

Three Year Engineering Factors, SFY 2018 Report:

Overhead Costs per Total Construction Costs

Report Key:

Projects are grouped by Work Type 1, and then work types are used to group projects into categories:

qry01MakeKey

11/8/2018

Category	Work Type
MAJOR PROJECT	A- ADD LANES
MAJOR PROJECT	D- DUAL DIVIDED
MAJOR PROJECT	F- FREEWAY
MAJOR PROJECT	I- INTERCHANGE
MAJOR PROJECT	M- MAJOR BRIDGE
MAJOR PROJECT	T- NEW OR IMPROVED 2 LANE
TCOS	1- ITS
TCOS	2- ADA-TRANS
TCOS	B- BRIDGE REPLACEMENT
TCOS	G- PREV MAINT-BRIDGE
TCOS	H- HIGH TYPE RESURFACING
TCOS	J- PREV MAINT-PAVEMENT
TCOS	K- MED TYPE RESURFACING
TCOS	L- LOW TYPE RESURFACING
TCOS	O- OTHER
TCOS	P- PAVEMENT REPLACEMENT
TCOS	Q- CMAQ
TCOS	R- BRIDGE REHABILITATION
TCOS	S- BRDG RETROFIT AND STR
TCOS	X- SAFETY
TCOS	Y- ROUTINE MAINTENANCE
OTHER	E- ENHANCEMENTS
OTHER	V-HIGHWAY RAIL SAFETY
OTHER	W- SHOULDER WIDENING

Note: Only the first work type is used. For instance, many projects include shoulder widening, but few projects have shoulder widening as their first work type.

Highlighted values:

n < 20 Each line item has an 'n' value indicating the number of projects included in the line. If the number of projects is low, then any unusual project can have a large effect on the results. Thus, lower 'n' values are highlighted and validity of the data should be confirmed.

0% In some line items, none of the projects will include a type of engineering expense. For instance, Routine Maintenance normally does not include Right of Way Acquisition. The calculated rate will then be 0%, and these values have been highlighted.

Note: Since SFY 2015's report, all projects are in the seven, reorganized districts. The group of "various" districts has been removed.

Calculations:

Projects completed in the time frame are tabulated and categorized by primary work type and district. Excludes payment projects, right of way only projects, and other projects without actual construction costs.

Within each line item, all projects are totaled and then converted to percentages, based on the actual construction amount (actual CN). Not based on the actual total amount (actual Total). Thus, estimated construction costs for a project can be used with factors in this report to estimate overhead costs, which add up to total costs.

$$PE\% = (\text{actual PE}) / (\text{actual CN})$$

$$CE\% = (\text{actual CE}) / (\text{actual CN})$$

$$RW \text{ acquisition} = (\text{actual land})$$

$$RW \text{ incidentals} = (\text{total actual RW}) - (\text{actual land})$$

$$RWp\% = (\text{actual land}) / (\text{actual CN})$$

$$RWi\% = (RW \text{ incidentals}) / (\text{actual CN})$$

$$\begin{aligned} \text{Total Engineering} = & \\ & ((\text{actual PE}) + (\text{actual CE}) + (RW \text{ incidentals})) \\ & \text{-----} \\ & (\text{actual CN}) \end{aligned}$$

If a district has no completed projects of the work type, in the time frame, then the line item is removed from their table.

