

## Three Year Engineering Factors, SFY 2017 Report:

Overhead Costs per Total Construction Costs

### Report Key:

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

qry01MakeKey

12/11/2017

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

**7/1/2014- 6/30/2017  
Statewide Totals**

Statewide						
Work Types	Preliminary Engineering	Construction Inspection	Right of Way Incidentals	Total Engineering	Right of Way Acquisition	n=
1- ITS	0.19%	0.00%	0.00%	0.19%	0.00%	2
2- ADA-TRANS	13.67%	27.07%	1.58%	42.32%	0.84%	16
A- ADD LANES	5.88%	4.13%	0.62%	10.63%	6.58%	27
B- BRIDGE REPLACEMENT	15.45%	11.33%	0.22%	27.00%	0.94%	81
D- DUAL DIVIDED	9.11%	5.94%	0.96%	16.01%	28.22%	7
E- ENHANCEMENTS	8.97%	16.39%	0.59%	25.96%	0.57%	22
F- FREEWAY	1.94%	6.54%	0.05%	8.54%	0.45%	7
G- PREV MAINT-BRIDGE	3.06%	6.52%	0.00%	9.58%	0.00%	26
H- HIGH TYPE RESURFACING	2.49%	7.22%	0.05%	9.76%	0.25%	48
I- INTERCHANGE	9.04%	7.40%	0.47%	16.91%	6.02%	22
J- PREV MAINT-PAVEMENT	2.35%	8.11%	0.00%	10.46%	0.00%	136
K- MED TYPE RESURFACING	1.71%	7.41%	0.01%	9.13%	0.01%	218
L- LOW TYPE RESURFACING	1.80%	6.51%	0.09%	8.39%	0.13%	140
M- MAJOR BRIDGE	13.42%	1.89%	1.11%	16.42%	5.86%	8
O- OTHER	9.61%	10.59%	0.61%	20.82%	2.49%	79
P- PAVEMENT REPLACEMENT	7.48%	7.55%	0.12%	15.15%	0.02%	12
Q- CMAQ	6.22%	9.64%	0.01%	15.87%	0.003%	32
R- BRIDGE REHABILITATION	5.66%	8.97%	0.01%	14.64%	0.03%	107
* S- BRDG RETROFIT AND STR	235.90%	8.12%	3.11%	247.13%	99.75%	2
T- NEW OR IMPROVED 2 LANE	5.92%	8.59%	1.50%	16.01%	26.28%	10
V- HIGHWAY RAIL SAFETY	15.37%	9.84%	1.00%	26.20%	4.69%	1
W- SHOULDER WIDENING	6.36%	18.25%	0.71%	25.32%	1.13%	2
X- SAFETY	6.48%	11.20%	0.31%	17.98%	1.90%	91
Y- ROUTINE MAINTENANCE	1.31%	9.26%	0.02%	10.59%	0.04%	38
	7.08%	6.60%	0.45%	14.13%	4.72%	1,134

Work Type Categories	Preliminary Engineering	Construction Inspection	Right of Way Incidentals	Total Engineering	Right of Way Acquisition	n=
MAJOR PROJECT	9.09%	4.45%	0.80%	14.35%	9.10%	81
TCOS	5.12%	8.41%	0.11%	13.64%	0.68%	1,028
OTHER	9.40%	15.93%	0.62%	25.96%	0.89%	25
	7.08%	6.60%	0.45%	14.13%	4.72%	1,134

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.

- \* Only two projects for Bridge Retrofit and Strengthening were completed during the current time frame. One project was split into smaller construction projects with all Preliminary Engineering in the parent project, but most construction was in the child projects, which were not included. Resulting in unusual percentage values for this larger project.

