)	18,000	SF	\$ 20.00	\$ 360,000.00

Project Cost \$ 35,382,363.20

- A. Utility relocation cost estimate assumed for underpass construction. Actual utilities to be relocated unknown.
- B. Construction staging cost factored on maintaining mobility on US 97 during construction
- C. All quantities estimated from Alternative Figures from Kittelson & Associates, Inc.
- D. Assumed Right of Way required: 160' width for relocated US 97, 100' width for ramps
- E. US 97 bridge assumed dimensions and type: 92'W x 160'L, type BT84 precast.
- F. Railroad bridge assumed dimensions and type: 24'W x 160'L, steel thru girder.

*Total 7,273,125
RR Crossing
Cooley*



M:\projects\2007 - Cooley Road from Hwy 97 to 180\docs\figs\A\US97\2007-us97-fig1.dwg 10/05/2007 10:53am cbsgh Layout File P1011

Alternative H-1

-  1. Construct temporary railroad crossing adjacent to existing crossing.
-  2. Construct temporary US 97 and Cooley Road. Construct temporary traffic signal at intersection of temporary Cooley Rd. and US 97.
-  3. Construct Cooley Rd., US 97 and ramp and bridge improvements.
-  4. Move traffic to proposed Cooley Rd. and US 97.
-  5. Complete US 97 and Cooley Rd. improvements.

ALTERNATIVE H-1: RELOCATED SIGNALIZED US 97/COOLEY RD BEND, OREGON **H-1**

Crossing 28T-149.73

Butler Market Rd., Bend -- Undercrossing

RATIONALE: Butler Market Rd currently crosses under US97 Parkway about 350 feet to the west of the RR. At US97 Parkway the grade on Butler Market Rd. is about 15 feet below the RR grade. A solution of half RR overcrossing and half RR undercrossing was considered. However, it appears that raising the RR grade 10 feet would reduce the vertical clearance of the 3rd St./US 20 bridge over the RR below minimum clearance. A full undercrossing (lowering Butler Market Rd. and leaving RR at grade) is a better solution. Lowering Butler Market Rd. does not affect US97 Parkway, but does require lowering the frontage road and on ramp between the RR and US 97 Parkway, and requires lowering 4th St. An overcrossing was also considered. The overcrossing would need to span both the RR and US 97 Parkway because the west approach could not fit under the existing US97 Parkway bridge over Butler. The frontage road, the on ramp to US97, and 4th St. would all need to be raised to meet the new overcrossing profile. An undercrossing appears to be the better option.

DAVID EVANS AND ASSOCIATES, INC.

SUMMARY COST ESTIMATE

PROJECT: ODOT0000608 Central Oregon Rail Plan		Terry Shike/503-361-8635			
CROSSING NO:		Butler Market Rd - Uxing RR by lowering road			
RAIL SEGMENT IDENTIFICATION:		RAIL SEGMENT LENGTH:			
NO.	ITEM	UNIT	QUANTITY	UNIT COST	TOTAL
	Bridge 80' x 45'	ft2	3600	\$635	\$2,286,000
	Excavation	yd3	42000	\$20	\$840,000
	Paving	ft2	102000	\$10	\$1,020,000
	Sidewalks	ft2	15100	\$10	\$151,000
	Cul de sacs	each	0	\$25,000	\$0
SUBTOTAL					\$4,297,000

ADDITIONAL COSTS	
Utility Allowance	\$100,000
Design/Surveying (10%)	\$429,700
Constr.Engr./Contingency (50%)	\$2,148,500
Special Costs (Unique to crossing or segment)	
SUBTOTAL	\$2,678,200
TOTAL CONSTRUCTION COST	
RIGHT-OF-WAY COSTS (Supplied by ODOT)	
TOTAL CROSSING/SEGMENT COST	
	\$6,975,200

Assumptions/Notes:

- Four lanes with 6 ft bike/shoulder and 6 ft sidewalks.
- Rock is close to surface, so retaining walls not needed. Assume drill and blast rock excavation.
- Lower Frontage Rd adjacent to Parkway, 6.4 ft, both sides of Butler, 56 ft width.
- Lower 4th St. 9 ft east side of Butler, 50 ft width.
- Lower accesses to businesses, SW - changes from downward grade to upward grade.

Crossing 28T-150.50

Revere Ave., Bend -- Undercrossing

RATIONALE: Revere Ave. intersects the Parkway about 500 ft. to the west and Division St. about 150 ft. to the west of the RR. The On/Off Ramps to Parkway are directly opposite of Division St. Revere Ave. intersects Lytle St about 200 ft. to east of the RR, 2nd St. about 400 ft. to east of the RR and 3rd St. about 700 ft. to the east of the RR. The approaches to a full overcrossing would each be about 1,100 ft.. long and vary in height from zero to 30 feet high at the RR. The impact of these approaches would reduce the vertical clearance under the Parkway, and would require all of these streets to be raised or become cul de sacs, shutting of access to businesses. An overcrossing at this location does not appear to be feasible. A full undercrossing of RR (by raising the RR) was also considered, but would require very long approaches along the RR, which requires retaining walls full length to contain the fill within RR ROW.

It would either block off crossings at other streets or require additional undercrossings. A full undercrossing of the RR (by lowering Revere) appears to be the better solution, but costly. The on/off ramps must be lowered to meet the new profile, however lowering them will exceed maximum grades. Therefore, new ramps must be provided. Division St. can be lowered. Also, lowering Revere could reduce the stability of the abutments for the Parkway bridge over Revere. Strengthening of the rock may be required, but does appear feasible. Access to Revere from Lytle St. and 2nd. St would be cut off by using cul de sacs, but 3rd St would experience minor impact.

DAVID EVANS AND ASSOCIATES, INC.

