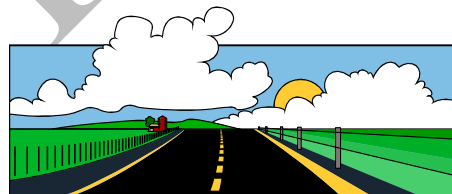


Construction Cost Estimation Preparation Manual for Preliminary Design (Metric Units)



July 2002

Prepared by Construction Cost Estimates Unit
Program Support Services

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1.0 Introduction

For use by the Designer's Cost Estimators in developing Construction Cost Estimates (referred to within as the estimate) for NJDOT Capital Program Projects at Preliminary Design (PD). PD estimates are based on the project's type, length, pavement type, and types of bridges, and are used for the 5-year Program and involves the Metropolitan Planning Organizations, and the Transportation Improvement Program. The Cost Estimating Unit has been placed outside of the rest of the production units in order to provide independent estimates used in the financial programming.

The information provided by this office includes:

Bid Price Report for Standard Items

Price information used to develop Final Engineer's Construction Estimates and Proposals. The database files are for use with the Contractor Payment System Front End program (CPSFE).

Issued annually and updated quarterly.

Standard Item List

A list of all the Standard Items used to develop Final Engineer's Construction Estimates and Proposals. The database files are for use with the Contractor Payment System Front_End program (CPSFE).

It is updated when needed - about once a year, but not necessarily annually.

Asphalt Cement & Fuel Price Index

Average Price, computed each month from industry sources and placed on this web site. It is used in preparation of the Asphalt and Fuel Price adjustments, which are entered into the Final Engineer's Construction Estimates.

Contractor Payment System Front End Program

The Contractor Payment System (CPS) consists of PC and Mainframe programs used by the New Jersey Department of Transportation to develop Final Engineer's Construction Estimates and Proposals for receipt of bids, to maintain project information and to pay contractors. The PC program (Contractor Payment System Front End) is used by consultants and design units of the Department to create the data files needed by the Department, and to produce Engineer's Estimates for projects. When the data files are complete, the files are uploaded by the Department to the mainframe based CPS program in order to produce the contract documents.

The program (with Manual) and an upgrade program are available.

Contacts

Andy Kuchtyak	Reviewers Group	609-530-2701
Glenn Lawrence	Support Group	609-530-5639

Initial estimates based on the project's type, length, pavement type, and types of bridges, are used for the 5-year Program. The 1-year Program uses the Final Estimates and involves the Metropolitan Planning Organizations, the Transportation Improvement Program

1.1 Definitions

- Engineer's Estimate - an estimate of the reasonable cost of a NJDOT construction project.
- Contractor's Payment System Front End (CPSFE) - the NJDOT's computer program for developing the Engineer's Estimate and the Proposal for NJDOT construction projects
- Transport Bid Analysis Management System/ Decision Support System (BAMS/DSS) - a system developed by AASHTO and InfoTech Inc that helps to analyze bids.

1.2 Submittal

The PD submission shall include preliminary plans, estimate sheets and transmittal letter with a date for completion review.

Revised estimates are also submitted annually by September 1st.

Superseded

2.1 Initial Preparation

- A. Determine which of the seven classifications most nearly represents the type of work to be performed.
- B. Use the forms for that classification to estimate the construction cost. Also available is an Excel spreadsheet called PD Estimate.xls.
- C. For projects that do not fit into any of the seven classifications, the best results are usually obtained by searching out a previously completed project of a similar nature and adjusting its cost to reflect and scope differences and price escalation.
- D. Those seven Construction Classifications (Work Types) are:
 1. **NEW CONSTRUCTION**

New construction or major reconstruction of divided or undivided highways. Includes all major phases of construction site preparation, earthwork, drainage, structures, paving, etc. whether contracted separately or as a complete project. Minor items such as signing, landscaping and guardrail are included unless they are in separate specialty contracts. If Maintenance of Traffic will include 2 or more stages or if extensive Maintenance of Traffic equipment is needed, use Class 2.
 2. **RECONSTRUCTION, WIDENING AND DUALIZATION**

The removal and replacement, rebuilding or upgrading of an existing facility, including intersections. There may be grade changes but normally the changes will not be significant. Includes all phases of construction. May include short relocations. Includes widening equivalent to one lane width or wider. Includes structures when decks are replaced on existing substructures or decks are widened and substructures extended. Includes intersection improvements when roadway area is also rebuilt.
 3. **WIDENING AND RESURFACING**

Widening and resurfacing of existing highway facilities when the total added width is equivalent to less than one lane width in each direction and grades are not changed. Includes minor grading, extending culverts, curb and gutter, etc. Includes bridge deck widening possibly without substructure changes.
 4. **RESURFACING**

Overlaying existing highways, and surfacing or overlaying existing shoulders with asphaltic material. Includes joint repair, minor widening with asphaltic materials, some base corrections or asphaltic base, curb and gutter replacement, and adjustments at structures, drives and street returns. Does not include extensive reconstruction, pavement replacement or construction of new pavements, excavation, utility or sewer work.
 5. **BRIDGE REPAIR**

Repair of bridges, includes repairs to decks, curbs, rails, beams and structures. If total deck removal and replacement is required, the contract should be classified as reconstruction.
 6. **INTERSECTION IMPROVEMENTS**

Minor construction or reconstruction of street or highway intersections. Normally

includes some removal, grading, drainage and paving. May include curb and sidewalk along with traffic signals installed at the intersection. If intersection pavement is to be rebuilt, the contract should be classified as reconstruction.

7. SAFETY AND TRAFFIC CONTROL

Placement or replacement of guide rail, signs, striping, lighting, traffic signals, and other safety and traffic control devices, along streets and highways, when let on a specialty contract basis. If safety and traffic control devices are included as part of a major contract type, they should be included under the Miscellaneous activities for that type.

- E. The costs shown on the calculation forms are for the date shown on the forms. Updates will be issued to reflect changes in costs and conditions. If the Designer feels that the cost shown on the calculation forms do not accurately reflect the cost of the work for his particular project, he may adjust the cost accordingly. The cost changed and the reason for the cost change shall be submitted in a letter attached to the Initial estimate.
- F. For some types of work only a range of unit prices could be determined. The estimator must determine which unit price is most appropriate.
- G. Provisions are included on the Summary Sheet for contingencies and to adjust estimated costs to the anticipated midpoint of construction time.
- H. When there is proposed work to existing structures within the limits of the proposed project, the Bureau of Structural Engineering shall be contacted to determine the estimated cost of that work.
- I. The Summary Sheet includes provisions for adding other work types. Examples of possible additions are wetland mitigation, garbage dump removal, toxic waste removal, etc. Costs for these work types are best determined as stated in Paragraph C above.
- J. For work which must be constructed at night or done on overtime, increase the Estimate for that work by 30%.
- K. This procedure does not include engineering design costs.
- L. The percentages shown for the Utilities (Relocation Companies/Owners) costs are "averages" for each classification of project. Unusual conditions such as power stations, sewerage plants, high-tension lines and pumping stations must be taken into account. If any unusual condition is encountered, the designer must contact the Bureau of Utility and Railroad Engineering for guidance in determining the initial (preliminary) utility cost. The Bureau of Utility and Railroad Engineering must also be contacted when there is "railroad" involvement. All utility costs must be updated whenever the Construction Cost Estimates are updated. If detailed cost estimates are available they should be used instead of the percentages.
- M. When there is R.O.W. involvement, Mr. Edward Nyzio of the R.O.W. Division must be contacted at (609) 530-2188 to obtain a R.O.W. cost which should be added to the Summary Sheet.