**Three Year Average Engineering Factors
Engineering Costs per Total Construction Costs**

**7/1/2015- 6/30/2018
Statewide Totals**

Statewide						
Work Types	Preliminary Engineering	Construction Inspection	Right of Way Incidentals	Total Engineering	Right of Way Acquisition	n=
1- ITS	0.00%	16.23%	0.00%	16.23%	0.00%	1
2- ADA-TRANS	17.38%	23.79%	2.64%	43.81%	1.26%	27
A- ADD LANES	8.16%	9.58%	1.06%	18.80%	10.48%	27
B- BRIDGE REPLACEMENT	14.56%	12.13%	0.28%	26.97%	0.89%	104
D- DUAL DIVIDED	6.01%	7.90%	0.75%	14.66%	12.81%	3
E- ENHANCEMENTS	9.03%	17.24%	0.66%	26.93%	0.62%	19
F- FREEWAY	14.18%	16.99%	0.50%	31.67%	4.16%	5
G- PREV MAINT-BRIDGE	3.67%	6.44%	0.00%	10.11%	0.00%	32
H- HIGH TYPE RESURFACING	3.75%	7.71%	0.14%	11.60%	0.46%	46
I- INTERCHANGE	8.83%	7.93%	0.53%	17.29%	6.74%	18
J- PREV MAINT-PAVEMENT	2.15%	8.39%	0.00%	10.54%	0.00%	120
K- MED TYPE RESURFACING	1.82%	7.45%	0.01%	9.28%	0.00%	274
L- LOW TYPE RESURFACING	1.93%	7.25%	0.07%	9.25%	0.14%	119
M- MAJOR BRIDGE	4.85%	2.98%	0.05%	7.87%	0.30%	8
O- OTHER	7.08%	10.86%	0.64%	18.57%	2.73%	77
P- PAVEMENT REPLACEMENT	5.44%	7.44%	0.00%	12.88%	0.00%	12
Q- CMAQ	7.08%	11.70%	0.01%	18.79%	0.003%	24
R- BRIDGE REHABILITATION	4.54%	9.13%	0.03%	13.70%	0.20%	115
S- BRDG RETROFIT AND STR	4.25%	2.09%	0.00%	6.34%	0.00%	1
T- NEW OR IMPROVED 2 LANE	5.25%	10.79%	1.35%	17.39%	11.43%	9
V- HIGHWAY RAIL SAFETY	12.99%	13.38%	2.09%	28.45%	8.12%	2
W- SHOULDER WIDENING	8.14%	13.15%	0.31%	21.60%	1.38%	2
X- SAFETY	8.95%	13.54%	0.40%	22.88%	2.22%	104
Y- ROUTINE MAINTENANCE	1.81%	11.85%	0.03%	13.68%	0.04%	39
	5.39%	8.54%	0.27%	14.19%	2.15%	1,188

Work Type Categories	Preliminary Engineering	Construction Inspection	Right of Way Incidentals	Total Engineering	Right of Way Acquisition	n=
MAJOR PROJECT	7.08%	7.10%	0.59%	14.76%	6.44%	70
TCOS	4.62%	8.94%	0.12%	13.68%	0.45%	1,095
OTHER	9.81%	16.23%	0.94%	26.99%	2.22%	23
	5.39%	8.54%	0.27%	14.19%	2.15%	1,188

Engineering costs are represented as percentages of corresponding actual construction costs. Based on projects completed within the indicated time frame. Excludes payment projects, right of way only projects and other projects without actual construction costs.

**Three Year Average Engineering Factors
Engineering Costs per Total Construction Costs**

**7/1/2015 - 6/30/2018
by District**

Northwest						
Work Types	Preliminary Engineering	Construction Inspection	Right of Way Incidentals	Total Engineering	Right of Way Acquisition	n=
2- ADA-TRANS	6.12%	8.85%	3.23%	18.20%	0.99%	1
B- BRIDGE REPLACEMENT	17.34%	11.71%	1.05%	30.11%	5.16%	13
G- PREV MAINT-BRIDGE	1.79%	9.87%	0.00%	11.66%	0.00%	5
H- HIGH TYPE RESURFACING	0.57%	7.01%	0.00%	7.58%	0.00%	3
I- INTERCHANGE	0.80%	11.92%	0.14%	12.86%	0.00%	1
J- PREV MAINT-PAVEMENT	0.26%	5.64%	0.00%	5.90%	0.00%	5
K- MED TYPE RESURFACING	1.72%	6.00%	0.00%	7.72%	0.00%	11
L- LOW TYPE RESURFACING	0.68%	4.27%	0.00%	4.95%	0.00%	44
M- MAJOR BRIDGE	0.07%	0.50%	0.18%	0.75%	1.21%	2
O- OTHER	11.07%	12.52%	2.16%	25.75%	7.04%	10
R- BRIDGE REHABILITATION	4.05%	10.89%	0.03%	14.97%	0.02%	25
X- SAFETY	0.66%	6.30%	0.00%	6.97%	0.00%	5
Y- ROUTINE MAINTENANCE	0.81%	19.46%	0.00%	20.27%	0.00%	1
	3.76%	6.61%	0.28%	10.65%	1.19%	126

Work Type Categories	Preliminary Engineering	Construction Inspection	Right of Way Incidentals	Total Engineering	Right of Way Acquisition	n=
MAJOR PROJECT	0.16%	1.97%	0.18%	2.31%	1.05%	3
TCOS	4.93%	8.11%	0.32%	13.36%	1.23%	123
	3.76%	6.61%	0.28%	10.65%	1.19%	126

Engineering costs are represented as percentages of corresponding actual construction costs. Based on projects completed within the indicated time frame. Excludes payment projects, right of way only projects and other projects without actual construction costs.