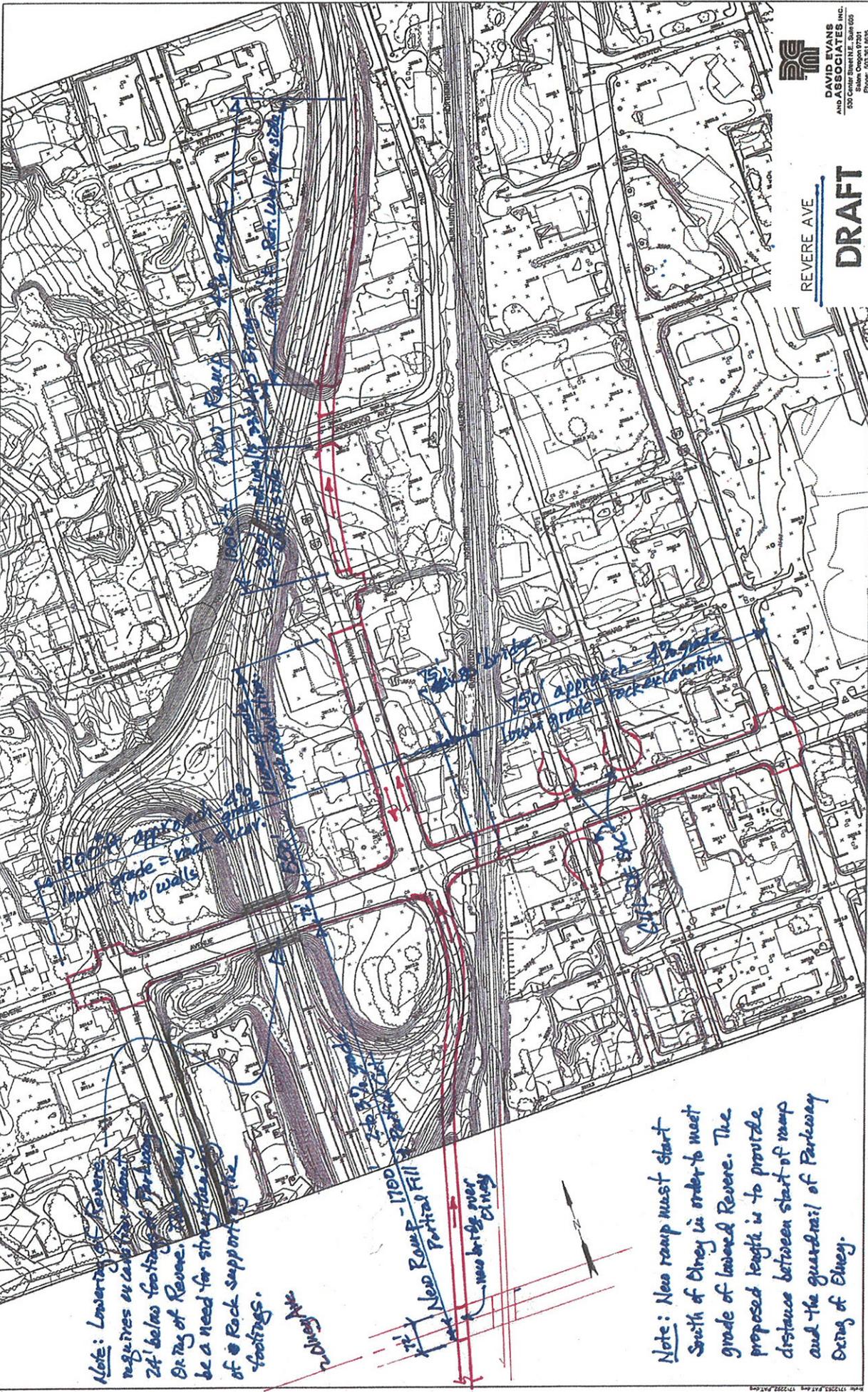
SUMMARY COST ESTIMATE

PROJECT: ODOT0000608 Central Oregon Rail Plan		Terry Shike/503-361-8635			
CROSSING NO:		Revere Avenue - Uxing RR by lowering road			
RAIL SEGMENT IDENTIFICATION:		RAIL SEGMENT LENGTH:			
NO.	ITEM	UNIT	QUANTITY	UNIT COST	TOTAL
	RR Bridge 80' x 75'	ft2	6000	\$635	\$3,810,000
	Hwy Bridge 33' x 80'	ft2	2805	\$165	\$462,825
	Hwy Bridge 33' x 140'	ft2	3080	\$165	\$508,200
	MSE Retaining Walls	ft2	6000	\$100	\$600,000
	Excavation	yd3	125000	\$20	\$2,500,000
	Paving	ft2	244000	\$10	\$2,440,000
	Sidewalks	ft2	23000	\$10	\$230,000
	Cul de sacs	each	3	\$25,000	\$75,000
	Rock bolting under Parkway Br.	LS	1	\$200,000	\$200,000
SUBTOTAL					\$10,826,025

ADDITIONAL COSTS	
Utility Allowance	\$100,000
Design/Surveying (10%)	\$1,082,603
Constr. Engr./Contingency (50%)	\$5,413,013
Special Costs (Unique to crossing or segment)	
SUBTOTAL	\$6,595,615
TOTAL CONSTRUCTION COST	
RIGHT-OF-WAY COSTS (Supplied by ODOT)	
TOTAL CROSSING/SEGMENT COST	
	\$17,421,640

Assumptions/Notes:

Four lanes with 6 ft bike/shoulder and 6 ft sidewalks on Revere and Division. 30' width on Ramps.
 Two existing tracks, so proposed bridge will be 3 track bridge - no access road.
 Rock is close to surface, so retaining walls not needed. Assume drill and blast rock excavation.
 Cul de sac Lytle Street both sides of Revere and 2nd Street east side of Revere.
 Lowering grade on Revere will require 24 ft exc below extg footings of Parkway Oxing Revere, which may require strengthening of the rock supporting the footings. A cost for rock bolting has been included.
 Existing On/Off ramps to Revere must be closed due to lowering of Revere. Concept has been included to show possible re-establishment of the ramps, and is included in the cost.



