

CONFIDENTIAL MEMORANDUM

NAMED RECIPIENTS: E-470 Public Highway Authority Board of Directors

AUTHOR: George Allen

SUBJECT: Master Plan Capital Projections and Cash Flow Projections

DATE: May 22, 2018

INTRODUCTION

As you may know, I perform citizen oversight of local governments with an emphasis on business, tax and financial issues and problems. Since December 2016, E470 has been one of my oversight projects. This memorandum addresses the capital project cost projections in the E470 Master Plan. In June 2017, I informed the E470 Board that all of its long-term planning work needed to be redone and tolls needed to be frozen until that work was completed. In December 2017, E470 published a Master Plan document which included capital project cost estimates. E470's capital project costs are a vital component of the long-term enterprise cash flow and the decision-making process for setting tolls between 2018 and 2040. Here is Table 12 from the Master Plan.

Table 12. Summary of Master Plan Costs: 2018-2040

Description	Total (Completion year \$)
Roadway Improvement Projects	\$1,187M
Trail Completion	\$ 34M
Renewal & Replacement	\$ 554M
Pavement Overlays	\$ 20M
Total thru 2040	\$1,795M

As part of the toll setting decision process, these cost estimates need to be scrutinized and analyzed. But before any analysis or recommendations can be made, there are some threshold issues with E470's documents and data. This memo presents some of those issues.

\$554 MILLION RENEWAL AND REPLACEMENT COSTS

My question is whether these projected costs can withstand public scrutiny. The software/hardware costs and facility repair costs are \$250 million and \$67 million, respectively. In comparison to other government entities and businesses of a similar size and scope, these cost estimates are wildly excessive. As of year-end 2017, the total E470 investment in software, furnishings, improvements and other fixed assets is only \$35 million. It is beyond excessive that E470 proposes spending another \$250 million on just "Software and Hardware Upgrades." As I have stated in the past, E470 has bloated budgets and is not careful with public money. This is just another example. The estimate for Facility

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Repairs and Upgrades is \$67 million which is equally absurd compared to the total E470 investment in buildings of \$24 million.

But there is a more basic issue with the Renewal and Replacement cost estimate. On Table 11, which I have attached, the row titles do not line up with the correct numbers. Since this silly error appears in the final Master Plan document approved by the E470 Board of Directors, it means I am the first person to review and analyze this cost estimate. Table 11 is a core data set supporting \$554 million of future spending of hard-earned money collected from E470 customers. It appears E470 has not even looked at this schedule, otherwise E470 would have seen the error in Table 11 and corrected it. Because the numbers are excessive, and because E470 has not even looked at Table 11, these cost estimates have zero credibility. I review E470’s documents as a high-level, outside, part-time, volunteer community service, and yet it is my review and analysis that raises issues and catches errors.

\$1,187 MILLION ROADWAY IMPROVEMENT PROJECTS

E470 has estimated \$831 million for the cost of future roadway improvement projects in 2017 dollars, which is then escalated for inflation to \$1,187 million in future dollars. These projects and costs are summarized in Table 10 of the Master Plan which I have attached.

From Appendix D of the Master Plan, I have attached the PENA Opinion of Probable Construction Costs with more silly, clerical errors highlighted. Again, it appears E470 is not reviewing and analyzing its core cost projection data supporting over a billion dollars of E470 spending.

But the larger issue is the unit prices used in the E470 cost estimates. I compared the E470 unit costs to CDOT’s unit cost estimates for the I25 South Gap road widening projects. Here is a summary.

COST CATEGORY	UNITS	CDOT I25	E470
		SOUTH GAP	MASTER PLAN
EARTH WORK	CY	\$11.80	\$10.00
ROADWAY BRIDGE	SF	\$129	\$135 AND \$200
WALLS	SF	\$59	\$200
CONTINGENCIES	COST RATIO	6.5%	30.0%
SIGNAGE AND STRIPING	COST RATIO	3.0%	5.0%
CONST SIGNS AND TRAFFIC CONTROL	COST RATIO	14.9%	10.0%
LIGHTING	COST RATIO	2.4%	5.0%
MOBILIZATION	COST RATIO	20.0%	18.0%
DESIGN ENGINEERING	COST RATIO	7.0%	10.0%
CONST ENGINEERING	COST RATIO	11.0%	15.0%
MINOR CONSTRUCTION REVISION	COST RATIO	3.0%	15.0%