All R.O.W. costs shall be updated whenever the Construction Cost Estimates are updated.

- N. Federal non-participating construction cost work sheets labeled Attachment No. 2.1 (located at the end of the section), listing anticipated items of work that FHWA will not participate in, shall be completed and included as the last page of each classification even if the non-participating amount is zero. This total shall already be included in the Construction Cost for the project and will only be used for programming purposes.
- O. Context Sensitive Design (CSD) - There is currently no historical data available to estimate this work. A space has been added to include the costs for the CSD. Additional sheets should be attached to the estimate that details the items of work and costs that were used to determine the CSD total amount. CSD work can include any additional landscape plantings above normal requirements, architectural treatments, or structural work, special types of curb or sidewalk, park areas, etc.

Superseded

2.1.1 Classification Number 1 - NEW CONSTRUCTION - METRIC
Work Type - EARTHWORK (must be calculated)

Route _____ Section/Contract # _____
 PM _____ UPC No. _____

	Unit	Quantity	x Unit Price	= Amount
Stripping (100-150mm Depth)	Hectare		10,000	
Roadway Exc. Unclassified	C.M.		See (J)	
Removal of Conc. Base & Conc. Surface Courses	S.M.		13-20 See (K)	
Channel Excavation	C.M.		17.50	
Ditch Excavation	C.M.		16.00	
Borrow Excavation Zone 3	C.M.		See (J)	
EARTHWORK TOTAL				=

Suggested procedure for calculating earthwork:

- A) Determine Typical section (number of lanes, median widths, side slopes, etc.).
- B) Get latest topography map available.
- C) Plot proposed alignment on topo map.
- D) Develop profile using topo controls such as existing roads, streams, rivers and design manual.
- E) Calculate Areas for the typical section in 0.3 meter increments of cut or fill.
- F) At 30 to 150 meter intervals (depending on frequency of X-section changes) calculate the earthwork.
- G) Calculate any other significant earthwork (ramps, crossroads, etc.).
- H) Make appropriate earthwork corrections for the pavement box and striping. Use 530 mm depth for rigid pavement, 660 mm depth for all flexible pavement and 100 mm depth for striping.
- I) Deduct any roadway excavation from borrow required to calculate Borrow Excavation Zone 3.
- J) See Construction Cost Estimate Work Sheet (Attachment 3.1). This worksheet must be utilized for the most recent price information.
- K) Based on the quantity, location and type of project.

Classification No. 1 - NEW CONSTRUCTION - Work Type - PAVEMENT - METRIC

3.6 M WIDE LANE (from subgrade up)

Pav't. Type	Description of Pavement	Cost/Linear Meter
A	250 mm R.C. Pavement	= 510
B	50 mm HMA Surf. Crs. & 200 mm HMA Base	= 200
C	75 mm HMA Surf. Crs. & 100 mm HMA Base	= 150
D	50 mm HMA Surf. Crs. & 50 mm HMA Base	= 70
E	Bridge Approach & Transition Slabs	= 510

Computation Table for Pavement. Cost

Type	Cost	X Length	X Pavement *W.F.	= Amount
PAVEMENT TOTAL				=

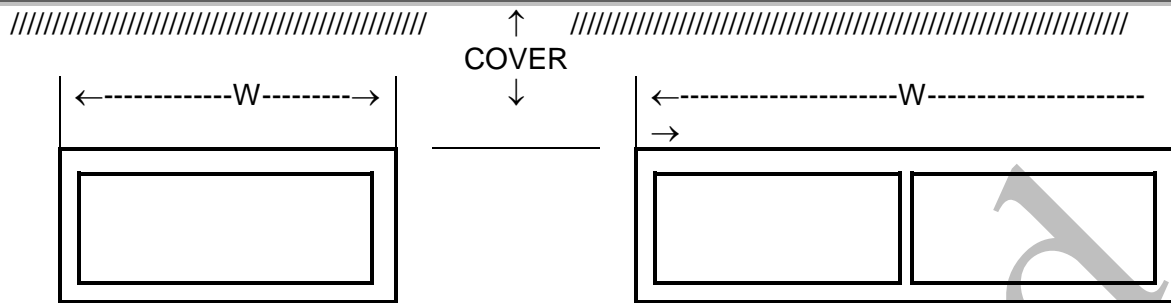
*Width Factors = Ratio of 3.6 meter wide lane to actual pavement width.

Example = actual pavement width = 7.5 meters = $7.5/3.6 = 2.05$ W.F.

Classification No. 1 - NEW CONSTRUCTION - Work Type - CSD - METRIC

Context Sensitive Design – Attach additional sheet detailing items and costs of context sensitive design work

Classification No. 1 - NEW CONSTRUCTION - Work Type - CULVERTS - METRIC



Type 1 W ≤ 6 Meters

Type 2 W > 6 Meters

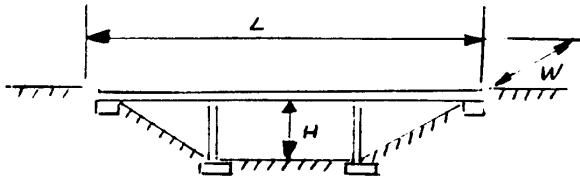
Type	Layout (3)	Skew (1)	Cover (2)	Cost Per Sq. Meter
Type 1	Area W x L exceeds 93 Sq. Meters	0-60 degrees	0 to 3 M	1235
	Short Culverts Difficult Conditions under Square Meters	0-60 degrees	0 to 3 M	2190
			3 to 6 M	2530
	Type 2	Area W x L exceeds 93 Sq. Meters	0-60 degrees	0 to 3 M
Short Culverts Difficult Conditions under Square Meters		0-60 degrees	0 to 3 M	2190
			3 to 6 M	2530

For skews over 60 degrees it will be necessary to make a special analysis and establish a square meter price comparable to above.

Description	Area Computation	x Cost per Sq. Meter	= Amount
CULVERT TOTAL			=

Classification No. 1 - NEW CONSTRUCTION - Work Type - BRIDGES (1 of 3) - METRIC

1 to 3 spans and 2 side spans (Max. Span 30.5 meters)

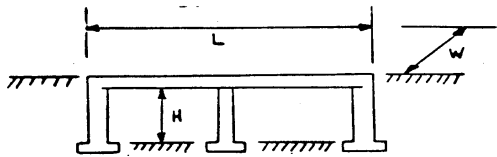


H - Clear Height 4.4 to 7.0 meters(4)

L - 30.5 to 122 meters & all Viaducts Over 122 meters (5)

Class	Layout	Skew (1)	Foundation (2)	Cost Per Sq. Meter
I	Width at Least 13.7 Meters	0 Degrees-40 Degrees	No Piles	1450
			Piles at Stub Abut.	1720
			Piles at Piers & Stub Abut.	1880
		40 Degrees-60 Degrees	No Piles	1560
			Piles at Stub Abut.	1810
			Piles at Piers & Stub Abut.	1950

1 to 3 Main Spans(Max. Span 30.5 Meters)(3)