Note: Lowering of Revere requires excavation along 24' below footings of Parkway Dr.ing of Revere. There may be a need for strengthening of Rock supporting the footings.

17' x 15' New Ramp - 1700' Partial Fill - new bridge over Hwy

1500' approach - low grade - no walls

150' approach - low grade - rock excavation

15' x 15' approach - low grade - rock excavation

Note: New ramp must start south of Hwy in order to meet grade of lowered Revere. The proposed length is to provide distance between start of ramp and the guardrail of Parkway Dr.ing of Hwy.

Crossing 28T-150.70

Olney Ave., Bend -- Undercrossing

RATIONALE: Olney Ave. intersects the Parkway about 200 ft. to the west of the RR and the Parkway goes over Olney. The approaches to a full overcrossing would each be at least 1100 ft. long and vary in height from zero to 30 feet high at the RR. The west approach would not fit under the Parkway, therefore an overcrossing of Olney over RR is not feasible. A half overcrossing/half undercrossing was considered, but was not feasible due to impacts to the RR. A full undercrossing of the RR (raising RR) was also considered, but would require very long approaches along the RR, which requires retaining walls full length to contain the fill within the RR ROW. It would either block off crossings at other streets or require additional undercrossings. A full undercrossing of the RR (lowering Olney) appears to be the better overall solution. Lowering Olney will impact the Parkway Bridge but it appears that strengthening of the supporting rock is feasible. 1st St. would have access cut off with cul de sacs.

DAVID EVANS AND ASSOCIATES, INC.

SUMMARY COST ESTIMATE

PROJECT: ODOT0000608 Central Oregon Rail Plan		Terry Shike/503-361-8635			
CROSSING NO:		Olney Avenue - Uxing RR by lowering road			
RAIL SEGMENT IDENTIFICATION:		RAIL SEGMENT LENGTH:			
NO.	ITEM	UNIT	QUANTITY	UNIT COST	TOTAL
	Bridge 75' x 80'	ft2	6000	\$635	\$3,810,000
	Excavation	yd3	55000	\$20	\$1,100,000
	Paving	ft2	97000	\$10	\$970,000
	Sidewalks	ft2	13500	\$10	\$135,000
	Cul de sacs	each	2	\$25,000	\$50,000
	Rock bolting under Parkway Br.	LS	1	\$200,000	\$200,000
SUBTOTAL					\$6,265,000

ADDITIONAL COSTS	
Utility Allowance	\$100,000
Design/Surveying (10%)	\$626,500
Constr.Engr./Contingency (50%)	\$3,132,500
Special Costs (Unique to crossing or segment)	
SUBTOTAL	\$3,859,000
TOTAL CONSTRUCTION COST	
RIGHT-OF-WAY COSTS (Supplied by ODOT)	
TOTAL CROSSING/SEGMENT COST	
	\$10,124,000

Assumptions/Notes:

Four lanes with 6 ft bike/shoulder and 6 ft sidewalks.

Two existing tracks, so proposed bridge will be 3 track bridge - no access road.

Rock is close to surface, so retaining walls not needed. Assume drill and blast rock excavation.

Cul de sac 1st Street both sides of Olney.

Lowering grade on Olney will require 24 ft exc below extg footings of Parkway Oxing Olney. This may require strengthening of the rock supporting the footings. A cost for rock bolting has been included.

Note: Lowering of Olney requires excavation of about 24' below footing of Parkway Over Olney. There may be a need for strengthening of the rock supporting the footings.



DAVID EVANS
AND ASSOCIATES INC.
333 Commercial Street, Suite 100
Salem, Oregon 97301
Phone: 503.391.6925

OLNEY AVE

DRAFT

650' approach - lower grade = rock excavation, no walls

75' x 80' Bridge

650' approach - lower grade = rock excavation, no walls

Proposed new facility to accommodate future widening of Parkway

Cul de Sac

Crossing 10A-000.45

Wilson Ave., Bend -- Overcrossing

RATIONALE: Wilson Ave. intersects Centennial St. about 200 ft. to west and 9th St. about 400 feet to east of the RR. The grades are relatively flat along Wilson so an over crossing appears to be the best solution.

Centennial and 9th St. would need to be raised to meet the profile of a new overcrossing or cul de sacs constructed. The City indicated 9th St. is to remain open and cul de sac Centennial, 6th St and Douglas St. Raising the profile of Wilson would severely impact access to several residences and businesses.

DAVID EVANS AND ASSOCIATES, INC.

SUMMARY COST ESTIMATE

PROJECT: ODOT0000608 Central Oregon Rail Plan		Terry Shike/503-361-8635			
CROSSING NO:		Wilson Avenue			
RAIL SEGMENT IDENTIFICATION:		RAIL SEGMENT LENGTH:			
NO.	ITEM	UNIT	QUANTITY	UNIT COST	TOTAL
	Bridge 113' x 75'	ft2	8475	\$165	\$1,398,375
	MSE Retaining Walls	ft2	97643	\$100	\$9,764,300
	Embankment	yd3	61386	\$15	\$920,790
	Paving	ft2	199200	\$10	\$1,992,000
	Sidewalks	ft2	38100	\$10	\$381,000
	Cul de sacs	each	4	\$25,000	\$100,000
SUBTOTAL					\$14,556,465

ADDITIONAL COSTS	
Utility Allowance	\$100,000
Design/Surveying (10%)	\$1,455,647
Constr.Engr./Contingency (50%)	\$7,278,233
Special Costs (Unique to crossing or segment)	
SUBTOTAL	\$8,833,879
TOTAL CONSTRUCTION COST	
RIGHT-OF-WAY COSTS (Supplied by ODOT)	
TOTAL CROSSING/SEGMENT COST	
\$23,390,344	

Assumptions/Notes:

- Four lanes, with 6 ft bike/shoulder and 6 ft sidewalks.
- Retaining walls each side to reduce ROW costs.
- Raise 9th St. 22.8 ft both side of Wilson - 54 ft width west and 40 ft width east.
- Need retaining walls each side of 9th St., use maximum grade of 6%.
- Cul de sac Centennial and 6th St., both sides of Wilson.
- Raise Douglas Sat. 3.5 ft each side of Wilson, 40 ft width.
- Raise Business Way 1.1 ft east side of Wilson, 40 ft width.
- Access to multiple businesses/residences will be cut off due to raising grades of Wilson & 9th.
- Existing profile along Wilson varies 3700 to 3708 ft - ignore this effect on cost estimate.