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The E470 unit cost estimates are consistently higher than CDOT. I acknowledge some possible non-comparability between definitions of cost categories between the two entities. However, the differences are quite large, and E470's costs are consistently higher. Plus, E470 does have a pattern of bloated cost budgets, understated revenue forecasts, inaccurate planning documents, conceptual errors, silly errors and excessive tolls. Although it is premature to form a conclusion, these factors cast more doubt on the credibility of the Roadway Improvement Cost Estimate. This data set needs to be subjected to the full analytical power and scrutiny of the public before it becomes the basis for any toll increases.

E470 2018 PROJECTED CASH FLOWS AND DEBT SERVICE COVERAGE

E470 prepared a projected cash flow analysis in 2016, and an updated projected cash flow in 2018. I have presented a comparison of the two projections below for 2018 through 2041.

E470 UNRESTRICTED FUNDS ESTIMATE 2018 TO 2041			
		2016 PROJECTION	2018 PROJECTION
Operating Revenues:			
Toll Revenue, net of uncollectible and unbillable tolls	a	9,206,161,000	10,930,382,000
Toll Fees Revenue, net		179,580,000	290,250,000
Interest Income		178,500,000	117,600,000
Tolling Services Revenue and Other Income		174,925,000	295,824,000
VRF Fees		6,939,000	7,125,000
Total Operating Revenues:		9,746,105,000	11,641,181,000
<i>Less:</i>			
Operating Expenses	b	2,515,549,805	1,959,466,000
VRF Debt Service Due		-	-
Net Revenues		7,230,555,195	9,681,715,000
Less: Senior Debt Service and Swaps Due	c	2,806,315,520	2,740,183,800
Funds Available After Debt Service		4,424,239,675	6,941,531,200
Less Uses of Funds			
Capital and R&R Expenditures	d	1,731,634,700	1,863,114,600
Future Debt Structuring Uses			2,000,000
Net Funds to Unrestricted		2,692,604,975	5,076,416,600
Plus December 2017 Unrestricted Funds		166,349,900	219,832,000
Equals Ending Unrestricted Fund Balance		2,858,954,875	5,296,248,600
a	2016 revenue projection is based on the E470 2014 T&R Study Table 5.8		
	2018 revenue projection is based on the E470 2017 T&R Study Table 10 "New Toll Structure"		
b	2016 operating expense projection is based on a 5.0% annual increase		
	2018 operating expense projection is based on a 3.0% annual increase		
c	Senior debt service is based on the current maturity structure		
d	2016 capital expenditures are based on a flat \$75 million per year after 2021		
	2018 capital expenditures are based on the December 2017 E470 Master Plan		

In June 2017, I issued a memorandum to the E470 Board stating that E470 needed to re-do all its long-term plans and freeze tolls because of \$3.0 billion of accumulated excess cash in the 2016 projected cash flow analysis. The purpose of those recommendations was to lower the E470 revenue growth curve and stop E470 from extracting so much excess revenue from the toll-paying customers. In 2018, E470 now has a master plan, an updated capital expenditure projection, a T&R report and a new toll structure. In 2018, E470 has updated its projected cash flow to include all these new projections.

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Unfortunately, with the new T&R report and the new projected cash flow, the revenue growth curve has moved upward and the accumulated cash in 2041 is now a shocking \$5.3 billion compared to \$2.9 billion excess accumulated cash in the 2016 projection. As I have stated in the past, E470 is an organization far off course.

