



# Construction Cost Default Values

### **Project Cost Estimation**

OKI will use the cost estimate from published planning studies or those provided by the agency that provided the project. In the absence of a cost estimate from a primary source, an estimate is made using either a KY Project Information Form (PIF) (if available for a KY project.) or the default value described below using secondary literature research. More discussion on secondary source data is included in the appendix to this document.

### Roadway

Roadway project cost estimates include construction and right of way. Default data is tabulated from FHWA HERS Data 2010 and factored to 2015 using an annual inflation rate of 2.5% per year.

<b>2015 Default Per Lane Miles Cost</b>		
	<b>Add Lane</b>	<b>New Alignment</b>
<b>Urban</b>		
Freeway/Expressway/Interstate	\$13,000,000	\$19,200,000
Other Principal Arterial	\$9,500,000	\$12,900,000
Minor Arterial/Collector	\$6,500,000	\$8,800,000
<b>Rural</b>		
Interstate	\$2,900,000	\$3,600,000
Other Principal Arterial	\$2,300,000	\$2,800,000
Minor Arterial	\$2,200,000	\$2,700,000
Major Collector	\$2,100,000	\$2,600,000

### Interchange on interstate system

Interchange costs estimates are based on recently completed interchanges in or near the OKI region and recent costs estimates from local area studies. OKI will use the following default interchange cost on interstate facilities:

Urban:	\$75 million
Suburban:	\$50 million
Rural:	\$30 million

### Intersection Reconstruction

Intersection reconstruction costs are not normally considered as capacity enhancement projects requiring inclusion in the Plan. However costs are included for reference and potential future use. Costs are developed from OKI FY14-17 TIP projects. Costs are simple averages of projects considered complex versus simple. Complex may involve multiple turn lane additions, minor realignment and potential vertical alignment corrections. Simple typically are the addition of a single turn lane from a major road to a minor road. Use of average cost should only be used as a planning level cost estimate as a number of factors can impact the actual total

project cost including right of way, utility relocation and scope of the project in terms of the approach improvements (i.e. number of legs to be improved).

Complex: \$3,900,000  
Simple: \$1,500,000

Transit

The following cost estimates will be used estimating transit project costs based on input provided by TANK and SORTA:

<b>Transit Default Costs</b>	
On-street Transit Station	\$3,000,000
Off-street Transit Station w/ amenities	\$6,000,000
Off-street basic park and ride	\$800,000
40' standard transit bus	\$435,000
40' hybrid transit bus	\$615,000
Compact transit vehicle	\$98,000

## Bike and Pedestrian

The following cost estimates are for bicycle facility and sidewalk construction only and do not include design, engineering, property acquisition, utility relocation or operation and maintenance. Source documentation follows the table.

Cost estimates in figure below are for bicycle facility and sidewalk construction only and do not include design, engineering, property acquisition, utility relocation or operation and maintenance. Many pedestrian projects will be incorporated and included as elements of roadway improvement projects but as necessary, the costs for sidewalks will be estimated at \$620,000 per mile. Costs are merely illustrative. Site-specific conditions significantly affect actual costs.

2015 OKI Bicycle/Pedestrian Facility Construction Cost Estimates <sup>vii</sup>		
Facility	Component cost / mile	Estimated cost / mile
<b>On-Road</b> <sup>viii</sup>		
Bike lanes (striping)	Center Line - \$4,800 Bike lane symbols - \$14,100 Shared lane markings - \$2,149	\$21,049
Wide curb lanes (14+ ft.)	Added pavement	\$200,000
Shared lane markings	Pavement markings	\$3,960
<b>Off-Road</b>		
Off road shared use path <sup>ix</sup>	10 ft. paved	\$481,140
Sidewalk – 5 ft. concrete <sup>x</sup>	Both sides (10 ft.)	\$620,000

Sources:

<sup>vii</sup> Bicycle and pedestrian costs update a previous estimate from April 2003 prepared for approximating bike components of projects included in the 2004 Update of the OKI 2030 Regional Transportation Plan. Some of the sources from the memo were used as a base for this 2016 update.