Crossing 10A-001.00

Reed Market Rd., Bend -- Overcrossing

RATIONALE: Reed Market Rd intersects 9th St. about 300 ft. to the east and American Lane about 250 ft. to the west of the RR. There are commercial buildings on each side of Reed Market Rd. A standard overcrossing is feasible, except that the intersecting streets will have to be raised to accommodate the overcrossing. The City is estimating the cost of this crossing.

Crossing 10A-003.29

Country Club Rd., Bend -- Undercrossing

RATIONALE: Country Club Road curves to the left. toward the west and drops in elevation approximately 20 ft.. There is an access road about 1000 ft. to the north that will be affected by the approach if an overcrossing is selected. Country Club Road is tangent to the east and drops a few feet. It intersects Mountain High Rd about 180 feet to east and an access driveway to a utility about 400 ft. to the north of the RR. An overcrossing was considered but determined to be impractical due to length of the north approach required by the 20 foot drop in elevation. An undercrossing (lowering Country Club Rd) is feasible. Due to presence of rock near the surface, rock excavation without retaining walls is feasible. Mountain High Rd will need to be lowered to meet the profile of the lowered Country Club Rd. The access road to the utility can be regraded with no walls.

DAVID EVANS AND ASSOCIATES, INC.

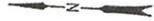
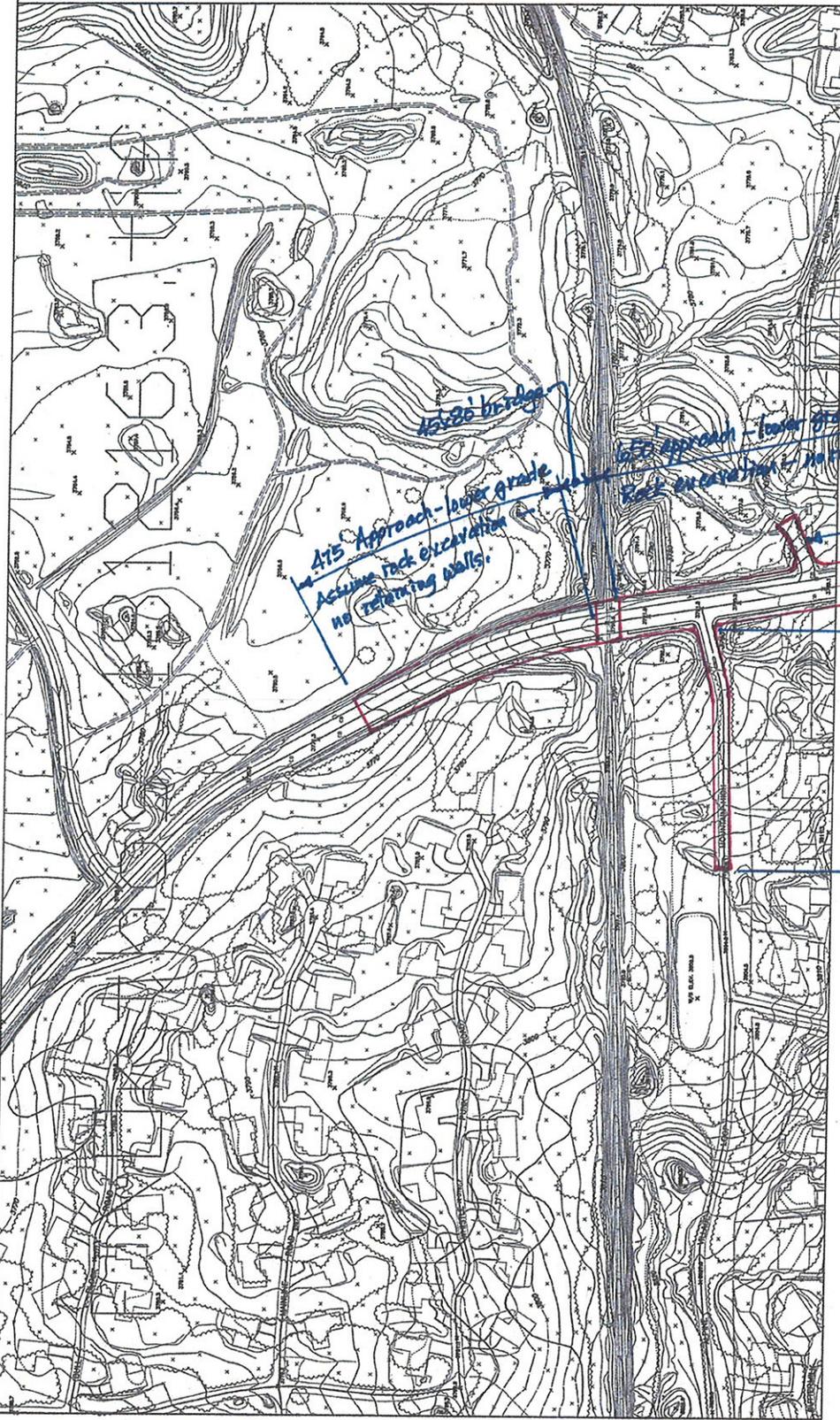
SUMMARY COST ESTIMATE