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

**7/1/2014 - 6/30/2017  
by District**

**Northwest**

Work Types	Preliminary Engineering	Construction Inspection	Right of Way Incidentals	<b>Total Engineering</b>	Right of Way Acquisition	n=
<b>B- BRIDGE REPLACEMENT</b>	19.00%	9.35%	1.56%	<b>29.91%</b>	9.38%	7
<b>G- PREV MAINT-BRIDGE</b>	0.73%	7.15%	0.00%	<b>7.88%</b>	0.00%	1
<b>H- HIGH TYPE RESURFACING</b>	0.59%	6.21%	0.00%	<b>6.80%</b>	0.00%	6
<b>J- PREV MAINT-PAVEMENT</b>	0.18%	6.19%	0.00%	<b>6.37%</b>	0.00%	7
<b>K- MED TYPE RESURFACING</b>	1.28%	5.96%	0.00%	<b>7.24%</b>	0.00%	13
<b>L- LOW TYPE RESURFACING</b>	0.56%	4.12%	0.12%	<b>4.79%</b>	0.06%	54
<b>M- MAJOR BRIDGE</b>	0.07%	0.50%	0.18%	<b>0.75%</b>	1.21%	2
<b>O- OTHER</b>	14.18%	13.58%	2.97%	<b>30.73%</b>	7.79%	9
<b>P- PAVEMENT REPLACEMENT</b>	3.61%	9.34%	0.75%	<b>13.70%</b>	0.11%	4
<b>R- BRIDGE REHABILITATION</b>	4.27%	10.45%	0.04%	<b>14.75%</b>	0.03%	28
<b>X- SAFETY</b>	4.27%	7.61%	0.22%	<b>12.10%</b>	0.88%	6
	2.54%	5.70%	0.24%	<b>8.48%</b>	1.00%	137

Work Type Categories	Preliminary Engineering	Construction Inspection	Right of Way Incidentals	<b>Total Engineering</b>	Right of Way Acquisition	n=
<b>MAJOR PROJECT</b>	0.07%	0.50%	0.18%	<b>0.75%</b>	1.21%	2
<b>TCOS</b>	3.19%	7.08%	0.26%	<b>10.53%</b>	0.94%	135
	2.54%	5.70%	0.24%	<b>8.48%</b>	1.00%	137

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**

**7/1/2014 - 6/30/2017  
by District**

<b>Northeast</b>						
Work Types	Preliminary Engineering	Construction Inspection	Right of Way Incidentals	Total Engineering	Right of Way Acquisition	n=
<b>A- ADD LANES</b>	0.06%	14.15%	0.00%	<b>14.21%</b>	0.00%	2
<b>B- BRIDGE REPLACEMENT</b>	22.53%	15.17%	0.24%	<b>37.94%</b>	0.21%	20
<b>D- DUAL DIVIDED</b>	0.00%	11.76%	0.00%	<b>11.76%</b>	0.00%	1
<b>E- ENHANCEMENTS</b>	13.52%	31.09%	1.30%	<b>45.92%</b>	0.62%	4
<b>G- PREV MAINT-BRIDGE</b>	1.77%	12.59%	0.00%	<b>14.36%</b>	0.00%	7
<b>H- HIGH TYPE RESURFACING</b>	2.11%	7.77%	0.00%	<b>9.88%</b>	0.00%	4
<b>I- INTERCHANGE</b>	14.80%	10.79%	1.34%	<b>26.93%</b>	41.04%	1
<b>J- PREV MAINT-PAVEMENT</b>	0.82%	9.82%	0.00%	<b>10.64%</b>	0.00%	37
<b>K- MED TYPE RESURFACING</b>	3.93%	10.71%	0.02%	<b>14.66%</b>	0.00%	5
<b>L- LOW TYPE RESURFACING</b>	1.86%	7.85%	0.44%	<b>10.16%</b>	0.98%	20
<b>O- OTHER</b>	3.48%	9.15%	0.00%	<b>12.63%</b>	0.00%	4
<b>P- PAVEMENT REPLACEMENT</b>	0.00%	15.22%	0.00%	<b>15.22%</b>	0.00%	1
<b>R- BRIDGE REHABILITATION</b>	5.91%	11.37%	0.00%	<b>17.28%</b>	0.00%	25
<b>X- SAFETY</b>	11.11%	11.89%	0.84%	<b>23.83%</b>	10.74%	8
<b>Y- ROUTINE MAINTENANCE</b>	0.00%	38.50%	0.00%	<b>38.50%</b>	0.00%	2
	7.10%	11.32%	0.27%	<b>18.69%</b>	3.21%	141