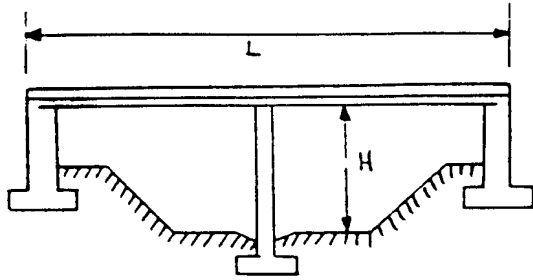


H - Clear Height 4.4 meters (4)

L - Length Under 122 meters

Class	Layout	Skew (1)	Foundation (2)	Cost Per Sq.Meter
II	L exceeds W Area L x W exceeds 418 Sq. Meter	0 Degrees- 40 Degrees	No Piles	1900
			On Piles	2015
		40 Degrees- 60 Degrees	No Piles	2365
			On Piles	2940
III	W exceeds L Area L x W exceeds 418 Sq. Meter	0 Degrees- 40 Degrees	No Piles	2440
			On Piles	3220
		40 Degrees- 60 Degrees	No Piles	2600
			On Piles	3335
IV	Width 9.1 - 13.7 meters Area W x L under 418 Sq. Meter	0 Degrees- 40 Degrees	No Piles	3180
			On Piles	4270
		40 Degrees- 60 Degrees	No Piles	3425
			On Piles	4480

Classification No. 1 - NEW CONSTRUCTION - Work Type - BRIDGES (2 of 3) - METRIC



1 to 2 Main Spans (Max. Span 38 meters)

H - Clear Height 4.4 meters

L - 30.5 - 76 meters

Layout	Skew (1)	Foundation (2)	Cost Per Sq.Meter
Width at Least 12 meters	0 Degrees to 40 Degrees	No Piles	1690
		Piles at Semi-Stub Abut.	1960
		Piles at Piers & Semi Stub Abut.	2200
Minimum Length 30.5 meters	40 Degrees to 60 Degrees	No Piles	1790
		Piles at Semi-Stub Abut.	2095
		Piles at Piers & Semi Stub Abut.	2340

Length	x	Width	x	=	Bridge Total

Superso

Classification No. 1 - NEW CONSTRUCTION - Work Type - BRIDGES (3 of 3) - METRIC

1. For skews over 60 degrees it will be necessary to make a special analysis and establish a square meter price comparable to above.
2. For very bad foundation conditions requiring unusual lengths or spacing of piles, it will be necessary to establish a square meter price.
3. For longer spans, adjust the cost per square meter to reflect increased cost of structural members.
4. For span bridges, it is expected the length of the side span will be increased in proportion to any increase in height. Because of the resultant increase in deck area, the square meter price will remain approximately the same in the range of heights shown. For extremely high structures (particularly for viaducts), square meter prices will have to be increased.
5. For structures over 122 meters long (viaducts), reduce the cost per square meter if repetitive span length and forming can be used. Reduce by \$5.00 for lengths from 122 to 180 meters and by \$10.00 for lengths over 180 meters. (Do not forget adjustments (3) and (4) above on viaducts).
6. For statically indeterminate structures, square meter prices will have to be established.

Structure Description	Calculated Sq. Meter of Bridge Deck	x Cost Per Sq. Meter	= Amount
		Sub Total	=
Clearing Site Bridge *0-3% of Sub Total =			+
*Pick appropriate percent based on the size, type and materials of existing structure		BRIDGE TOTAL	=

Classification No. 1 - NEW CONSTRUCTION - METRIC
Work Type - DRAINAGE (includes inlets and cross drains)

Rural		x 226,400	=
	project length(kilometers)	cost per kilometer	Amount
Urban		x 338,200	=
	project length(kilometers)	cost per kilometer	Amount

The above are the total costs of basins, manholes, longitudinal and transverse pipes, underdrains, headwalls, protecting curbs, aprons, etc. for a divided highway with a depressed median. The costs are assumed to apply to 4, 6, or 8 lane sections since there will be no appreciable difference in the number of basins or the sizes or lengths of pipes.

Frontage Road & Ramp Drainage

	x 180	=
length of ramp or frontage rd. in meters	cost per meter	Amount

DRAINAGE TOTAL

=

Classification No. 1 - NEW CONSTRUCTION - Work Type - INCIDENTAL ITEMS

Item	Cost / L.M.	x Quantity	= Amount
Beam Guide Rail	55/L.M.		
Fence 1.8 Meter High	60/L.M.		
225 mm X 400 mm Conc. Vertical Curb	45/L.M.		
375mm X 1040 mm Conc. Barrier Curb	165/L.M.		
600mm X 1040 mm Conc. Barrier Curb	240/L.M.		
600mm X Variable Conc. Barrier Curb	150/L.M.		
Sign Bridge	308,000		
Cantilever Sign Structure	60,500		
INCIDENTAL ITEMS TOTAL			=

Classification No. 1 - NEW CONSTRUCTION - Work Type - LANDSCAPE - METRIC

	Quantity	x Unit Prices	= Amount
Topsoil and Seeding (Mainline) Length of Project in kilometers		70,100	
Planting (Mainline) Length of Project in kilometers		40,000	
Topsoil, Seeding, Planting (Finger Ramp) Number of Finger Ramps		12,500	
Topsoil, Seeding, Planting (Loop Ramp) Number of Loop Ramps		20,000	
Topsoil, Seeding (Access Road) Length of Access Road in Meters		26.00	
LANDSCAPE TOTAL			=

Classification No. 1 - NEW CONSTRUCTION - Work Type - NOISE ABATEMENT MEASURES

	Unit	Quantity	X Cost	= Amount
Noise Wall	L.M.		1,000	
NOISE ABATEMENT MEASURES TOTAL				=

Classification No. 1 - NEW CONSTRUCTION - Work Type - GENERAL ITEMS

Item	Project Length (Km)	X Cost/KM	= Amount
Field Office		27,500	
Materials Field Laboratory		18,000	
Erosion Control during Construction		40,000	
GENERAL ITEMS TOTAL			=

Classification No. 1 - NEW CONSTRUCTION - SUMMARY Page 1 of 3 - METRIC

Route _____ Section/Contract # _____
 PM _____ UPC No. _____

Work Type	Totals from previous pages
Earthwork	
Pavement	
Culverts	
Bridges	
Drainage	
Incidental Items	
Landscape	
Noise Abatement	
General Items	
Context Sensitive Design	
PROJECT SUBTOTAL =	

Other Items	Proj. Subtotal Range	Choice	Amount
Lighting, Traffic Stripes, Signs and Delineators		3% of Proj. Subtotal	
Maintenance of Traffic		1.5% of Proj. Subtotal	
Training		1% of Proj. Subtotal	
Mobilization	Project Cost(Mil.)	% of Proj. Subtotal	
	Less than 5.0	9% of Proj. Subtotal	
	5.0 & above	10% of Proj. Subtotal	
Progress Schedule	Project Cost(Mil.)	\$	
	Less than 2.0	0	
	2.0 to 5.0	6,000	
	5.0 to 10.0	8,000	
	10.0 to 20.0	15,000	
	20.0 to 30.0	30,000	
	30.0 to 40.0	40,000	
	40.0 & above	58,000	
Clearing Site	Project Cost (Mil.)	\$	
	Less than 1.0	15,000	
	1.0 to 2.0	30,000	
	2.0 to 5.0	45,000	
	5.0 to 10.0	115,000	
	10.0 to 20.0	220,000	
	20.0 to 30.0	240,000	
	30.0 to 40.0	250,000	
40.0 & above	490,000		

Continued on next page

Classification No. 1 - NEW CONSTRUCTION – SUMMARY Page 2 of 3 - METRIC

Route _____ Section/Contract # _____
 PM _____ UPC No. _____

Construction Layout	Project Cost(Mil.)	\$	
	Less than 1.0	7,000	
	1.0 to 2.0	20,000	
	2.0 to 5.0	42,000	
	5.0 to 10.0	87,000	
	10.0 to 20.0	160,000	
	20.0 to 30.0	220,000	
	30.0 to 40.0	490,000	
	40.0 & above	890,000	
PROJECT TOTAL		=	

CONTINGENCIES & ESCALATION

	x	X	=
Project Total	(1+ C)	$1 + [0.01 (Y+1) (Y-2)]$	Construction Estimate for Initial
Contingencies		Y = Number of Years until midpoint of construction duration. If midpoint is less than 2 years no escalation is required. Maximum value = 10%.	

