

# MDT Cost Estimating

# MDT Resources

## Cost Estimating

MDT design staff is responsible for estimating construction costs for proposed projects. Interim guidance on cost estimating should be followed while the Department works on updating its Estimating Procedures and Guidelines. Please note that in the current MDT Procedures and Guidelines, some of the applications have changed, including: inflation, IDC, report formatting, etc. Cost estimating-related email may contain information that is supplemental to these guidelines. FHWA, AASHTO, and other states have additional information available as referenced below.

Please contact Chad Richards at 444-6944 or Lesly Tribelhorn at 444-6242 with any questions or training requests.

## Guidelines

- [MDT Procedures and Guidelines](#)
- [MDT Risk Management Guidelines \(DRAFT\)](#)
- [Risk Management Plan \(RMP\) Quick Guide | RMP Workbook](#)
- [Risk Management Process](#)
- [Introduction to Risk Management](#)
- [Plastic Pipe Items Guidance](#)
- [G-Match Guidance](#)

## Resources

### ESTIMATOR

- [Estimator 2.7a User Guide](#)
- [Estimator Import Instructions](#)
- [Estimator Product Sheet](#)
- [Estimator Solution for Loading Catalogs](#)
- [Traffic Control History](#)
- [Trns-port Bid Prices](#)
- [Trns-port Estimator Documentation](#)
- [Using Two Different Catalogs in the Same Project](#)

### EXCEL

- [Cost Estimate Spreadsheet - English | Metric](#)

# Updated Guidance

- MDT Estimating Procedures & Guidance
  - Mobilization Rates
  - Construction Engineering Rates
  - Traffic Control Rates & Guidance
  - Contingency Rates

# MDT Cost Estimating Tools

- MDT Cost Estimate Sheet
- Oracle Bid Tabs
- AASHTOWare Estimator
- Preliminary Estimating Tool
- Oracle traffic control tool
- AASHTOWare Estimation – Coming Soon!

# Mobilization Rates

- Mobilization rates from over 800 completed projects were used to develop average mobilization rates.
- Rates were broken down into categories by work type and total contract size.
- Rates were analyzed by district as well.
  - Rates did not have enough variance to justify separate figures.

# Mobilization Rates

PROJECT TYPE	CONTRACT AMOUNT	% MOBILIZATION
Chip Seal	\$0 - \$1,000,000	13.0%
	\$1,000,000 +	10.5%
Overlay or Mill/Fill	\$0 - \$1,000,000	12.0%
	\$1,000,000 - \$4,000,000	12.0%
	\$4,000,000 +	8.5%
Bridge Rehab	\$0 - \$2,000,000	15.0%
	\$2,000,000 +	13.5%
Bridge Replacement	\$0 - \$1,000,000	12.0%
	\$1,000,000 - \$4,000,000	15.0%
	\$4,000,000 +	13.5%
Reconstruction (Excluding Bridges)	\$0 - \$1,000,000	13.0%
	\$1,000,000 - \$4,000,000	11.0%
	\$4,000,000 - \$8,000,000	10.0%
	\$8,000,000 +	9.0%

# Construction Engineering Rates

- Construction Engineering rates were calculated from overall charges to the construction engineering account for over 970 completed projects.
- Projects were separated into work types for analysis and averages were developed for CE percentage rates.

# CE Rates

Project Type	CE Rate %
New Construction	10
Reconstruction	10
Major Rehab	8
Minor Rehab	7
Asphalt Resurfacing	6
Seal & Cover	6
Bridge Reconstruction	12
Bridge Rehab	8
Safety Improvements	14
Traffic & Signing	18
Environmental	24
Bike/Ped	13



# Traffic Control Rates

- Traffic control figures were used from over 440 completed projects from around the state.
- Traffic control average rates were figured for several different work types.
  - Averages for units per day and unit cost were both developed.
- Estimator then needs to develop approximate contract duration to determine traffic control needed.
  - Use contract times for comparable projects to determine approximate contract time.