Work Type Categories	Preliminary Engineering	Construction Inspection	Right of Way Incidentals	Total Engineering	Right of Way Acquisition	n=
<b>MAJOR PROJECT</b>	10.98%	11.61%	1.00%	<b>23.58%</b>	30.41%	4
<b>TCOS</b>	6.64%	10.94%	0.19%	<b>17.76%</b>	0.89%	133
<b>OTHER</b>	13.52%	31.09%	1.30%	<b>45.92%</b>	0.62%	4
	7.10%	11.32%	0.27%	<b>18.69%</b>	3.21%	141

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**

**7/1/2014 - 6/30/2017  
by District**

<b>Kansas City</b>						
Work Types	Preliminary Engineering	Construction Inspection	Right of Way Incidentals	Total Engineering	Right of Way Acquisition	n=
<b>A- ADD LANES</b>	5.11%	2.49%	0.42%	<b>8.02%</b>	4.26%	6
<b>B- BRIDGE REPLACEMENT</b>	14.34%	8.08%	0.03%	<b>22.45%</b>	0.03%	5
<b>D- DUAL DIVIDED</b>	0.12%	0.00%	0.00%	<b>0.12%</b>	0.00%	1
<b>E- ENHANCEMENTS</b>	5.29%	28.75%	0.35%	<b>34.39%</b>	0.20%	5
<b>G- PREV MAINT-BRIDGE</b>	3.68%	3.58%	0.00%	<b>7.26%</b>	0.00%	6
<b>H- HIGH TYPE RESURFACING</b>	3.81%	6.44%	0.00%	<b>10.25%</b>	0.00%	4
<b>I- INTERCHANGE</b>	10.08%	6.30%	0.51%	<b>16.89%</b>	7.64%	8
<b>J- PREV MAINT-PAVEMENT</b>	0.25%	6.80%	0.00%	<b>7.05%</b>	0.00%	14
<b>K- MED TYPE RESURFACING</b>	0.92%	8.39%	0.00%	<b>9.32%</b>	0.00%	17
<b>L- LOW TYPE RESURFACING</b>	2.23%	6.68%	0.08%	<b>8.99%</b>	0.01%	10
<b>O- OTHER</b>	11.60%	8.19%	0.44%	<b>20.23%</b>	1.78%	25
<b>Q- CMAQ</b>	0.73%	2.71%	0.00%	<b>3.44%</b>	0.00%	5
<b>R- BRIDGE REHABILITATION</b>	4.89%	5.76%	0.00%	<b>10.64%</b>	0.00%	17
<b>S- BRDG RETROFIT AND STR</b>	4.25%	2.09%	0.00%	<b>6.34%</b>	0.00%	1
<b>T- NEW OR IMPROVED 2 LANE</b>	9.10%	6.84%	1.40%	<b>17.34%</b>	36.93%	2
<b>X- SAFETY</b>	1.20%	9.57%	0.06%	<b>10.83%</b>	0.12%	12
<b>Y- ROUTINE MAINTENANCE</b>	0.19%	2.29%	0.05%	<b>2.53%</b>	0.06%	9
	5.57%	4.79%	0.31%	<b>10.67%</b>	3.73%	147

  

Work Type Categories	Preliminary Engineering	Construction Inspection	Right of Way Incidentals	Total Engineering	Right of Way Acquisition	n=
<b>MAJOR PROJECT</b>	6.37%	3.55%	0.45%	<b>10.38%</b>	5.86%	17
<b>TCOS</b>	4.24%	6.42%	0.07%	<b>10.72%</b>	0.23%	125
<b>OTHER</b>	5.29%	28.75%	0.35%	<b>34.39%</b>	0.20%	5
	5.57%	4.79%	0.31%	<b>10.67%</b>	3.73%	147