Project Cost(Mil.)	Contingencies (C) Percent	Average Construction Duration in Years
0-10	3%	1
10-20	2.5%	2
20-50	2%	3
Over 50	1.5%	4

CONSTRUCTION ENGINEERING (CE)

Project Cost (Mil.)	% of Construction Cost
Less than 1.0	28.4%
1.0 to 5.0	17.6%
5.0 to 10.0	12.2%
10.0 & above	9.5%
CONSTRUCTION ENGINEERING AMOUNT	

Classification No. 1 - NEW CONSTRUCTION – SUMMARY Page 3 of 3 - METRIC

Route _____ Section/Contract # _____
 PM _____ UPC No. _____

CONTINGENCIES FOR CONSTRUCTION CHANGE ORDER

Total Federal Participating Items in Millions of \$	Construction Change Order Contingency Amount
\$0 to 0.1	\$6,000
0.1 to 0.5	25,000
0.5 to 5.0	25,000 + 4% of amount in excess of \$500,000
5.0 to 10.0	205,000 + 3% of amount in excess of \$5,000,000
10.0 to 15.0	355,000 + 2% of amount in excess of \$10,000,000
15.0 and Above	455,000 + 1.5% of amount in excess of \$15,000,000 with a maximum of \$500,000

For State Funded Projects, Contingencies for Change orders = 0
 CHANGE ORDER CONTINGENCIES =

UTILITIES RELOCATIONS BY COMPANIES/OWNERS

	x 0.09 or	
	+ Estimate	= <input style="width: 150px; height: 20px;" type="text"/>

Construction Cost for Initial Estimate Use % or utilities detailed estimate Utility Relocation Cost for Initial Estimate

If there are no utility relocations on the project indicate "No Utilities" in the box above.

RIGHT OFWAY COST

If there is no ROW cost on the project indicate "No ROW" the box

SUMMARY

Construction Estimate for Initial	<input style="width: 100%; height: 20px;" type="text"/>
Construction Engineering (CE)	<input style="width: 100%; height: 20px;" type="text"/>
Contingencies	<input style="width: 100%; height: 20px;" type="text"/>
Utilities: Relocations By Companies/Owners	<input style="width: 100%; height: 20px;" type="text"/>
Total Estimate	<input style="width: 100%; height: 20px;" type="text"/>

Right of Way

2.1.2 Classification Number 2 - RECONSTRUCTION, WIDENING & DUALIZATION
Work Type - EARTHWORK (must be calculated) - METRIC

Route _____ Section/Contract # _____
 PM _____ UPC No. _____

	Unit	Quantity	x Unit Price	= Amount
Stripping (100-150mm Depth)	Hectare		10,000	
Roadway Exc. Unclassified	C.M.		See (J)	
Removal of Conc. Base & Conc. Surface Courses	S.M.		18.00	
Channel Excavation	C.M.		17.50	
Ditch Excavation	C.M.		16.00	
Borrow Excavation Zone 3	C.M.		See (J)	
EARTHWORK TOTAL				=

Suggested procedure for calculating earthwork:

- A) Determine typical section (number of lanes, median widths, side slopes, etc.).
- B) Get latest topography map available.
- C) Plot proposed alignment on topo map.
- D) Develop profile using topo controls such as existing roads, streams, rivers and design manual.
- E) Calculate Areas for the typical section in 0.3 meter increments of cut or fill.
- F) At 30 to 150 meter intervals (depending on frequency of X-section changes) calculate the earthwork.
- G) Calculate any other significant earthwork (ramps, crossroads, etc.).
- H) Make appropriate earthwork corrections for the pavement box and striping. Use 530 mm depth for rigid pavement, 660 mm depth for all flexible pavement and 100 mm depth for striping.
- I) Deduct any roadway excavation from borrow required to calculate Borrow Excavation Zone 3.
- J) See Construction Cost Estimate Work Sheet (Attachment 3.1). This worksheet must be utilized for the most recent price.

Classification Number 2 - RECONSTRUCTION, WIDENING & DUALIZATION - METRIC
Work Type - PAVEMENT

3.6 M WIDE LANE (from subgrade up)

Pav't. Type	Description of Pavement	Cost/Linear Meter
A	250 mm R.C. Pavement	510
B	50 mm HMA Surf. Crs. & 200 mm HMA Base	200
C	75 mm HMA Surf. Crs. & 100 mm HMA Base	150
D	50 mm HMA Surf. Crs. & 50 mm HMA Base	70
E	Bridge Approach & Transition Slabs	510
	(Resurfacing Portion only F & G)	
F	50 mm HMA Surface Course	27
G	75 mm HMA Surface Course	40
H	Milling 50 mm	10

Computation Table for Pavement. Cost

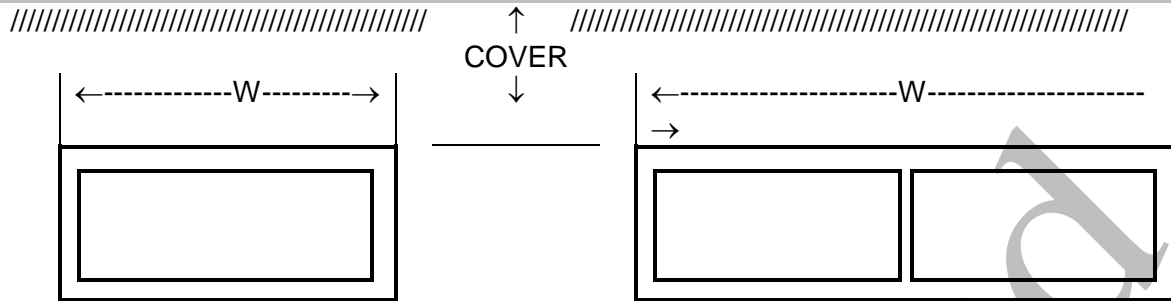
Type	Cost	X Length	X Pavement *W.F.	= Amount
PAVEMENT TOTAL				=

*Width Factors = Ratio of 3.6 meter wide lane to actual pavement width.
 Example = actual pavement width = 7.5 meters = $\frac{7.5}{3.6} = 2.05$ W.F.