**Three Year Average Engineering Factors
Engineering Costs per Total Construction Costs**

**7/1/2015 - 6/30/2018
by District**

Northeast						
Work Types	Preliminary Engineering	Construction Inspection	Right of Way Incidentals	Total Engineering	Right of Way Acquisition	n=
A- ADD LANES	0.11%	20.53%	0.00%	20.64%	0.00%	1
B- BRIDGE REPLACEMENT	21.39%	17.40%	0.23%	39.01%	0.24%	21
E- ENHANCEMENTS	13.52%	31.09%	1.30%	45.92%	0.62%	4
G- PREV MAINT-BRIDGE	2.42%	11.94%	0.00%	14.36%	0.00%	6
H- HIGH TYPE RESURFACING	2.11%	7.77%	0.00%	9.88%	0.00%	4
J- PREV MAINT-PAVEMENT	0.73%	11.14%	0.00%	11.87%	0.00%	27
K- MED TYPE RESURFACING	2.80%	11.09%	0.01%	13.91%	0.00%	9
L- LOW TYPE RESURFACING	2.34%	8.56%	0.56%	11.45%	1.23%	15
O- OTHER	4.80%	11.28%	0.00%	16.09%	0.00%	3
R- BRIDGE REHABILITATION	5.69%	12.35%	0.00%	18.04%	0.00%	21
X- SAFETY	11.62%	11.79%	0.87%	24.27%	11.15%	8
Y- ROUTINE MAINTENANCE	1.14%	32.62%	0.00%	33.76%	0.00%	4
	6.84%	12.59%	0.20%	19.64%	0.89%	123

Work Type Categories	Preliminary Engineering	Construction Inspection	Right of Way Incidentals	Total Engineering	Right of Way Acquisition	n=
MAJOR PROJECT	0.11%	20.53%	0.00%	20.64%	0.00%	1
TCOS	6.80%	12.16%	0.19%	19.14%	0.91%	118
OTHER	13.52%	31.09%	1.30%	45.92%	0.62%	4
	6.84%	12.59%	0.20%	19.64%	0.89%	123

Engineering costs are represented as percentages of corresponding actual construction costs. Based on projects completed within the indicated time frame. Excludes payment projects, right of way only projects and other projects without actual construction costs.

**Three Year Average Engineering Factors
Engineering Costs per Total Construction Costs**

**7/1/2015 - 6/30/2018
by District**

Kansas City						
Work Types	Preliminary Engineering	Construction Inspection	Right of Way Incidentals	Total Engineering	Right of Way Acquisition	n=
1- ITS	0.00%	16.23%	0.00%	16.23%	0.00%	1
A- ADD LANES	9.27%	10.34%	1.73%	21.35%	11.92%	10
B- BRIDGE REPLACEMENT	12.97%	8.39%	0.03%	21.39%	0.00%	6
D- DUAL DIVIDED	9.33%	4.52%	0.00%	13.85%	0.00%	1
E- ENHANCEMENTS	3.63%	33.32%	0.43%	37.39%	0.26%	5
G- PREV MAINT-BRIDGE	3.94%	4.83%	0.00%	8.78%	0.00%	9
H- HIGH TYPE RESURFACING	5.82%	7.39%	0.00%	13.21%	0.00%	3
I- INTERCHANGE	9.60%	7.00%	0.61%	17.21%	10.37%	6
J- PREV MAINT-PAVEMENT	0.48%	5.92%	0.00%	6.40%	0.00%	13
K- MED TYPE RESURFACING	1.61%	7.91%	0.00%	9.51%	0.00%	18
L- LOW TYPE RESURFACING	1.20%	7.62%	0.04%	8.86%	0.01%	11
M- MAJOR BRIDGE	0.37%	1.92%	0.05%	2.34%	0.25%	2
O- OTHER	8.30%	10.36%	0.45%	19.11%	1.84%	27
P- PAVEMENT REPLACEMENT	3.32%	10.88%	0.00%	14.20%	0.00%	1
Q- CMAQ	0.00%	6.90%	0.00%	6.90%	0.00%	1
R- BRIDGE REHABILITATION	4.68%	8.43%	0.00%	13.11%	0.00%	24
S- BRDG RETROFIT AND STR	4.25%	2.09%	0.00%	6.34%	0.00%	1
T- NEW OR IMPROVED 2 LANE	0.00%	0.00%	0.00%	0.00%	0.00%	1
X- SAFETY	4.98%	11.57%	0.17%	16.72%	0.33%	17
Y- ROUTINE MAINTENANCE	0.34%	2.85%	0.10%	3.29%	0.11%	5
	5.37%	7.30%	0.36%	13.03%	3.29%	162