FUTURE TOLL INCREASES SUBJECT TO BOARD APPROVAL

The 2018 Projected Cash Flow has a note that says “Toll rates after 2020 are subject to Board approval as the current toll rate structure and policy is effective for the period 2018 to 2020.” When the Board issues cash flow projections that show a \$5.3 billion excess cash, and then state that revenue is “subject to Board approval”, it means that money is up for grabs. Maybe E470 will get the money for its luxurious and excessive spending plans. Or maybe the E470 customers will get to keep that money. However, given all the data, studies, plans and documents supporting the \$5.3 billion accumulated cash, “Board approval” is not sufficient protection from being overcharged by E470. E470’s pattern of policy errors, poor business decisions, document errors, conceptual errors, and silly errors are sufficient cause to believe the Board may not protect the toll paying public from being overcharged. After all, the Board approved excessive annual toll increases to make E470, a 47-mile toll road on mostly flat terrain, one of the most expensive toll roads in the nation. The Board also approved the convoluted, uneven debt structure that it now strives to make level. The Board approved the costly interest rate swap. The Board approved the toll study and the master plan and the implied cash flows therein. And remember, E470 sent me a completely erroneous legal letter in December 2017 suggesting I was violating federal securities laws by communicating with E470 about its financial issues, problems and errors. Based on the patterns I observe, the condition of future “Board approval” is not sufficient protection against future toll increases.

Therefore, in preparation for the future debate about E470 toll increases, I have created competing cash flow projection which I will present in a side-by-side comparison to the E470 cash flow tables shown above. My model shows that if E470 kept tolls frozen at 2018 levels through 2041, the excess accumulated cash would be \$3.9 billion. Even using all E470’s assumptions, the customers still are overcharged if the toll rates are constant through 2041. It is shocking how far the E470 projections are from reality. Over time, E470 will come to realize that future tolls cannot remain constant, and ultimately must decrease. As usual, I will be advocating for the protection of the taxpayer and toll-paying customer by opposing E470’s excessive spending and lavish ways. I will make the case to the public and to E470 customers for lower tolls, while providing sufficient cash flow for a safe highway, necessary capital projects and payment of debt principal, interest and accretion.

CONCLUSION

In the past, I have stated that E470 is a gold mine with excessive tolls, bloated budgets and luxurious spending plans. Remember, the other taxpayers and I have to fund all the government entities in our lives from Washington down to the local government, special districts and authorities. If all our

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government entities spent money like E470, the private sector of the economy would be smothered. It is essential for the health and vitality of the overall economy that the government sector be contained.

E470 is a business being run by government with government methods and tools. Basic business methods, tools, documents, and processes, E470 does not even have, like a SWOT analysis, a strategic plan, a forward-looking balance sheet, a pro forma credit rating model, an integrated business model, a formal debt management plan (other than a few presentation slides) and a formal derivative management policy. E470's projected cash flow model, which I addressed in this memo, has additional conceptual flaws which I will explain in the future. Plus, E470 has a pattern of mistakes, both large and small, which the organization does not seem to be aware of until I point them out. I find it almost beyond belief that one citizen, performing a government oversight project from a high-level, outside perspective, can detect so many issues and problems. I have additional financial and management errors and problems that have come to my attention, but I have not yet reported to the Board. E470 needs to change its strategic direction by becoming austere and parsimonious, by managing a forward-looking balance sheet and cash flow, and by making repayment of debt the top priority followed by reduction of tolls. So, I will continue to be an outside agent of change by performing this citizen oversight community service. And I think citizen oversight of government is necessary and healthy when a government entity is so far off course. And as Warren Buffett and Charlie Munger taught us, change always comes from the outside and is always resisted from the inside.

COLORADO OPEN RECORDS DOCUMENT REQUEST

I request the following E470 documents:

1. Final trial balance of general ledger accounts with amounts as of year-end 2017 and 2016.
2. Workpaper, document, analysis or calculation supporting the Swap Differential amounts of \$4,849,313 for 2016 and \$4,332,633 for 2017 as shown in the E470 Debt and Swap Summary.

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Act to the E-470 Public Highway Authority with respect to this memorandum and the E-470 government oversight project.

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Table 10. Capital Improvement Projects with Cost Inflation