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**

**7/1/2014 - 6/30/2017  
by District**

<b>Central</b>						
Work Types	Preliminary Engineering	Construction Inspection	Right of Way Incidentals	Total Engineering	Right of Way Acquisition	n=
<b>A- ADD LANES</b>	8.98%	10.85%	0.85%	<b>20.68%</b>	6.90%	6
<b>B- BRIDGE REPLACEMENT</b>	21.82%	16.00%	0.26%	<b>38.08%</b>	0.59%	14
<b>D- DUAL DIVIDED</b>	4.36%	9.56%	1.11%	<b>15.03%</b>	18.93%	1
<b>E- ENHANCEMENTS</b>	9.70%	16.81%	0.50%	<b>27.00%</b>	0.45%	2
<b>G- PREV MAINT-BRIDGE</b>	3.09%	12.04%	0.00%	<b>15.13%</b>	0.00%	2
<b>H- HIGH TYPE RESURFACING</b>	0.48%	8.06%	0.00%	<b>8.53%</b>	0.00%	9
<b>I- INTERCHANGE</b>	4.75%	8.39%	0.00%	<b>13.13%</b>	0.00%	1
<b>J- PREV MAINT-PAVEMENT</b>	0.37%	7.78%	0.00%	<b>8.16%</b>	0.00%	15
<b>K- MED TYPE RESURFACING</b>	2.08%	8.77%	0.02%	<b>10.87%</b>	0.00%	30
<b>L- LOW TYPE RESURFACING</b>	1.13%	7.27%	0.00%	<b>8.40%</b>	0.00%	34
<b>M- MAJOR BRIDGE</b>	14.45%	4.21%	0.02%	<b>18.68%</b>	0.71%	1
<b>O- OTHER</b>	10.61%	13.07%	0.59%	<b>24.27%</b>	0.15%	5
<b>P- PAVEMENT REPLACEMENT</b>	3.37%	7.76%	0.00%	<b>11.13%</b>	0.00%	3
<b>R- BRIDGE REHABILITATION</b>	14.55%	13.05%	0.08%	<b>27.68%</b>	0.28%	10
<b>X- SAFETY</b>	4.28%	15.91%	0.17%	<b>20.36%</b>	2.57%	9
<b>Y- ROUTINE MAINTENANCE</b>	3.23%	19.48%	0.01%	<b>22.72%</b>	0.07%	10
	5.92%	9.26%	0.22%	<b>15.39%</b>	2.81%	152

Work Type Categories	Preliminary Engineering	Construction Inspection	Right of Way Incidentals	Total Engineering	Right of Way Acquisition	n=
<b>MAJOR PROJECT</b>	9.03%	7.66%	0.52%	<b>17.21%</b>	7.48%	9
<b>TCOS</b>	4.10%	10.06%	0.05%	<b>14.20%</b>	0.19%	141
<b>OTHER</b>	9.70%	16.81%	0.50%	<b>27.00%</b>	0.45%	2
	5.92%	9.26%	0.22%	<b>15.39%</b>	2.81%	152

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**

**7/1/2014 - 6/30/2017  
by District**

**St. Louis**

Work Types	Preliminary Engineering	Construction Inspection	Right of Way Incidentals	Total Engineering	Right of Way Acquisition	n=
<b>1- ITS</b>	0.00%	0.00%	0.00%	<b>0.00%</b>	0.00%	1
<b>2- ADA-TRANS</b>	37.99%	30.73%	1.12%	<b>69.83%</b>	0.56%	1
<b>A- ADD LANES</b>	4.95%	12.26%	0.31%	<b>17.52%</b>	6.67%	4
<b>B- BRIDGE REPLACEMENT</b>	11.85%	7.87%	0.01%	<b>19.73%</b>	0.04%	9
<b>D- DUAL DIVIDED</b>	15.45%	6.22%	1.17%	<b>22.84%</b>	48.35%	2
<b>E- ENHANCEMENTS</b>	9.45%	11.91%	0.74%	<b>22.10%</b>	0.80%	3
<b>F- FREEWAY</b>	0.46%	5.28%	0.00%	<b>5.74%</b>	0.00%	2
<b>G- PREV MAINT-BRIDGE</b>	1.69%	9.79%	0.00%	<b>11.48%</b>	0.00%	9
<b>H- HIGH TYPE RESURFACING</b>	6.04%	10.11%	0.21%	<b>16.36%</b>	1.05%	14
<b>I- INTERCHANGE</b>	7.06%	8.33%	0.78%	<b>16.17%</b>	1.79%	1
<b>J- PREV MAINT-PAVEMENT</b>	4.42%	8.59%	0.00%	<b>13.01%</b>	0.00%	39
<b>K- MED TYPE RESURFACING</b>	8.43%	11.22%	0.00%	<b>19.65%</b>	0.00%	10
<b>L- LOW TYPE RESURFACING</b>	8.52%	13.71%	0.00%	<b>22.23%</b>	0.00%	2
<b>M- MAJOR BRIDGE</b>	14.62%	1.81%	1.30%	<b>17.73%</b>	6.79%	5
<b>O- OTHER</b>	10.35%	14.71%	0.17%	<b>25.23%</b>	0.20%	15
<b>P- PAVEMENT REPLACEMENT</b>	9.39%	6.94%	0.00%	<b>16.33%</b>	0.00%	3
<b>Q- CMAQ</b>	7.53%	11.30%	0.01%	<b>18.83%</b>	0.00%	26
<b>R- BRIDGE REHABILITATION</b>	5.61%	11.04%	0.00%	<b>16.66%</b>	0.00%	14
* <b>S- BRDG RETROFIT AND STR</b>	385.83%	12.02%	5.13%	<b>402.98%</b>	164.31%	1
<b>X- SAFETY</b>	12.27%	13.58%	0.41%	<b>26.25%</b>	1.17%	17
<b>Y- ROUTINE MAINTENANCE</b>	0.00%	1.76%	0.00%	<b>1.76%</b>	0.00%	8
	11.82%	5.83%	0.75%	<b>18.40%</b>	7.44%	186