Work Type Categories	Preliminary Engineering	Construction Inspection	Right of Way Incidentals	Total Engineering	Right of Way Acquisition	n=
MAJOR PROJECT	6.77%	6.32%	0.73%	13.81%	7.27%	20
TCOS	4.30%	7.71%	0.06%	12.08%	0.22%	137
OTHER	3.63%	33.32%	0.43%	37.39%	0.26%	5
	5.37%	7.30%	0.36%	13.03%	3.29%	162

Engineering costs are represented as percentages of corresponding actual construction costs. Based on projects completed within the indicated time frame. Excludes payment projects, right of way only projects and other projects without actual construction costs.

**Three Year Average Engineering Factors
Engineering Costs per Total Construction Costs**

**7/1/2015 - 6/30/2018
by District**

Central						
Work Types	Preliminary Engineering	Construction Inspection	Right of Way Incidentals	Total Engineering	Right of Way Acquisition	n=
2- ADA-TRANS	41.51%	24.26%	2.43%	68.19%	2.83%	3
A- ADD LANES	8.58%	9.44%	0.77%	18.79%	6.82%	6
B- BRIDGE REPLACEMENT	19.80%	17.20%	0.25%	37.25%	0.25%	20
D- DUAL DIVIDED	4.36%	9.56%	1.11%	15.03%	18.93%	1
E- ENHANCEMENTS	83.00%	34.00%	4.00%	121.00%	0.00%	1
G- PREV MAINT-BRIDGE	4.12%	13.50%	0.00%	17.62%	0.00%	4
H- HIGH TYPE RESURFACING	0.52%	7.76%	0.00%	8.28%	0.00%	8
I- INTERCHANGE	4.75%	8.39%	0.00%	13.13%	0.00%	1
J- PREV MAINT-PAVEMENT	0.77%	8.34%	0.00%	9.11%	0.00%	14
K- MED TYPE RESURFACING	1.98%	7.83%	0.01%	9.82%	0.00%	45
L- LOW TYPE RESURFACING	1.64%	8.30%	0.00%	9.93%	0.00%	30
O- OTHER	13.17%	24.38%	1.96%	39.50%	0.39%	2
P- PAVEMENT REPLACEMENT	5.31%	8.11%	0.00%	13.42%	0.00%	3
R- BRIDGE REHABILITATION	6.26%	8.83%	0.04%	15.13%	0.31%	20
W- SHOULDER WIDENING	8.17%	11.71%	0.42%	20.30%	1.85%	1
X- SAFETY	5.57%	15.11%	0.16%	20.84%	2.43%	8
Y- ROUTINE MAINTENANCE	4.65%	18.04%	0.01%	22.70%	0.06%	9
	4.70%	9.43%	0.24%	14.36%	2.68%	176

Work Type Categories	Preliminary Engineering	Construction Inspection	Right of Way Incidentals	Total Engineering	Right of Way Acquisition	n=
MAJOR PROJECT	6.48%	9.33%	0.78%	16.59%	10.21%	8
TCOS	4.05%	9.43%	0.05%	13.54%	0.19%	166
OTHER	13.99%	13.44%	0.70%	28.13%	1.71%	2
	4.70%	9.43%	0.24%	14.36%	2.68%	176

Engineering costs are represented as percentages of corresponding actual construction costs. Based on projects completed within the indicated time frame. Excludes payment projects, right of way only projects and other projects without actual construction costs.