# Traffic Control Rates

PROJECT TYPE	AVERAGE UNIT PER DAY	AVERAGE UNIT PRICE
Bridge	700	0.61
Reconstruction	2240	0.70
Overlay or Mill/Fill	2050	0.72
Interstate (Crossover/2way)	1100	0.75
Interstate (One Way)	2500	0.65
Safety	1550	0.63

# Traffic Control History Tool

- Located under TRNS-PORT on the web applications webpage.
- Tool to query projects to determine unit quantities and unit prices for similar projects.
- Query options:
  - District
  - Work Type
  - Length of Project

# Traffic Control History

TRAFFIC CONTROL HISTORY QUERY    TRAFFIC CONTROL HISTORY DETAIL

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**AVERAGES**

PLAN QTY	CUR QTY	TC QTY USED	UNIT PRICE	TOTAL COST	% COST OF CONT PYMTS	UNITS PER DAY	COST PER DAY
68,482.14	68,482.14	59,268.07	75	39,079.04	4.82	1,816.01	1,197.41
<b>UNITS/MILE</b>	<b>UNITS/KM</b>	<b>COST/MI</b>	<b>COST/KM</b>				

Device Information (if part of query)

TYPE	DEV QTY USED	NBR DEV USED	DEV QTY/MI	DEV QTY/KM	% OF TOTAL QTY

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**PROJECTS**

CONT ID	LET DATE	DIST	PRJ NBR	PROJECT DESCRIPTION	CHRG DAYS	CONT TYPE	PROJECT LENGTH	MILES	TC QTY USED	UNIT PRPSL		RECALC	CALC
										PRICE	NBR	NBR DEV USED	IND
01815	20150611	1	8771127000	ASHLEY CR - SOUTH	30	AD	3.3	71,339.00	8	0110		<input checked="" type="checkbox"/>	
02115	20150122	1	8145027000	LONEPINE - SOUTH	20	AD	4.9	45,122.00	1	0070		<input checked="" type="checkbox"/>	
02414	20140410	1	8146047000	TUCKER CROSSING - N&S	23	AD	3.7	31,531.00	83	0070		<input checked="" type="checkbox"/>	
03A10	20101021	5	6975050000	BILLINGS - NORTH	27	AD	7.2	50,614.00	1.25	0090		<input checked="" type="checkbox"/>	
04B13	20131114	1	7650132000	EDDY'S FLAT	48	AD	3.5	16,466.00	8	0210		<input checked="" type="checkbox"/>	
04B13	20131114	1	7651130000	PLAINS TO PARADISE	48	AD	9.9	108,664.00	8	0210		<input checked="" type="checkbox"/>	
04B13	20131114	1	7653134000	PERMA - E & W	48	AD	8.2	87,474.00	8	0210		<input checked="" type="checkbox"/>	
05315	20150312	1	8731151000	CHARLOS HEIGHTS	40	AD	5	63,451.00	84	0120		<input checked="" type="checkbox"/>	
05411	20110714	3	7362025000	GERALDINE - ARROW CREEK	20	AD	28.42	33,232.00	31	0070		<input checked="" type="checkbox"/>	
06612	20120607	1	7628037000	BELL CROSSING - NORTH & SOUTH	32	AD	5	46,112.00	68	0080		<input checked="" type="checkbox"/>	

# Contingency Rates

- Statistical analysis performed on over 800 completed projects.
  - PPMS milestone estimates compared to final constructed costs.
    - Percentages were developed comparing the final constructed cost to the milestone figures.
    - These percentages were input into bell curves to determine the 80<sup>th</sup> percentile figures.
  - Projects were subjectively broken down by complexity into three categories: Low, Moderate, High

# Contingency Rates

Phase	Low Risk	Medium Risk	High Risk
Planning\Nom\OT	20-45	30-80	40-110
PFR	15-40	25-60	40-100
AGR		20-40	35-80
SOW	10-30	15-35	30-70
PIH	5-20	10-25	20-55
FPR	0-5	3-10	5-20

# AASHTOWare Estimation

- New web-based estimating tool in development
- Anticipated release for February 2017
- All-in-one estimating tool
  - Bid Data
  - Bid Item regression analysis
  - Estimate builder and estimate reporting
  - Preliminary estimating tools
- Centralized Estimate storage

Questions?