PROJECT: ODOT0000608 Central Oregon Rail Plan	Terry Shike/503-361-8635				
CROSSING NO:	Country Club Road - Uxing RR by lowering road				
RAIL SEGMENT IDENTIFICATION:	RAIL SEGMENT LENGTH:				
NO.	ITEM	UNIT	QUANTITY	UNIT COST	TOTAL
	Bridge 80' x 45'	ft2	3600	\$635	\$2,286,000
	Excavation	yd3	45000	\$20	\$900,000
	Paving	ft2	85000	\$10	\$850,000
	Sidewalks	ft2	16300	\$10	\$163,000
	Cul de sacs	each	0	\$25,000	\$0
SUBTOTAL					\$4,199,000

ADDITIONAL COSTS	
Utility Allowance	\$100,000
Design/Surveying (10%)	\$419,900
Constr. Engr./Contingency (50%)	\$2,099,500
Special Costs (Unique to crossing or segment)	
SUBTOTAL	\$2,619,400
TOTAL CONSTRUCTION COST	
RIGHT-OF-WAY COSTS (Supplied by ODOT)	
TOTAL CROSSING/SEGMENT COST	
	\$6,818,400

Assumptions/Notes:

- Four lanes with 6 ft bike/shoulder and 6 ft sidewalks.
- Rock is close to surface, so retaining walls not needed - assume drill and blast rock excavation.
- Lower Mountain High Rd. 18.3 ft west side of Country Club, 30 ft width.
- Mountain High, use max grade 8% to eliminate impact to reservoir.
- Access to utility on SE side already lower than Country Club, can excavate/flatten grade.
- Aerial topo only extends 440 ft from RR, so guessing about impacts beyond topo.



COUNTRY CLUB ROAD

DRAFT

access to utility -
 on existing close grade,
 So excavation will flatten
 grade. - no walls

400' - lower grade
 rock excavation -
 No retaining walls

Crossing 10A-004.40

China Hat Rd., Bend -- Overcrossing

RATIONALE: China Hat Rd. intersects with a driveway about 600 feet northwest of the RR and another driveway or local road about 800 ft. southwest of RR. A surface drainage detention pond is in the SE quadrant of the intersection with the RR. This appears to be a standard overcrossing, except that the intersecting streets will have to be raised to accommodate the overcrossing.

DAVID EVANS AND ASSOCIATES, INC.

SUMMARY COST ESTIMATE

PROJECT: ODOT0000608 Central Oregon Rail Plan		Terry Shike/503-361-8635			
CROSSING NO:		China Hat Road (USFS Road 18)			
RAIL SEGMENT IDENTIFICATION:		RAIL SEGMENT LENGTH:			
NO.	ITEM	UNIT	QUANTITY	UNIT COST	TOTAL
	Bridge 106' x 75'	ft2	7950	\$165	\$1,311,750
	MSE Retaining Walls	ft2	78077	\$100	\$7,807,700
	Embankment	yd3	67247	\$15	\$1,008,705
	Paving	ft2	165900	\$10	\$1,659,000
	Sidewalks	ft2	29550	\$10	\$295,500
	Cul de sacs	each	0	\$25,000	\$0
SUBTOTAL					\$12,082,655

ADDITIONAL COSTS	
Utility Allowance	\$100,000
Design/Surveying (10%)	\$1,208,266
Constr.Engr./Contingency (50%)	\$6,041,328
Special Costs (Unique to crossing or segment)	
SUBTOTAL	\$7,349,593
TOTAL CONSTRUCTION COST	
RIGHT-OF-WAY COSTS (Supplied by ODOT)	
TOTAL CROSSING/SEGMENT COST	
	\$19,432,248

Assumptions/Notes:

- Four lanes with 6 ft bike/shoulder and 6 ft sidewalks.
- Retaining walls each side to reduce ROW costs.
- Raise access road located about 600 ft NW 18.8 ft, - 40 ft width.
- See note next page for impact of grade change along China Hat Road.

The existing profile along China Hat Rd varies from 3864 ft at the crossing to 3854 about 870 ft NW of the crossing. The drop in grade will extend this approach about 500 feet and increase the approach quantities. However, the grade south of the crossing rises in elevation and reduces the approach length to about 860 ft, stopping short of the access roads. The quantities almost balance out compared to a crossing with a flat grade, but the ROW impacts are quite different. Ignore the grade change in construction cost but consider it in ROW cost..

Crossing 10A-005.60

Baker Rd., Bend -- Overcrossing

RATIONALE: Baker Rd intersects US97 approximately 600 feet to the east of the RR and is carried over US97 on a structure. The profile of this bridge will not match the needed profile over RR, therefore the bridge must be replaced. Assume the new overcrossing would be adjacent and to the north of the existing one. There are on/off ramps to US 97 that will need to be raised to match the profile of the overcrossing. There are approach streets to Baker Rd on the west side, which also must be raised to meet the new profile, rerouted or access stopped with a cul de sac.

DAVID EVANS AND ASSOCIATES, INC.