Capital Improvement Projects (in thousands)		PPI Index* 2.1%					Value in Future Year			
Location		Base Year	2017	2023	2026	2029	2032	2035	2040	Total
Interchange: Quebec, 120th, 56th, Quincy, Gannett	Signalize ramp terminal Intersections	\$2,000								\$2,000
Pavement Overlay - I-25 to Parker Road	Overlay - Not FHU	\$7,930		\$7,930						\$7,930
Pavement Overlay - I-76 to I-25	Overlay - Not FHU	\$10,000		\$12,057						\$12,057
Multi-Use Trail - Limited to Widening	ESTIMATE - not FHU	\$27,000		\$7,930		\$12,632		\$14,537		\$35,299
Quincy to I-70	Widen lanes from 4 to 6	\$94,000		\$106,483						\$106,483
Interchange: Quincy	Interchange Improvements	\$7,930		\$7,930						\$7,930
Interchange: Jordan	Interchange Improvements	\$1,133		\$1,133						\$1,133
Interchange: Chambers	Interchange Improvements	\$4,500		\$5,098						\$5,098
Interchange: Quebec	Interchange Improvements	\$4,250		\$5,124						\$5,124
64th Ave	Signalize ramp terminal Intersections	\$500		\$603						\$603
I-70 to Pena	Widen lanes from 4 to 6	\$70,000		\$89,827						\$89,827
Pena to I-76	Widen lanes from 4 to 6	\$96,000		\$123,191						\$123,191
Interchange: Pena	Separate Northbound Auxiliary Lanes	\$20,000		\$25,665						\$25,665
Interchange: York, Colorado, 6th, Jewell	Signalize ramp terminal Intersections	\$2,000		\$2,566						\$2,566
I-25 to Parker	Widen lanes from 6 to 8	\$17,000		\$23,219						\$23,219
Parker to Smoky Hill	Widen lanes from 6 to 8	\$16,000		\$21,853						\$21,853
Smoky Hill to I-70	Widen lanes from 6 to 8	\$29,000		\$42,156						\$42,156
I-76 to US 85	Widen lanes from 4 to 6	\$37,000		\$53,785						\$53,785
US 85 to I-25(N)	Widen lanes from 4 to 6	\$103,000		\$149,727						\$149,727
Interchange: 64th	Interchange Improvements	\$3,750		\$5,451						\$5,451
Interchange: Jewell	Interchange Improvements	\$3,750		\$5,451						\$5,451
Interchange: Parker	Interchange Improvements	\$1,750		\$2,544						\$2,544
Pena to I-76	Widen lanes from 6 to 8	\$23,000		\$37,095						\$37,095
Interchange: York	Interchange Improvements	\$1,750		\$2,822						\$2,822
Interchange: Colorado	Interchange Improvements	\$3,250		\$5,242						\$5,242
Interchange: 104th	Interchange Improvements	\$1,750		\$2,822						\$2,822
Interchange: 56th	Interchange Improvements	\$1,750		\$2,822						\$2,822
Interchange: 6th	Interchange Improvements	\$3,750		\$6,048						\$6,048
Interchange: Gannett	Interchange Improvements	\$5,000		\$8,064						\$8,064
Interchange: Peoria	Interchange Improvements	\$1,750		\$2,822						\$2,822
Interchange: I-76	Add missing ramps	\$105,000		\$169,349						\$169,349
Interchange: I-70, Piccadilly, Harvest	Interchange Improvements, New Interchange	\$101,000		\$162,897						\$162,897
Interchange: Potomac	New Interchange	\$20,000		\$32,257						\$32,257
Interchange: 38th and/or 48th	New Interchange	\$20,000		\$32,257						\$32,257
Interchange: 88th	New Interchange	\$15,000		\$24,193						\$24,193
Interchange: 112th	New Interchange	\$15,000		\$24,193						\$24,193
Total Roadway Improvements (Excluding Overlay and Trails)		\$874,500		\$136,503	\$17,784	\$254,082	\$45,071	\$273,652	\$512,884	\$1,241,976
Total Roadway Improvements (Including Overlay and Trails)		\$830,500		\$136,503	\$17,784	\$254,082	\$45,071	\$273,652	\$512,884	\$1,186,691

PPI Index is based on a five year average of the Final Demand Construction Producer Price Index (PPI) from the Bureau of Labor Statistics website spanning January 2012 through October 2017.