Classification No. 2 - RECON, WIDENING & DUALIZATION - Work Type - CSD - METRIC

Context Sensitive Design – Attach additional sheet detailing items and costs of context sensitive design work

Classification No. 2 - RECONSTRUCTION, WIDENING & DUALIZATION - METRIC
Work Type - CULVERTS



Type 1 W ≤ 6 Meters

Type 2 W > 6 Meters

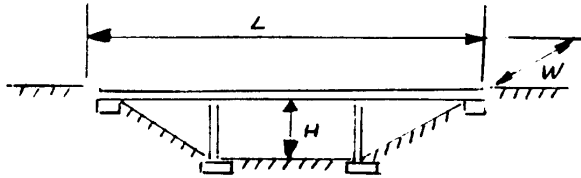
Type	Layout (3)	Skew (1)	Cover (2)	Cost Per Sq. Meter
Type 1	Area W x L exceeds	0-60	0 to 3 M	1235
	93 Sq. Meters	degrees	3 to 6 M	1585
	Short Culverts Difficult	0-60	0 to 3 M	2190
	Conditions under Square Meters	degrees	3 to 6 M	2530
Type 2	Area W x L exceeds	0-60	0 to 3 M	1310
	93 Sq. Meters	degrees	3 to 6 M	1640
	Short Culverts Difficult	0-60	0 to 3 M	2190
	Conditions under Square Meters	degrees	3 to 6 M	2530

For skews over 60 degrees it will be necessary to make a special analysis and establish a square meter price comparable to above.

Description	Area Computation	x Cost per Sq. Meter	= Amount
CULVERT TOTAL			=

Classification No. 2 - RECONSTRUCTION, WIDENING & DUALIZATION - METRIC
Work Type - BRIDGES (1 of 3)

1 to 3 spans and 2 side spans (Max. Span 30.5 meters)

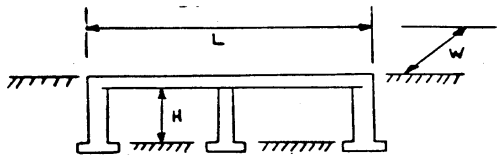


H - Clear Height 4.4 to 7.0 meters (4)

L - 30.5 to 122 meters & all Viaducts Over 122 meters (5)

Class	Layout	Skew (1)	Foundation (2)	Cost Per Sq. Meter
I	Width at Least 13.7 Meters	0 Degrees-40 Degrees	No Piles	1450
			Piles at Stub Abut.	1720
			Piles at Piers & Stub Abut.	1880
		40 Degrees-60 Degrees	No Piles	1560
			Piles at Stub Abut.	1810
			Piles at Piers & Stub Abut.	1950

1 to 3 Main Spans (Max. Span 30.5 Meters)(3)



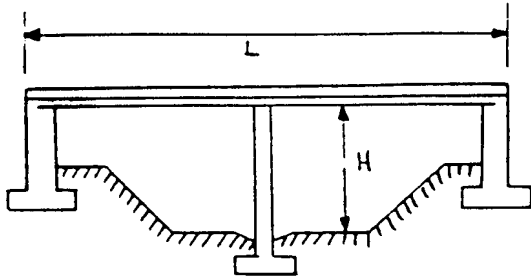
H - Clear Height 4.4 meters (4)

L - Length Under 122 meters

Class	Layout	Skew (1)	Foundation (2)	Cost Per Sq. Meter
II	L exceeds W Area L x W exceeds 418 Sq. Meter	0 Degrees-40 Degrees	No Piles	1900
			On Piles	2015
		40 Degrees-60 Degrees	No Piles	2365
			On Piles	2940
III	W exceeds L Area L x W exceeds 418 Sq. Meter	0 Degrees-40 Degrees	No Piles	2440
			On Piles	3220
		40 Degrees-60 Degrees	No Piles	2600
			On Piles	3335
IV	Width 9.1 - 13.7 meters Area W x L under 418 Sq. Meter	0 Degrees-40 Degrees	No Piles	3180
			On Piles	4270
		40 Degrees-60 Degrees	No Piles	3425
			On Piles	4480

Classification No. 2 - RECONSTRUCTION, WIDENING & DUALIZATION - METRIC
Work Type - BRIDGES cont'd (2 of 3)

1 to 2 Main Spans (Max. Span 38 meters)



H - Clear Height 4.4 meters

L - 30.5 - 76 meters

Layout	Skew (1)	Foundation (2)	Cost Per Sq.Meter
Width at Least 12 meters	0 Degrees to 40 Degrees	No Piles	1690
		Piles at Semi-Stub Abut.	1960
		Piles at Piers & Semi Stub Abut.	2200
Minimum Length 30.5 meters	40 Degrees to 60 Degrees	No Piles	1790
		Piles at Semi-Stub Abut.	2095
		Piles at Piers & Semi Stub Abut.	2340

	x		x	=	
Length		Width			Bridge Total
					Cost per SM

Classification No. 2 - RECONSTRUCTION, WIDENING & DUALIZATION - METRIC
Work Type - BRIDGES cont'd (3 of 3)

1. For skews over 60 degrees it will be necessary to make a special analysis and establish a square meter price comparable to above.
2. For very bad foundation conditions requiring unusual lengths or spacing of piles, it will be necessary to establish a square meter price.
3. For longer spans, adjust the cost per square meter to reflect increased cost of structural members.
4. For span bridges, it is expected the length of the side span will be increased in proportion to any increase in height. Because of the resultant increase in deck area, the square meter price will remain approximately the same in the range of heights shown. For extremely high structures (particularly for viaducts), square meter prices will have to be increased.
5. For structures over 122 meters long (viaducts), reduce the cost per square meter if repetitive span length and forming can be used. Reduce by \$5.00 for lengths from 122 to 180 meters and by \$10.00 for lengths over 180 meters. (Do not forget adjustments (3) and (4) above on viaducts).
6. For statically indeterminate structures, square meter prices will have to be established.

Structure Description	Calculated Sq. Meter of Bridge Deck	x	Cost Per Sq. Meter	=	Amount
			Sub Total	=	
Clearing Site Bridge *0-3% of Sub Total =				+	
*Pick appropriate percent based on the size, type and materials of existing structure			BRIDGE TOTAL	=	

Classification No.2 - RECONSTRUCTION, WIDENING & DUALIZATION - METRIC
Work Type - DRAINAGE (includes inlets and cross drains)

Rural		x 226,400	=
	project length(kilometers)	cost per kilometer	Amount
Urban		x 338,200	=
	project length(kilometers)	cost per kilometer	Amount

The above are the total costs of basins, manholes, longitudinal and transverse pipes, underdrains, headwalls, protecting curbs, aprons, etc. for a divided highway with a depressed median. The costs are assumed to apply to 4, 6 or 8 lane sections since there will be no appreciable difference in the number of basins or the sizes or lengths of pipes.