SUMMARY COST ESTIMATE

PROJECT: ODOT0000608 Central Oregon Rail Plan		Terry Shike/503-361-8635			
CROSSING NO:		Baker Rd, Oxing of BNSF, US97			
RAIL SEGMENT IDENTIFICATION:		RAIL SEGMENT LENGTH:			
NO.	ITEM	UNIT	QUANTITY	UNIT COST	TOTAL
	RR Bridge 100' x 86'	ft2	8600	\$165	\$1,419,000
	US 97 Bridge, 200' x 86'	ft2	17200	\$165	\$2,838,000
	MSE Retaining Walls	ft2	115,000	\$100	\$11,500,000
	Embankment	yd3	100000	\$15	\$1,500,000
	Paving	ft2	287,000	\$10	\$2,870,000
	Sidewalks	ft2	26000	\$10	\$260,000
	Cul de sacs	each	3	\$25,000	\$75,000
SUBTOTAL					\$20,462,000

ADDITIONAL COSTS	
Utility Allowance	\$100,000
Design/Surveying (10%)	\$2,046,200
Constr.Engr./Contingency (50%)	\$10,231,000
Special Costs (Unique to crossing or segment)	
SUBTOTAL	\$12,377,200
TOTAL CONSTRUCTION COST	
RIGHT-OF-WAY COSTS (Supplied by ODOT)	
TOTAL CROSSING/SEGMENT COST	
	\$32,839,200

Assumptions/Notes:

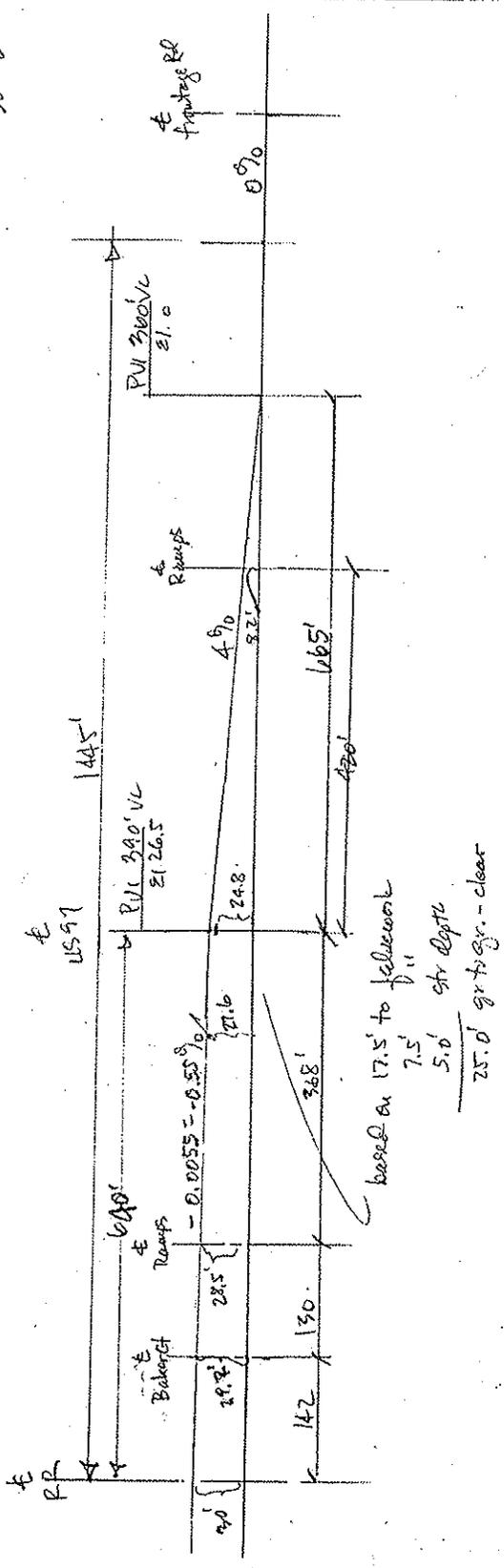
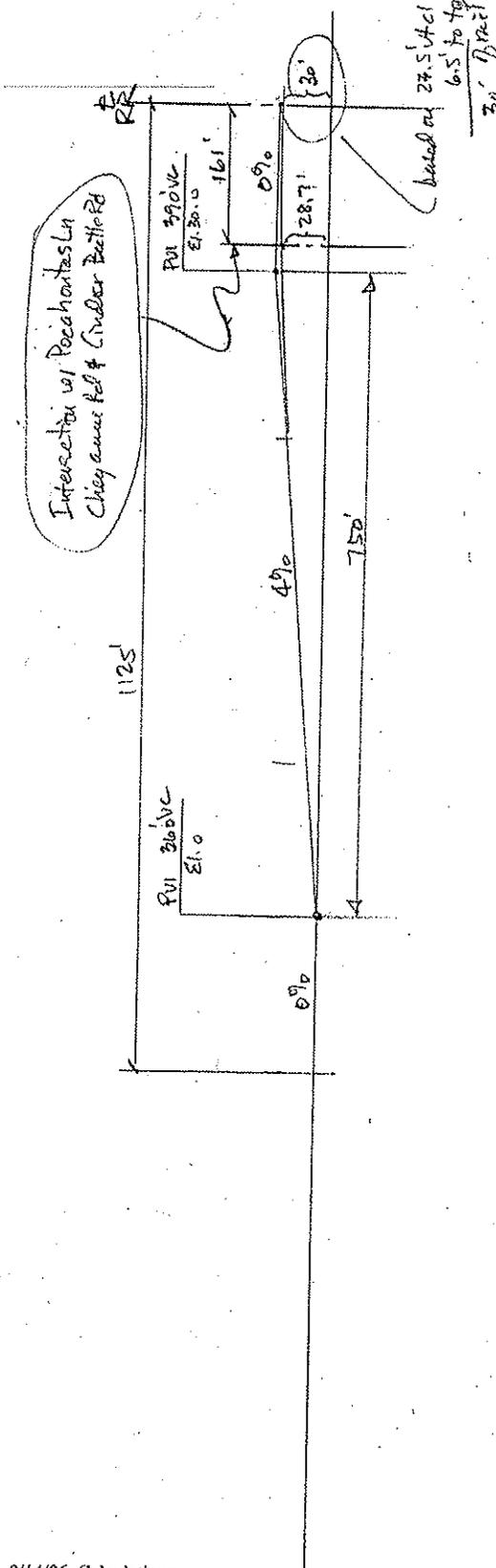
- Four lanes, median with 6 ft bike/shoulder and 6 ft sidewalks.
- Retaining walls each side to reduce ROW costs. May be less cost to use embankment.
- Span across RR and US 97 - remove existing US97 bridge to match new gradeline.
- Raise existing on/off ramps - west ramps raise 24 feet - east ramps 4 ft - MSE walls each side.
- Cul de sac intersecting local streets - maybe reconnect these streets toward the west.
- Estimate based on rough lengths between features from attached sketch.
- Profile is an estimate - assuming 0% grade along the existing ground.