Table 11. Renewal and Replacement Cost Summary

Producer Price Index [*]	Factor applied in 2023* from 2022 figures											
	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Renewal and Replacement												
Structure Maintenance	\$ 552,500	\$ 535,000	\$ 435,000	\$ 385,000	\$ 385,000	\$ 393,000	\$ 401,000	\$ 409,000	\$ 419,000	\$ 427,000	\$ 436,000	\$ 445,000
Electrical Repairs and Lighting	276,000	276,000	276,000	226,000	226,000	129,000	132,000	135,000	138,000	141,000	144,000	147,000
Sign Replacement	150,000	150,000	150,000	200,000	200,000	204,000	208,000	212,000	216,000	221,000	225,000	231,000
Pavement Replacement	670,000	570,000	420,000	420,000	420,000	429,000	438,000	447,000	456,000	466,000	476,000	486,000
Roadway Markings	300,000	300,000	300,000	300,000	300,000	306,000	312,000	319,000	326,000	333,000	340,000	347,000
Roadway Infrastructure and Support	665,000	900,000	450,000	850,000	430,000	439,000	448,000	457,000	467,000	477,000	487,000	497,000
Transponder Replacement	454,000	592,800	576,400	607,000	675,000	689,000	703,000	718,000	733,000	748,000	764,000	780,000
Facility Repairs and Upgrades	2,396,500	3,630,000	1,170,000	6,330,000	2,330,000	2,379,000	2,429,000	2,480,000	2,532,000	2,585,000	2,639,000	2,694,000
Software and Hardware Upgrades	4,260,000	8,890,000	10,875,000	10,010,000	9,365,000	9,562,000	9,765,000	9,968,000	10,177,000	10,381,000	10,595,000	10,832,000
Storage Environment	5,000	1,305,000	1,075,000	375,000	575,000	587,000	599,000	612,000	625,000	638,000	651,000	665,000
Vehicle Replacement	7,038,000	190,000	200,000	220,000	190,000	193,000	156,000	159,000	162,000	165,000	168,000	172,000
Fence Replacement	365,000	68,000	4,725,000	4,750,000	4,750,000	4,850,000	4,963,000	5,086,000	5,162,000	5,270,000	5,381,000	5,494,000
Landscape Maintenance	500,000	500,000	500,000	500,000	500,000	511,000	522,000	533,000	544,000	555,000	567,000	579,000
Subtotal Renewal and Replacement	\$ 17,700,000	\$ 22,826,900	\$ 21,270,400	\$ 25,241,000	\$ 20,274,000	\$ 20,700,000	\$ 21,133,000	\$ 21,576,000	\$ 22,028,000	\$ 22,481,000	\$ 22,964,000	\$ 23,447,000
Structure Maintenance												
Electrical Repairs and Lighting	\$ 454,000	\$ 464,000	\$ 474,000	\$ 484,000	\$ 494,000	\$ 504,000	\$ 515,000	\$ 526,000	\$ 537,000	\$ 548,000	\$ 560,000	\$ 560,000
Sign Replacement	150,000	153,000	156,000	159,000	162,000	165,000	168,000	172,000	176,000	180,000	184,000	184,000
Pavement Replacement	236,000	241,000	246,000	251,000	256,000	261,000	266,000	272,000	278,000	284,000	290,000	290,000
Roadway Infrastructure and Support	496,000	506,000	517,000	528,000	539,000	550,000	562,000	574,000	586,000	598,000	611,000	611,000
Transponder Replacement	354,000	381,000	389,000	377,000	365,000	363,000	401,000	409,000	418,000	427,000	436,000	436,000
Facility Repairs and Upgrades	507,000	518,000	529,000	540,000	551,000	563,000	575,000	587,000	599,000	612,000	625,000	625,000
Software and Hardware Upgrades	796,000	813,000	830,000	847,000	865,000	883,000	902,000	921,000	940,000	960,000	980,000	980,000
Storage Environment	2,751,000	2,809,000	2,868,000	2,928,000	2,989,000	3,052,000	3,116,000	3,181,000	3,248,000	3,316,000	3,386,000	3,386,000
TCS Modifications	11,059,000	11,291,000	11,528,000	11,770,000	12,017,000	12,269,000	12,527,000	12,790,000	13,059,000	13,333,000	13,613,000	13,613,000
Vehicle Replacement	679,000	693,000	708,000	723,000	738,000	753,000	769,000	785,000	801,000	818,000	835,000	835,000
Fence Replacement	5,609,000	5,727,000	5,847,000	5,970,000	6,095,000	6,223,000	6,354,000	6,487,000	6,623,000	6,762,000	6,904,000	6,904,000
Landscape Maintenance	176,000	180,000	184,000	188,000	192,000	196,000	200,000	204,000	208,000	212,000	216,000	216,000
Subtotal Renewal and Replacement	\$ 23,938,000	\$ 24,441,000	\$ 24,956,000	\$ 25,480,000	\$ 26,013,000	\$ 26,557,000	\$ 27,115,000	\$ 27,685,000	\$ 28,265,000	\$ 28,860,000	\$ 29,467,000	\$ 29,467,000

* PPI Index is based on a five year average of the Final Demand Construction Producer Price Index (PPI) from the Bureau of Labor Statistics website spanning January 2012 through October 2017.