Frontage Road & Ramp Drainage

	x 180	=
length of ramp or frontage rd. in meters	cost per meter	Amount

DRAINAGE TOTAL

=

Classification No.2 - RECONSTRUCTION, WIDENING & DUALIZATION
Work Type - Work Type - LANDSCAPE

	Quantity	x Unit Prices	= Amount
Topsoil and Seeding (Mainline) Length of Project in kilometers		70,100	
Planting (Mainline) Length of Project in kilometers		40,000	
Topsoil, Seeding, Planting (Finger Ramp) Number of Finger Ramps		12,500	
Topsoil, Seeding, Planting (Loop Ramp) Number of Loop Ramps		20,000	
Topsoil, Seeding (Access Road) Length of Access Road in Meters		26.00	
LANDSCAPE TOTAL			=

Classification No. 2 - RECONSTRUCTION, WIDENING & DUALIZATION
Work Type - Work Type - INCIDENTAL ITEMS

Item	Cost / L.M.	x Quantity	= Amount
Beam Guide Rail	55/L.M.		
Fence 1.8 Meter High	60/L.M.		
225 mm X 400 mm Conc. Vertical Curb	45/L.M.		
375mm X 1040 mm Conc. Barrier Curb	165/L.M.		
600mm X 1040 mm Conc. Barrier Curb	240/L.M.		
600mm X Variable Conc. Barrier Curb	150/L.M.		
Sign Bridge	308,000		
Cantilever Sign Structure	60,500		
INCIDENTAL ITEMS TOTAL			=

Classification No. 2 - RECONSTRUCTION, WIDENING & DUALIZATION - Work Type -
NOISE ABATEMENT MEASURES - METRIC

	Unit	Quantity	x Cost	= Amount
Noise Wall	L.M.		1,000	
NOISE ABATEMENT MEASURES TOTAL				=

Classification No. 2 - RECONSTRUCTION, WIDENING & DUALIZATION
Work Type - GENERAL ITEMS

Item	Project Length (Km)	x Cost/KM	= Amount
Field Office		27,500	
Materials Field Laboratory		18,000	
Erosion Control during Construction		40,000	
GENERAL ITEMS TOTAL			=

Class. No. 2 - RECONSTRUCTION, WIDENING & DUALIZATION – SUMMARY Page 1 of 3 - METRIC

Route _____ Section/Contract # _____
 PM _____ UPC No. _____

Work Type	Totals from previous pages
Earthwork	
Pavement	
Culverts	
Bridges	
Drainage	
Incidental Items	
Landscape	
Noise Abatement	
General Items	
Context Sensitive Design	
PROJECT SUBTOTAL =	

Other Items	Proj. Subtotal Range	Choice	Amount
Lighting, Traffic Stripes, Signs and Delineators		3% of Proj. Subtotal	
Maintenance of Traffic		7% of Proj. Subtotal	
Training		1% of Proj. Subtotal	
Mobilization	Project Cost(Mil.)	% of Proj. Subtotal	
	Less than 5.0	9% of Proj. Subtotal	
	5.0 & above	10% of Proj. Subtotal	
Progress Schedule	Project Cost(Mil.)	\$	
	Less than 2.0	0	
	2.0 to 5.0	6,000	
	5.0 to 10.0	8,000	
	10.0 to 20.0	15,000	
	20.0 to 30.0	30,000	
	30.0 to 40.0	40,000	
	40.0 & above	58,000	
Clearing Site	Project Cost (Mil.)	\$	
	Less than 1.0	15,000	
	1.0 to 2.0	30,000	
	2.0 to 5.0	45,000	
	5.0 to 10.0	115,000	
	10.0 to 20.0	220,000	
	20.0 to 30.0	240,000	
	30.0 to 40.0	250,000	
	40.0 & above	490,000	

Continued on next page

Class. No. 2 - RECONSTRUCTION, WIDENING & DUALIZATION – SUMMARY Page 2 of 3 - METRIC

Route _____ Section/Contract # _____
 PM _____ UPC No. _____

Construction Layout	Project Cost(Mil.)	\$	
	Less than 1.0	7,000	
	1.0 to 2.0	20,000	
	2.0 to 5.0	42,000	
	5.0 to 10.0	87,000	
	10.0 to 20.0	160,000	
	20.0 to 30.0	220,000	
	30.0 to 40.0	490,000	
	40.0 & above	890,000	
PROJECT TOTAL		=	

CONTINGENCIES & ESCALATION

	x	X	=
Project Total	(1+ C)	$1 + [0.01 (Y+1) (Y-2)]$	Construction Cost for Initial Estimate
Contingencies		Y = Number of Years until midpoint of construction duration. If midpoint is less than 2 years no escalation is required.	

Project Cost(Mil.)	Contingencies (C) Percent	Average Construction Duration in Years
0-5	3%	1
5-20	2.5%	2
Over 20	2%	3

ROW COST

If there is no ROW cost on the project indicate "No ROW" the box

CONSTRUCTION ENGINEERING (CE)

Project Cost (Mil.)	% of Construction Cost
Less than 1.0	31.1%
1.0 to 5.0	20.3%
5.0 to 10.0	16.2%
10.0 & above	12.2%
CONSTRUCTION ENGINEERING AMOUNT	

Class. No. 2 - RECONSTRUCTION, WIDENING & DUALIZATION – SUMMARY Page 3 of 3 - METRIC

Route _____ Section/Contract # _____
 PM _____ UPC No. _____

CONTINGENCIES FOR CONSTRUCTION CHANGE ORDER

Total Federal Participating Items in Millions of \$	Construction Change Order Contingency Amount
\$0 to 0.1	\$6,000
0.1 to 0.5	25,000
0.5 to 5.0	25,000 + 4% of amount in excess of \$500,000
5.0 to 10.0	205,000 + 3% of amount in excess of \$5,000,000
10.0 to 15.0	355,000 + 2% of amount in excess of \$10,000,000
15.0 and Above	455,000 + 1.5% of amount in excess of \$15,000,000 with a maximum of \$500,000

For State Funded Projects, Contingencies for Change orders = 0
 CONTINGENCIES

=

UTILITIES RELOCATIONS BY COMPANIES/OWNERS

	*	= <input style="width: 150px; height: 20px;" type="text"/>
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Construction Cost for Initial Estimate *for Urban use 12%, Rural 5.5% Utility Relocation Cost for Initial Estimate

or use utilities detailed estimates as soon as available.

If there are no utility relocations on the project indicate "No Utilities" in the box above.

RIGHT OFWAY COST

If there is no ROW cost on the project indicate "No ROW" the box

SUMMARY

Construction Estimate for Initial	<input style="width: 100%; height: 20px;" type="text"/>
Construction Engineering (CE)	<input style="width: 100%; height: 20px;" type="text"/>
Contingencies	<input style="width: 100%; height: 20px;" type="text"/>
Utilities: Relocations By Companies/Owners	<input style="width: 100%; height: 20px;" type="text"/>
Total Estimate	<input style="width: 100%; height: 20px;" type="text"/>

Right of Way

2.1.3 Classification Number 3 - WIDENING & RESURFACING - METRIC
Work Type - EARTHWORK (must be calculated)

Route _____ Section/Contract # _____
 PM _____ UPC No. _____

	Unit	Quantity	x Unit Price	= Amount
Stripping (100-150mm Depth)	Hectare		10,000	
Roadway Exc. Unclassified	C.M.		See (J)	
Removal of Conc. Base & Conc. Surface Courses	S.M.		18.00	
Channel Excavation	C.M.		17.50	
Ditch Excavation	C.M.		16.00	
Borrow Excavation Zone 3	C.M.		See (J)	
EARTHWORK TOTAL				=

Suggested procedure for calculating earthwork:

- A) Determine typical section (number of lanes, median widths, side slopes, etc.).
- B) Get latest topography map available.
- C) Plot proposed alignment on topo map.
- D) Develop profile using topo controls such as existing roads, streams, rivers and design manual.
- E) Calculate Areas for the typical section in 0.3 meter increments of cut or fill.
- F) At 30 to 150 meter intervals (depending on frequency of X-section changes) calculate the earthwork.
- G) Calculate any other significant earthwork (ramps, crossroads, etc.).
- H) Make appropriate earthwork corrections for the pavement box and striping. Use 530 mm depth for rigid pavement, 660 mm depth for all flexible pavement and 100 mm depth for striping.
- I) Deduct any roadway excavation from borrow required to calculate Borrow Excavation Zone 3.
- J) See Construction Cost Estimate Work Sheet (Attachment 3.1). This worksheet must be utilized for the most recent price information.