DAVID EVANS
AND ASSOCIATES INC.

JOB DESCRIPTION Baker Rd.
CALCULATION FOR _____

JN. _____
BY TJSH DATE 5/15/08
SHEET _____ OF _____ SHEETS
CHECKED BY _____ DATE _____



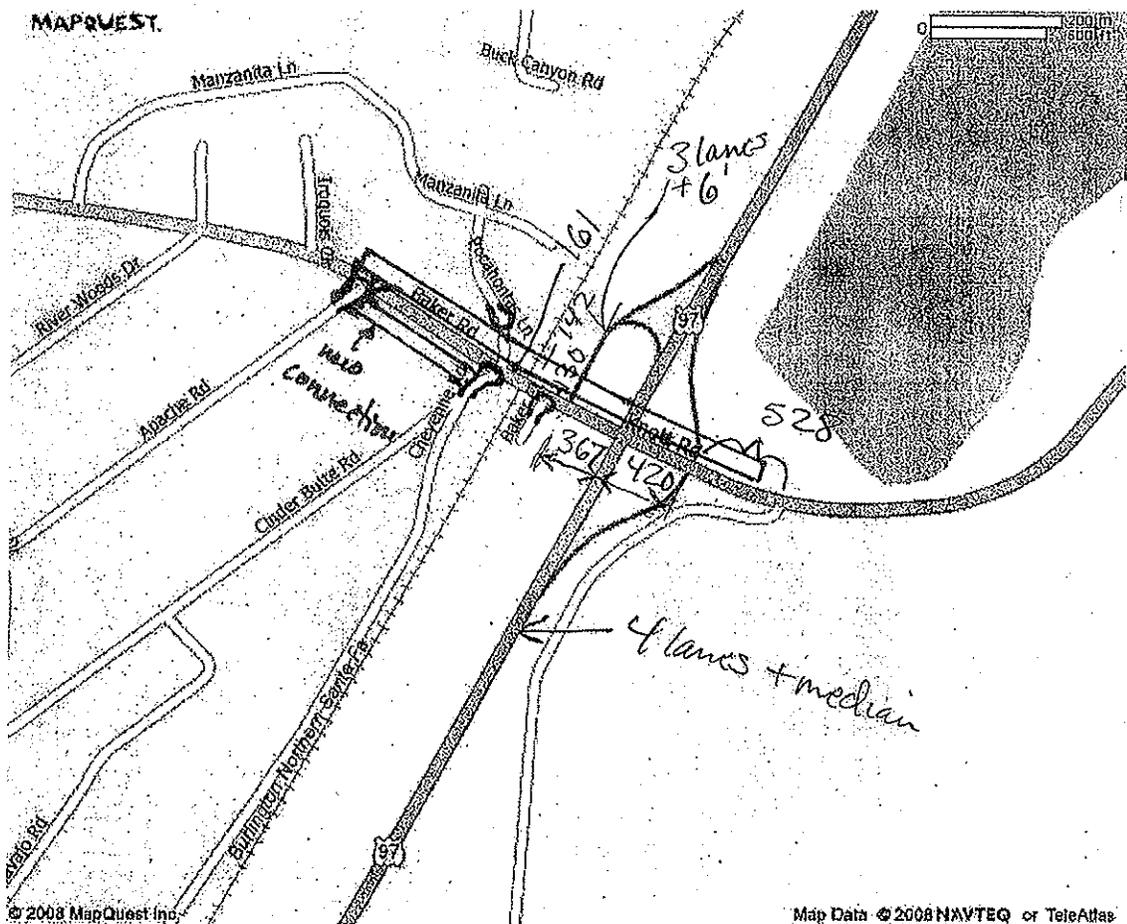
based on 17.5' to full curve
7.5' str depth
5.0' str depth
25.0' gr to gr. - clear

$$1.95 \times 0.0055 = 1.07$$

$$\left(\frac{.04 + .0055(195)}{2(300)} \right) = 1.68 - 1.68$$

$$\frac{26.5}{1.68} = 15.78$$

$$\frac{24.82}{1.68} = 14.82$$



Directions and maps are informational only. We make no warranties on the accuracy of their content, road conditions or route usability or expeditiousness. You assume all risk of use. MapQuest and its suppliers shall not be liable to you for any loss or delay resulting from your use of MapQuest. Your use of MapQuest means you agree to our [Terms of Use](#)

Crossing 10A-012.10

Benham Falls Road/USFS Road 9702 – Undercrossing

RATIONALE: Benham Falls Road is a paved Forest Service road that provides access from Highway 97 to a parking lot near the Deschutes River with access to Benham Falls. The road generally slopes downhill to the river. There are other dirt Forest Service roads that connect to this paved road near the tracks. These dirt Forest Service roads will need to be relocated. Since the road west of the tracks slope away from the tracks at a grade of approximately 4% and the road slopes slope toward the tracks on the east side at a grade of approximately 2%, an undercrossing is proposed. It would take a very long distance to get the road back to the existing road grades on the west side of the tracks with an overcrossing.

DAVID EVANS AND ASSOCIATES, INC.