**Three Year Average Engineering Factors
Engineering Costs per Total Construction Costs**

**7/1/2015 - 6/30/2018
by District**

St. Louis

Work Types	Preliminary Engineering	Construction Inspection	Right of Way Incidentals	Total Engineering	Right of Way Acquisition	n=
2- ADA-TRANS	37.99%	30.73%	1.12%	69.83%	0.56%	1
A- ADD LANES	7.72%	9.24%	0.13%	17.08%	2.67%	6
B- BRIDGE REPLACEMENT	11.59%	8.59%	0.03%	20.21%	0.05%	10
E- ENHANCEMENTS	9.46%	11.97%	0.74%	22.16%	0.80%	3
G- PREV MAINT-BRIDGE	2.33%	10.65%	0.00%	12.99%	0.00%	7
H- HIGH TYPE RESURFACING	5.41%	9.26%	0.15%	14.82%	0.73%	17
I- INTERCHANGE	7.06%	8.33%	0.78%	16.17%	1.79%	1
J- PREV MAINT-PAVEMENT	3.80%	8.82%	0.00%	12.62%	0.00%	33
K- MED TYPE RESURFACING	8.28%	11.39%	0.00%	19.67%	0.00%	10
L- LOW TYPE RESURFACING	8.69%	14.52%	0.00%	23.20%	0.00%	3
M- MAJOR BRIDGE	10.11%	4.72%	0.00%	14.83%	0.00%	3
O- OTHER	5.73%	10.66%	0.06%	16.44%	0.11%	15
P- PAVEMENT REPLACEMENT	7.93%	8.19%	0.00%	16.12%	0.00%	4
Q- CMAQ	7.41%	11.93%	0.01%	19.35%	0.00%	23
R- BRIDGE REHABILITATION	3.30%	9.76%	0.08%	13.14%	0.58%	15
X- SAFETY	12.41%	13.75%	0.38%	26.53%	1.06%	21
Y- ROUTINE MAINTENANCE	0.48%	2.85%	0.00%	3.33%	0.00%	9
	7.22%	8.89%	0.11%	16.22%	0.53%	181

Work Type Categories	Preliminary Engineering	Construction Inspection	Right of Way Incidentals	Total Engineering	Right of Way Acquisition	n=
MAJOR PROJECT	9.04%	6.47%	0.14%	15.65%	0.99%	10
TCOS	6.29%	9.82%	0.07%	16.18%	0.30%	168
OTHER	9.46%	11.97%	0.74%	22.16%	0.80%	3
	7.22%	8.89%	0.11%	16.22%	0.53%	181

Engineering costs are represented as percentages of corresponding actual construction costs. Based on projects completed within the indicated time frame. Excludes payment projects, right of way only projects and other projects without actual construction costs.

**Three Year Average Engineering Factors
Engineering Costs per Total Construction Costs**

**7/1/2015 - 6/30/2018
by District**

Southwest						
Work Types	Preliminary Engineering	Construction Inspection	Right of Way Incidentals	Total Engineering	Right of Way Acquisition	n=
2- ADA-TRANS	12.86%	26.61%	2.62%	42.09%	0.92%	22
A- ADD LANES	5.83%	11.01%	0.45%	17.29%	54.50%	2
B- BRIDGE REPLACEMENT	15.11%	12.38%	0.03%	27.52%	0.05%	19
E- ENHANCEMENTS	9.68%	19.41%	0.00%	29.09%	0.00%	5
F- FREEWAY	14.18%	16.99%	0.50%	31.67%	4.16%	5
G- PREV MAINT-BRIDGE	1.51%	14.90%	0.00%	16.40%	0.00%	1
H- HIGH TYPE RESURFACING	1.17%	8.00%	0.00%	9.17%	0.00%	3
I- INTERCHANGE	10.92%	9.42%	0.54%	20.88%	5.74%	5
J- PREV MAINT-PAVEMENT	0.72%	8.72%	0.00%	9.44%	0.00%	22
K- MED TYPE RESURFACING	1.47%	6.56%	0.01%	8.03%	0.01%	99
L- LOW TYPE RESURFACING	1.69%	7.18%	0.00%	8.87%	0.00%	7
O- OTHER	4.86%	13.87%	0.50%	19.22%	3.47%	9
P- PAVEMENT REPLACEMENT	0.00%	4.94%	0.00%	4.94%	0.00%	2
R- BRIDGE REHABILITATION	2.78%	6.42%	0.00%	9.20%	0.00%	6
T- NEW OR IMPROVED 2 LANE	4.99%	15.00%	1.38%	21.37%	29.01%	2
V- HIGHWAY RAIL SAFETY	12.99%	13.38%	2.09%	28.45%	8.12%	2
X- SAFETY	10.31%	15.04%	0.68%	26.03%	3.36%	38
Y- ROUTINE MAINTENANCE	0.54%	16.16%	0.00%	16.70%	0.00%	6
	4.85%	9.13%	0.23%	14.21%	2.59%	255