<sup>viii</sup> The on-road traditional bike lane estimates is based on figures from the City of Cincinnati for the street rehabilitation on Delta Avenue in 2014

<sup>ix</sup> A principal source for this update is the Bicycle/Pedestrian Information Center Facility Cost [http://www.pedbikeinfo.org/cms/downloads/Countermeasure%20Costs\\_Report\\_Nov2013.pdf](http://www.pedbikeinfo.org/cms/downloads/Countermeasure%20Costs_Report_Nov2013.pdf)

This source was used for the off-road estimates. The costs in the figure are reflect 2015 dollars.

<sup>x</sup> The construction cost estimate for five foot sidewalks on both side of a street is based on figures from Indiana Department of Transportation – Table of Typical Pedestrian and Bicycle Facility Costs (March 2011) [http://in.gov/indot/files/BikePed\\_Facility\\_Costs2372011.pdf](http://in.gov/indot/files/BikePed_Facility_Costs2372011.pdf)

## ITS

Individual project costs were estimated during the development of the *OKI ITS Architecture Update and Strategic Plan*. Appendix G of this *Plan* will be referenced for default cost information as necessary.

[http://www.consystem.com/oki/web/files/projectdocs/OKI%20ITS%20Architecture%20&%20Strategic%20Plan\\_FINAL.pdf](http://www.consystem.com/oki/web/files/projectdocs/OKI%20ITS%20Architecture%20&%20Strategic%20Plan_FINAL.pdf)

## Appendix – Source Data and Links

### Roadway Improvement Costs

The roadway projects considered for inclusion in the OKI Transportation Plan have been through various levels of planning. Some have been evaluated to the extent that some level of cost estimate has been developed. To the extent possible OKI will use the most recent and detailed cost estimates available but there will be many projects that will have to rely on planning level cost estimates that OKI has derived from research of similar projects. For consistency, OKI is relying on data from the FHWA Highway Investment Analysis Methodology, known as the Highway Economic Requirements System (HERS). OKI is not using the software, only the project improvement cost by roadway project type.

The HERS project data reflects the costs of improving bridges, modifying interchanges, and addressing environmental issues, these values represent the average costs for a typical project. However, a project with a large number of bridges, complicated interchanges, major environmental issues, and/or other extreme engineering issues would be expected to cost considerably more than a less complex project.

The values shown for adding a lane at "Normal Cost" reflect costs for projects where sufficient right-of-way is available or could be readily obtained to accommodate additional lanes. The values for adding lane equivalents at "High Cost" are intended to reflect situations in which conventional widening is not feasible and alternative approaches would be required in order to add capacity to a given corridor. Such alternatives would include the construction of parallel facilities, double-decking, tunneling, or the purchase of extremely expensive right-of-way. OKI is using the following assumptions for per lane mile cost estimates:

- Rural freeways: Average of Normal and High costs for rolling terrain
- Urban Freeways, principal arterials and collectors: Average Normal and High costs for large urban areas

More information about how HERS can be found on FHWA's website:

- <http://www.fhwa.dot.gov/policy/2008cpr/appa.htm#5>
- <http://www.fhwa.dot.gov/asset/hersst/pubs/users/page14.cfm#parameters>

Typical Costs per Lane Mile by Type of Improvement  
(Thousands of 2010 Dollars per Lane Mile)