SUMMARY COST ESTIMATE

PROJECT: ODOT0000630 Central Oregon Rail Plan	Engineer Name/Phone: Jim Dobrowski / 541.389.7614
CROSSING NO: 29, ODOT 066839Y	LOCATION: Benham Falls Road / USFS Rd 9702 Deschutes County
RAIL SEGMENT IDENTIFICATION: 10A-012.10	RAIL SEGMENT LENGTH:

NO.	ITEM	UNIT	QUANTITY	UNIT COST	TOTAL
1	Mobilization	LS	1	\$360,000	\$360,000
2	Selective Demolition	LS	1	\$150,000	\$150,000
3	Gravel access	LS	1	\$30,000	\$30,000
4	RR Bridge 100' x 45'	SF	4500	\$165	\$742,500
5	Excavation	CY	80000	\$20	\$1,600,000
6	Paving	SF	45600	\$10	\$456,000
SUBTOTAL					\$3,338,500

ADDITIONAL COSTS

Utility Allowance	\$50,000
Engineering/Surveying (10%)	\$333,850
Construction Engr./Contingency (50%)	\$1,669,250
Special Costs (Unique to crossing or segment)	
SUBTOTAL	\$2,053,100

TOTAL CONSTRUCTION COST

RIGHT-OF-WAY COSTS (Supplied by ODOT)	\$10,000
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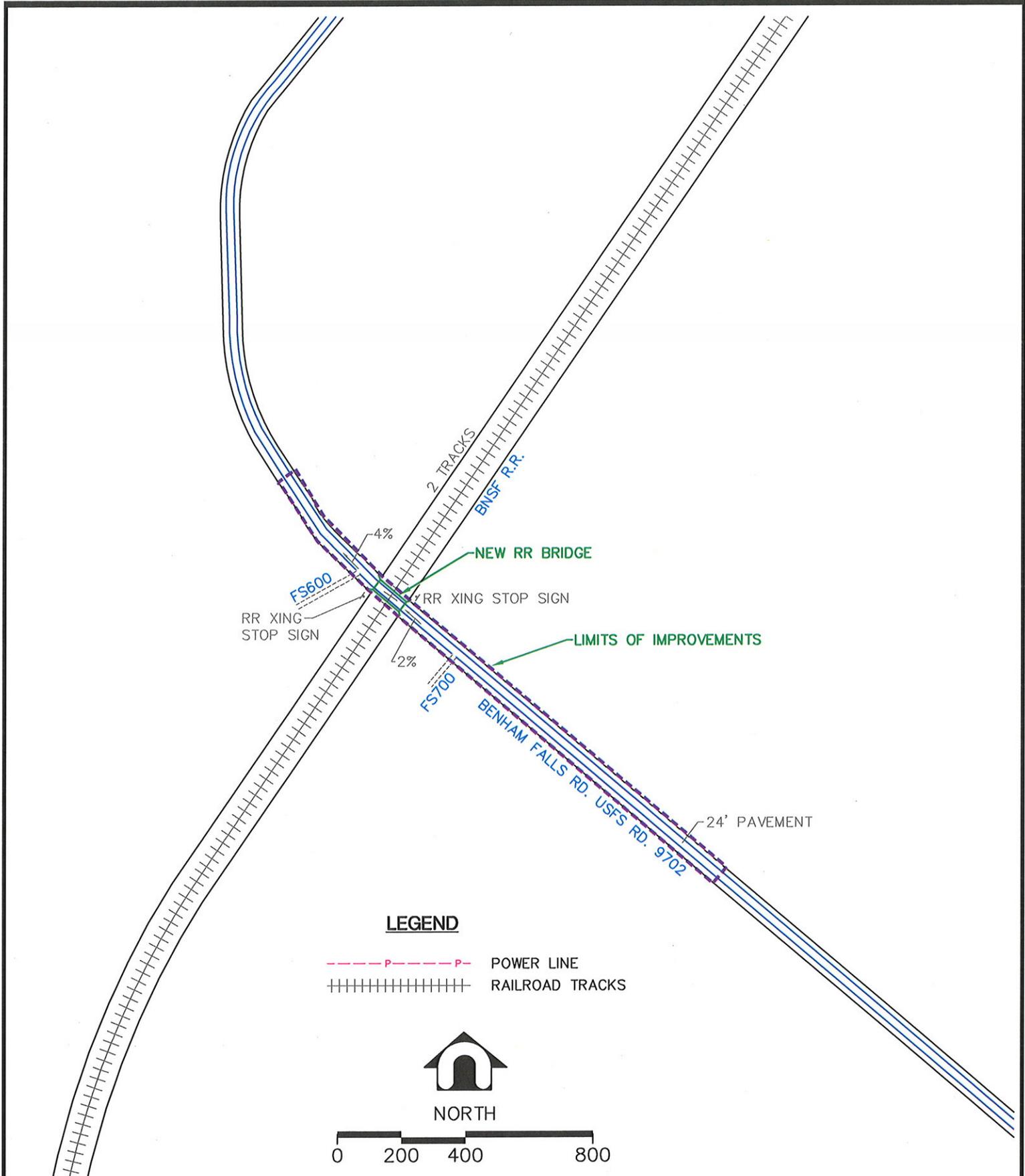
TOTAL CROSSING/SEGMENT COST **\$5,401,600**

Assumptions/Notes:

Bridge to provide for 2 tracks

RR bridge span 100', 45' wide

24 ft. wide existing pavement, 24 ft. wide pavement for road improvements



P:\O\ODOT\0000630\0400CAD\EC\SHEETS\029-ODOT-0630-Benham Falls Rd.dwg Apr 22,2009 - 9:14am jjd

scale	1"=400'	design	JJD
date	11.14.08	drawn	WXS
file			



**DAVID EVANS
AND ASSOCIATES INC.**
320 SW Upper Terrace Drive, Suite 200
Bend, Oregon 97702 (541) 389-7814

CROSSING NO. 29
CROSSING ID 10A-012.80
USDOT NO. 066839Y
N 43°55'26" W -121°24'48"
LAVA
DESCHUTES COUNTY, OREGON