Work Type Categories	Preliminary Engineering	Construction Inspection	Right of Way Incidentals	Total Engineering	Right of Way Acquisition	n=
<b>MAJOR PROJECT</b>	12.80%	3.29%	1.11%	<b>17.21%</b>	11.04%	14
<b>TCOS</b>	10.26%	9.90%	0.11%	<b>20.27%</b>	1.56%	169
<b>OTHER</b>	9.45%	11.91%	0.74%	<b>22.10%</b>	0.80%	3
	11.82%	5.83%	0.75%	<b>18.40%</b>	7.44%	186

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.

- \* Only one project for Bridge Retrofit and Strengthening was completed during the current time frame for this district. This one project was split into many smaller construction projects. Thus, all Preliminary Engineering is in the parent project, but most construction is in child projects, which were not included. Resulting in unusual percentage values.

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

**7/1/2014 - 6/30/2017  
by District**

**Southwest**

Work Types	Preliminary Engineering	Construction Inspection	Right of Way Incidentals	Total Engineering	Right of Way Acquisition	n=
<b>1- ITS</b>	0.39%	0.00%	0.00%	<b>0.39%</b>	0.00%	1
<b>2- ADA-TRANS</b>	12.64%	26.91%	1.60%	<b>41.16%</b>	0.85%	15
<b>A- ADD LANES</b>	12.43%	8.73%	2.02%	<b>23.19%</b>	25.59%	6
<b>B- BRIDGE REPLACEMENT</b>	13.17%	14.26%	0.00%	<b>27.43%</b>	0.00%	12
<b>E- ENHANCEMENTS</b>	11.10%	16.07%	0.00%	<b>27.17%</b>	0.00%	6
<b>F- FREEWAY</b>	14.18%	16.99%	0.50%	<b>31.67%</b>	4.16%	5
<b>G- PREV MAINT-BRIDGE</b>	1.51%	14.90%	0.00%	<b>16.40%</b>	0.00%	1
<b>H- HIGH TYPE RESURFACING</b>	0.99%	8.06%	0.00%	<b>9.05%</b>	0.00%	2
<b>I- INTERCHANGE</b>	9.93%	8.79%	0.43%	<b>19.15%</b>	3.00%	5
<b>J- PREV MAINT-PAVEMENT</b>	0.57%	8.76%	0.00%	<b>9.33%</b>	0.00%	18
<b>K- MED TYPE RESURFACING</b>	1.38%	6.43%	0.01%	<b>7.82%</b>	0.01%	93
<b>L- LOW TYPE RESURFACING</b>	2.32%	7.34%	0.00%	<b>9.66%</b>	0.00%	6
<b>O- OTHER</b>	7.08%	15.61%	0.42%	<b>23.11%</b>	3.97%	11
<b>P- PAVEMENT REPLACEMENT</b>	0.00%	9.01%	0.00%	<b>9.01%</b>	0.00%	1
<b>Q- CMAQ</b>	0.00%	1.63%	0.00%	<b>1.63%</b>	0.00%	1
<b>R- BRIDGE REHABILITATION</b>	2.69%	6.63%	0.00%	<b>9.32%</b>	0.00%	8
<b>T- NEW OR IMPROVED 2 LANE</b>	6.43%	9.61%	2.28%	<b>18.31%</b>	54.16%	3
<b>V- HIGHWAY RAIL SAFETY</b>	15.37%	9.84%	1.00%	<b>26.20%</b>	4.69%	1
<b>X- SAFETY</b>	9.76%	13.80%	0.56%	<b>24.13%</b>	3.09%	30
<b>Y- ROUTINE MAINTENANCE</b>	1.34%	19.23%	0.00%	<b>20.58%</b>	0.00%	4
	5.28%	8.93%	0.41%	<b>14.62%</b>	5.43%	229