PENA				FELSBURG HOLT & ULLEVIG CONSULTING AND ESTIMATING CORPORATION	
Opinion of Probable Construction Costs				Date Prepared:	December 13, 2017
Item	Unit	Unit Cost	Quantity	Extended Cost	Notes
1. Clearing and Grubbing	AC	\$3,400.00	5	\$17,000	
2. Removal of Asphalt Mat	SY	\$7.00	2,500	\$17,500	
3. Pavement - Hot Mix Asphalt	Ton	\$85.00	17,770	\$1,510,450	based on typical sections
4. ABC (Class 6)	Ton	\$27.00	15,755	\$425,385	based on typical sections
5. Curb and Gutter	LF	\$30.00		\$0	
6. Sidewalk	SY	\$55.00		\$0	6" depth
7. Wall	SF	\$200.00	8,000	\$1,600,000	Crusher fines
8. Bridge - Roadway	SF	\$200.00	20,140	\$4,028,000	
ROADWAY AND BRIDGE SUB-TOTAL				\$7,598,335	
				\$7,598,335	
		% Range	% Used	Cost	
Project Construction Bid Items		Project Dependent	N / A	\$7,598,335 (A)	
Earthwork		(10%) of (A)	10.0%	\$759,834 (B)	
Contingencies		(10 - 30%) of (A)	30.0%	\$2,279,501 (B)	
Minor Construction Revisions		(10 - 30%) of (A)	15.0%	\$1,139,750 (C)	
Irrigation		(1 - 2%) of (A)	0.0%	\$0 (D)	
Erosion Control		(2 - 5%) of (A)	5.0%	\$379,917 (E)	
Environmental Mitigation		(1 - 5%) of (A)	5.0%	\$379,917 (F)	
Signing and Striping		(1 - 5%) of (A)	5.0%	\$379,917 (G)	
Construction Signing & Traffic Control		(2 - 20%) of (A)	10.0%	\$759,834 (H)	
Lighting		(1 - 5%) of (A)	5.0%	\$379,917 (I)	
Landscape		(1 - 20%) of (A)	5.0%	\$379,917 (J)	
Mobilization		(4 - 20%) of (A+B+C+D+E+F+G+H+I)	10.0%	\$1,443,684 (K)	
Total of Construction Bid Items (A+B+C+D+E+F+G+H+I+J+K)				\$15,881,000 (L)	
Engineering and Construction					
Not Used					
Design Engineering		10% of (K)	10.0%	\$1,588,100 (M)	
Construction Engineering		15% of (K)	15.0%	\$2,382,150 (N)	
Total Environmental & Engineering (M+N)				\$3,970,250 (O)	
Right of Way					
Right-of-Way and Easements		Pay Unit	Unit Cost	Quantity	
		AC	Varies	Varies	\$0 (P)
Total ROW (P)				\$0 (Q)	
Total Project Cost (L+O+Q)				\$19,851,000	
Opinion of Probable Construction Costs					
<p>In providing opinions of probable construction cost, the Client understands that Felsburg Holt & Ullevig has no control over costs or the price of labor, equipment or materials, or over the Contractor's method of pricing, and that the opinions of probable construction costs provided herein are to be made on the basis of our qualifications and experience. FHU makes no warranty, expressed or implied, as to the accuracy of such opinions as compared to bid or actual costs.</p>					

SHOULD BE L NOT K

SHOULD INCLUDE + J

CAOT I25 SOUTH GAP COST ESTIMATE USES \$129/S.F.

CAOT I25 SOUTH GAP COST ESTIMATE USES \$59/S.F. FOR WALLS

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