Classification Number 3 - WIDENING & RESURFACING - METRIC
Work Type - PAVEMENT

3.6 M WIDE LANE (from subgrade up)

Pav't. Type	Description of Pavement	Cost/Linear Meter
A	250 mm R.C. Pavement	510
B	50 mm HMA Surf. Crs. & 200 mm HMA Base	200
C	75 mm HMA Surf. Crs. & 100 mm HMA Base	150
D	50 mm HMA Surf. Crs. & 50 mm HMA Base	70
E	Bridge Approach & Transition Slabs	510
	(Resurfacing Portion only F & G)	
F	50 mm HMA Surface Course	27
G	75 mm HMA Surface Course	40
H	Milling 50 mm	10

Computation Table for Pavement. Cost

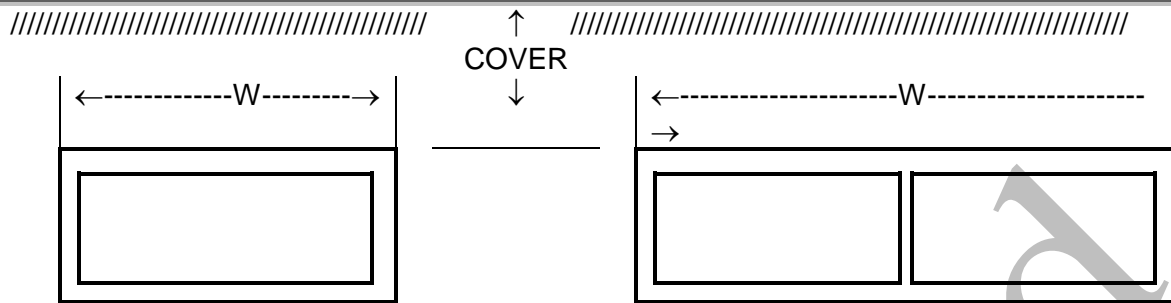
Type	Cost	X Length	X Pavement *W.F.	= Amount
PAVEMENT TOTAL				=

*Width Factors = Ratio of 3.6 meter wide lane to actual pavement width.
 Example = actual pavement width = 7.5 meters = $7.5/3.6 = 2.05$ W.F.

Classification No. 3 - WIDENING & RESURFACING - Work Type - CSD - METRIC

Context Sensitive Design – Attach additional sheet detailing items and costs of context sensitive design work

Classification No. 3 - WIDENING & RESURFACING - Work Type - CULVERTS - METRIC



Type 1 $W \leq 6$ Meters

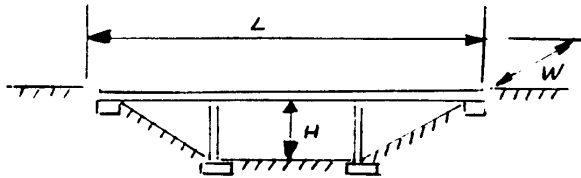
Type 2 $W > 6$ Meters

Type	Layout (3)	Skew (1)	Cover (2)	Cost Per Sq. Meter
Type 1	Area $W \times L$ exceeds 93 Sq. Meters	0-60 degrees	0 to 3 M	1235
	Short Culverts Difficult Conditions under Square Meters	0-60 degrees	0 to 3 M	2190
			3 to 6 M	2530
	Type 2	Area $W \times L$ exceeds 93 Sq. Meters	0-60 degrees	0 to 3 M
Short Culverts Difficult Conditions under Square Meters		0-60 degrees	0 to 3 M	2190
			3 to 6 M	2530

For skews over 60 degrees it will be necessary to make a special analysis and establish a square meter price comparable to above.

Description	Area Computation	x Cost per Sq. Meter	= Amount
CULVERT TOTAL			=

Classification No. 3 - WIDENING & RESURFACING
Work Type - BRIDGES (1 of 3) - METRIC



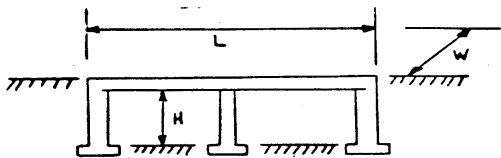
1 to 3 spans and 2 side spans (Max. Span 30.5 meters)

H - Clear Height 4.4 to 7.0 meters(4)

L - 30.5 to 122 meters & all Viaducts
 Over 122 meters (5)

Class	Layout	Skew (1)	Foundation (2)	Cost Per Sq. Meter
I	Width at Least 13.7 Meters	0 Degrees-40 Degrees	No Piles	1450
			Piles at Stub Abut.	1720
			Piles at Piers & Stub Abut.	1880
		40 Degrees-60 Degrees	No Piles	1560
			Piles at Stub Abut.	1810
			Piles at Piers & Stub Abut.	1950

1 to 3 Main Spans (Max. Span 30.5 Meters)(3)

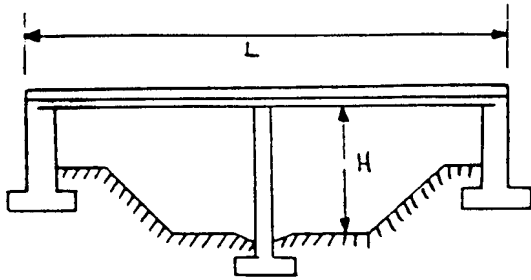


H - Clear Height 4.4 meters (4)

L - Length Under 122 meters

Class	Layout	Skew (1)	Foundation (2)	Cost Per Sq.Meter
II	L exceeds W Area L x W exceeds 418 Sq. Meter	0 Degrees-40 Degrees	No Piles	1900
			On Piles	12015
		40 Degrees-60 Degrees	No Piles	2365
			On Piles	2940
III	W exceeds L Area L x W exceeds 418 Sq. Meter	0 Degrees-40 Degrees	No Piles	2440
			On Piles	3220
		40 Degrees-60 Degrees	No Piles	2600
			On Piles	3335
IV	Width 9.1 - 13.7 meters Area W x L under 418 Sq. Meter	0 Degrees-40 Degrees	No Piles	3180
			On Piles	4270
		40 Degrees-60 Degrees	No Piles	3425
			On Piles	4480

Classification No. 3 - WIDENING & RESURFACING - Work Type - BRIDGES (2 of 3) - METRIC



1 to 2 Main Spans (Max. Span 38 meters)

H - Clear Height 4.4 meters

L - 30.5 - 76 meters

Layout	Skew (1)	Foundation (2)	Cost Per Sq.Meter
Width at Least 12 meters	0 Degrees to 40 Degrees	No Piles	1690
		Piles at Semi-Stub Abut.	1960
		Piles at Piers & Semi Stub Abut.	2200
Minimum Length 30.5 meters	40 Degrees to 60 Degrees	No Piles	1790
		Piles at Semi-Stub Abut.	2095
		Piles at Piers & Semi Stub Abut.	2340

Length	x	Width	x	=	Bridge Total

Classification No. 3 - WIDENING & RESURFACING - Work Type - BRIDGES (3 of 3) - METRIC

1. For skews over 60 degrees it will be necessary to make a special analysis and establish a square meter price comparable to above.
2. For very bad foundation conditions requiring unusual lengths or spacing of piles, it will be necessary to establish a square meter price.
3. For longer spans, adjust the cost per square meter to reflect increased cost of structural members.
4. For span bridges, it is expected the length of the side span will be increased in proportion to any increase in height. Because of the resultant increase in deck area, the square meter price will remain approximately the same in the range of heights shown. For extremely high structures (particularly for viaducts), square meter prices will have to be increased.
5. For structures over 122 meters long (viaducts), reduce the cost per square meter if repetitive span length and forming can be used. Reduce by \$5.00 for lengths from 122 to 180 meters and by \$10.00 for lengths over 180 meters. (Do not forget adjustments (3) and (4) above on viaducts).
6. For statically indeterminate structures, square meter prices will have to be established.