Work Type Categories	Preliminary Engineering	Construction Inspection	Right of Way Incidentals	Total Engineering	Right of Way Acquisition	n=
<b>MAJOR PROJECT</b>	10.38%	9.40%	1.27%	<b>21.05%</b>	19.41%	19
<b>TCOS</b>	3.25%	8.66%	0.10%	<b>12.01%</b>	0.42%	203
<b>OTHER</b>	12.99%	13.32%	0.44%	<b>26.75%</b>	2.08%	7
	5.28%	8.93%	0.41%	<b>14.62%</b>	5.43%	229

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**

**7/1/2014 - 6/30/2017  
by District**

<b>Southeast</b>						
Work Types	Preliminary Engineering	Construction Inspection	Right of Way Incidentals	Total Engineering	Right of Way Acquisition	n=
<b>A- ADD LANES</b>	6.63%	7.54%	1.51%	<b>15.67%</b>	12.47%	3
<b>B- BRIDGE REPLACEMENT</b>	12.47%	15.02%	0.20%	<b>27.68%</b>	0.28%	14
<b>D- DUAL DIVIDED</b>	6.50%	6.18%	1.12%	<b>13.79%</b>	12.97%	2
<b>E- ENHANCEMENTS</b>	0.00%	0.00%	0.00%	<b>0.00%</b>	0.00%	2
<b>H- HIGH TYPE RESURFACING</b>	0.42%	5.36%	0.00%	<b>5.78%</b>	0.00%	9
<b>I- INTERCHANGE</b>	3.70%	9.33%	0.00%	<b>13.03%</b>	0.00%	6
<b>J- PREV MAINT-PAVEMENT</b>	1.51%	3.75%	0.00%	<b>5.26%</b>	0.00%	6
<b>K- MED TYPE RESURFACING</b>	1.13%	7.50%	0.02%	<b>8.65%</b>	0.01%	50
<b>L- LOW TYPE RESURFACING</b>	2.45%	4.42%	0.00%	<b>6.87%</b>	0.00%	14
<b>O- OTHER</b>	6.32%	8.25%	0.94%	<b>15.51%</b>	4.19%	10
<b>R- BRIDGE REHABILITATION</b>	11.42%	15.75%	0.03%	<b>27.20%</b>	0.00%	5
<b>T- NEW OR IMPROVED 2 LANE</b>	4.19%	8.78%	1.10%	<b>14.08%</b>	5.21%	5
<b>W- SHOULDER WIDENING</b>	6.36%	18.25%	0.71%	<b>25.32%</b>	1.13%	2
<b>X- SAFETY</b>	1.00%	5.90%	0.07%	<b>6.96%</b>	0.45%	9
<b>Y- ROUTINE MAINTENANCE</b>	4.65%	15.20%	0.00%	<b>19.85%</b>	0.00%	5
	3.50%	7.44%	0.42%	<b>11.36%</b>	3.12%	142

Work Type Categories	Preliminary Engineering	Construction Inspection	Right of Way Incidentals	Total Engineering	Right of Way Acquisition	n=
<b>MAJOR PROJECT</b>	5.30%	7.94%	0.98%	<b>14.21%</b>	7.91%	16
<b>TCOS</b>	2.49%	7.13%	0.11%	<b>9.73%</b>	0.46%	122
<b>OTHER</b>	3.79%	10.87%	0.42%	<b>15.08%</b>	0.67%	4
	3.50%	7.44%	0.42%	<b>11.36%</b>	3.12%	142

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.