Work Type Categories	Preliminary Engineering	Construction Inspection	Right of Way Incidentals	Total Engineering	Right of Way Acquisition	n=
MAJOR PROJECT	10.19%	10.68%	0.58%	21.45%	13.51%	14
TCOS	3.61%	8.65%	0.12%	12.39%	0.40%	234
OTHER	12.18%	14.86%	1.58%	28.61%	6.13%	7
	4.85%	9.13%	0.23%	14.21%	2.59%	255

Engineering costs are represented as percentages of corresponding actual construction costs. Based on projects completed within the indicated time frame. Excludes payment projects, right of way only projects and other projects without actual construction costs.

**Three Year Average Engineering Factors
Engineering Costs per Total Construction Costs**

**7/1/2015 - 6/30/2018
by District**

Southeast						
Work Types	Preliminary Engineering	Construction Inspection	Right of Way Incidentals	Total Engineering	Right of Way Acquisition	n=
A- ADD LANES	6.42%	7.59%	1.53%	15.54%	12.70%	2
B- BRIDGE REPLACEMENT	9.03%	14.51%	0.45%	23.99%	0.31%	15
D- DUAL DIVIDED	12.33%	2.60%	0.00%	14.93%	0.00%	1
E- ENHANCEMENTS	0.00%	0.00%	0.00%	0.00%	0.00%	1
H- HIGH TYPE RESURFACING	3.51%	5.87%	0.32%	9.71%	0.78%	8
I- INTERCHANGE	5.72%	6.59%	0.00%	12.31%	0.00%	4
J- PREV MAINT-PAVEMENT	1.41%	9.29%	0.00%	10.70%	0.00%	6
K- MED TYPE RESURFACING	1.28%	7.73%	0.01%	9.02%	0.00%	82
L- LOW TYPE RESURFACING	3.06%	3.97%	0.00%	7.04%	0.00%	9
M- MAJOR BRIDGE	3.33%	3.33%	0.00%	6.66%	0.00%	1
O- OTHER	6.85%	8.81%	1.30%	16.97%	6.04%	11
P- PAVEMENT REPLACEMENT	0.79%	5.57%	0.00%	6.36%	0.00%	2
R- BRIDGE REHABILITATION	8.24%	17.32%	0.03%	25.59%	0.00%	4
T- NEW OR IMPROVED 2 LANE	5.32%	10.36%	1.35%	17.04%	9.41%	6
W- SHOULDER WIDENING	8.05%	17.32%	0.00%	25.37%	0.00%	1
X- SAFETY	2.30%	13.89%	0.00%	16.18%	0.00%	7
Y- ROUTINE MAINTENANCE	3.73%	18.33%	0.00%	22.06%	0.00%	5
	3.94%	8.40%	0.47%	12.80%	2.78%	165

Work Type Categories	Preliminary Engineering	Construction Inspection	Right of Way Incidentals	Total Engineering	Right of Way Acquisition	n=
MAJOR PROJECT	5.82%	8.50%	1.18%	15.51%	9.01%	14
TCOS	3.31%	8.35%	0.24%	11.89%	0.74%	149
OTHER	5.98%	12.86%	0.00%	18.84%	0.00%	2
	3.94%	8.40%	0.47%	12.80%	2.78%	165

Engineering costs are represented as percentages of corresponding actual construction costs. Based on projects completed within the indicated time frame. Excludes payment projects, right of way only projects and other projects without actual construction costs.