Category	Reconstruct and Widen Lane	Reconstruct Existing Lane	Resurface and Widen Lane	Resurface Existing Lane	Improve Shoulder	Add Lane, Normal Cost	Average factored to 2015	Add Lane, Equivalent High Cost	New Alignment, Normal	Average Factor to 2015	New Alignment, High
<b>Rural Interstate</b>											
Flat	\$1,409	\$920	\$797	\$327	\$61	\$1,811	\$2,444	\$2,510	\$2,510	\$2,840	\$2,510
Rolling	\$1,579	\$944	\$918	\$348	\$100	\$1,963	<b>\$2,908</b>	\$3,177	\$3,177	<b>\$3,594</b>	\$3,177
Mountainous	\$2,994	\$2,067	\$1,521	\$515	\$210	\$6,113	\$7,506	\$7,156	\$7,156	\$8,096	\$7,156
<b>Other Principal Arterial</b>											
Flat	\$1,100	\$737	\$665	\$262	\$41	\$1,451	\$1,995	\$2,076	\$2,076	\$2,349	\$2,076
Rolling	\$1,242	\$757	\$756	\$292	\$68	\$1,553	<b>\$2,297</b>	\$2,507	\$2,507	<b>\$2,836</b>	\$2,507
Mountainous	\$2,413	\$1,705	\$1,465	\$412	\$89	\$5,483	\$6,674	\$6,314	\$6,314	\$7,144	\$6,314
<b>Minor Arterial</b>											
Flat	\$1,006	\$647	\$620	\$232	\$38	\$1,318	\$1,793	\$1,851	\$1,851	\$2,094	\$1,851
Rolling	\$1,215	\$716	\$771	\$250	\$70	\$1,511	<b>\$2,203</b>	\$2,384	\$2,384	<b>\$2,697</b>	\$2,384
Mountainous	\$2,018	\$1,323	\$1,465	\$343	\$159	\$4,629	\$5,761	\$5,555	\$5,555	\$6,285	\$5,555
<b>Major Collector</b>											
Flat	\$1,060	\$685	\$640	\$237	\$49	\$1,370	\$1,822	\$1,850	\$1,850	\$2,093	\$1,850
Rolling	\$1,160	\$696	\$720	\$252	\$66	\$1,399	<b>\$2,080</b>	\$2,277	\$2,277	\$2,576	\$2,277
Mountainous	\$1,758	\$1,089	\$1,048	\$343	\$101	\$2,963	\$3,865	\$3,870	\$3,870	<b>\$4,379</b>	\$3,870
<b>Urban/Freeway/Expressway/Interstate</b>											
Small Urban	\$2,297	\$1,591	\$1,810	\$386	\$71	\$2,882	\$6,967	\$9,434	\$3,884	\$9,698	\$13,259
Small Urbanized	\$2,469	\$1,605	\$1,873	\$457	\$94	\$3,170	\$7,646	\$10,346	\$5,236	\$13,073	\$17,873
Large Urbanized	\$3,938	\$2,626	\$2,900	\$613	\$354	\$5,270	<b>\$12,981</b>	\$17,676	\$7,679	<b>\$19,175</b>	\$26,216
Major Urbanized	\$7,877	\$5,253	\$5,629	\$1,015	\$707	\$10,540	\$30,827	\$43,953	\$15,359	\$41,927	\$58,755
<b>Other Principal Arterial</b>											
Small Urban	\$2,002	\$1,351	\$1,657	\$324	\$72	\$2,450	\$5,913	\$8,002	\$3,062	\$7,644	\$10,451
Small Urbanized	\$2,142	\$1,368	\$1,732	\$383	\$96	\$2,654	\$6,424	\$8,702	\$3,778	\$9,432	\$12,895
Large Urbanized	\$3,060	\$2,005	\$2,534	\$481	\$309	\$3,884	<b>\$9,538</b>	\$12,977	\$5,186	<b>\$12,948</b>	\$17,702
Major Urbanized	\$6,120	\$4,009	\$5,068	\$777	\$617	\$7,768	\$21,429	\$30,113	\$10,372	\$31,266	\$44,897
<b>Minor Arterial/Collector</b>											
Small Urban	\$1,475	\$1,021	\$1,253	\$237	\$52	\$1,809	\$4,338	\$5,860	\$2,209	\$5,516	\$7,542
Small Urbanized	\$1,546	\$1,032	\$1,265	\$269	\$64	\$1,906	\$4,582	\$6,194	\$2,711	\$6,769	\$9,254
Large Urbanized	\$2,081	\$1,380	\$1,729	\$331	\$173	\$2,643	<b>\$6,459</b>	\$8,774	\$3,528	<b>\$8,808</b>	\$12,042
Major Urbanized	\$4,162	\$2,761	\$2,616	\$550	\$347	\$5,285	\$20,025	\$30,113	\$7,056	\$25,072	\$37,264

Source: Highway Economic Requirements System. (HERS)