Structure Description	Calculated Sq. Meter of Bridge Deck	x Cost Per Sq. Meter	= Amount
		Sub Total	=
Clearing Site Bridge *0-3% of Sub Total =			+
*Pick appropriate percent based on the size, type and materials of existing structure		BRIDGE TOTAL	=

Classification No.3 - WIDENING & RESURFACING - METRIC
Work Type - DRAINAGE (includes inlets and cross drains)

(PER DIRECTION OF WIDENING)	Cost per meter	Amount
meters	x 180	=
DRAINAGE TOTAL		

Classification No.3 - WIDENING & RESURFACING
Work Type - Work Type - LANDSCAPE

The meter measurement is for each side of the roadway or ramp that requires landscaping. For example: If a road is widened on one side only the cost = 13.50 per meter. If the road is widened on both sides the cost is 27.00 per meter. If a dualized roadway is widened into the median for each direction of traffic and both outside edges, the cost = 54.00 per meter. When more than one-half of the profile changes by 0.3 meters, the above costs will increase by 25 percent.

Pavement Edge Length in Meters	Cost per pavement edge for Topsoil & Seeding	Amount
	X 12.50	
LANDSCAPE TOTAL		=

Classification No. 3 - WIDENING & RESURFACING - Work Type - INCIDENTAL ITEMS

Item	Cost / L.M.	x Quantity	= Amount
Beam Guide Rail	55/L.M.		
Fence 1.8 Meter High	60/L.M.		
225 mm X 400 mm Conc. Vertical Curb	45/L.M.		
375mm X 1040 mm Conc. Barrier Curb	165/L.M.		
600mm X 1040 mm Conc. Barrier Curb	240/L.M.		
600mm X Variable Conc. Barrier Curb	150/L.M.		
Sign Bridge	308,000		
Cantilever Sign Structure	60,500		
INCIDENTAL ITEMS TOTAL			=

Classification No. 3 - WIDENING & RESURFACING - METRIC
Work Type - NOISE ABATEMENT MEASURES

	Unit	Quantity	x Cost	= Amount
Noise Wall	L.M.		1,000	
NOISE ABATEMENT MEASURES TOTAL				=

Classification No. 3 - WIDENING & RESURFACING - Work Type - GENERAL ITEMS

Item	Project Length (Km)	x Cost/KM	= Amount
Field Office		27,500	
Materials Field Laboratory		18,000	
Erosion Control during Construction		40,000	
GENERAL ITEMS TOTAL			=

Classification No. 3 - WIDENING & RESURFACING- SUMMARY Page 1 of 3 - METRIC

Route _____ **Section/Contract #** _____
PM _____ **UPC No.** _____

Work Type	Totals from previous pages
Earthwork	
Pavement	
Culverts	
Bridges	
Drainage	
Incidental Items	
Landscape	
Noise Abatement	
General Items	
Context Sensitive Design	
PROJECT SUBTOTAL =	

Other Items	Proj. Subtotal Range	Choice	Amount
Lighting, Traffic Stripes, Signs and Delineators		3% of Proj. Subtotal	
Maintenance of Traffic		7% of Proj. Subtotal	
Training		1% of Proj. Subtotal	
Mobilization	Project Cost(Mil.)	% of Proj. Subtotal	
	Less than 1.0	8% of Proj. Subtotal	
	1.0 to 5.0	8% of Proj. Subtotal	
	5.0 & above	8% of Proj. Subtotal	
Progress Schedule	Project Cost(Mil.)	\$	
	Less than 2.0	0	
	2.0 to 5.0	6,000	
	5.0 to 10.0	8,000	
	10.0 to 20.0	15,000	
	20.0 to 30.0	30,000	
	30.0 to 40.0	40,000	
	40.0 & above	58,000	
Clearing Site	Project Cost (Mil.)	\$	
	Less than 1.0	10,000	
	1.0 to 2.0	30,000	
	2.0 to 5.0	45,000	
	5.0 & above	50,000	
Construction Layout	Project Cost(Mil.)	\$	
	Less than 1.0	6,000	
	1.0 to 2.0	8,000	
	2.0 to 5.0	26,500	
	5.0 & above	31,000	
PROJECT TOTAL			=

Classification No. 3 - WIDENING & RESURFACING- SUMMARY Page 2 of 3 - METRIC

Route _____ Section/Contract # _____
 PM _____ UPC No. _____

CONTINGENCIES & ESCALATION

	x	X	=
Project Total	(1+ C) Contingencies	1 + [0.01 (Y+1) (Y-2)] Y = Number of Years until midpoint of construction duration. If midpoint is less than 2 years no escalation is required.	Construction Cost for Initial Estimate

Project Cost(Mil.)	Contingencies (C) Percent	Average Construction Duration in Years
0-10	3%	1
Over 10	2.5%	2

CONSTRUCTION ENGINEERING (CE)

Project Cost (Mil.)	% of Construction Cost
Less than 1.0	27.0%
1.0 to 5.0	14.9%
5.0 to 10.0	13.5%
10.0 & above	12.2%
CONSTRUCTION ENGINEERING AMOUNT	

CONTINGENCIES FOR CONSTRUCTION CHANGE ORDER

Total Federal Participating Items in Millions of \$	Construction Change Order Contingency Amount
\$0 to 0.1	\$6,000
0.1 to 0.5	25,000
0.5 to 5.0	25,000 + 4% of amount in excess of \$500,000
5.0 to 10.0	205,000 + 3% of amount in excess of \$5,000,000
10.0 to 15.0	355,000 + 2% of amount in excess of \$10,000,000
15.0 and Above	455,000 + 1.5% of amount in excess of \$15,000,000 with a maximum of \$500,000

For State Funded Projects, Contingencies for Change orders = 0

CONTINGENCIES =

UTILITIES RELOCATIONS BY COMPANIES/OWNERS

	*	=
Construction Cost for Initial Estimate	*for Urban use 12%, Rural 5.5%	Utility Relocation Cost for Initial Estimate

or use utilities detailed estimates as soon as available.
 If there are no utility relocations on the project indicate "No Utilities" in the box above.

Classification No. 3 - WIDENING & RESURFACING- SUMMARY Page 3 of 3 - METRIC

Route _____ Section/Contract # _____
PM _____ UPC No. _____

ROW COST

If there is no ROW cost on the project indicate "No ROW" the box

--

SUMMARY

Construction Estimate for Initial

Construction Engineering (CE)

Contingencies

Utilities: Relocations By Companies/Owners

Total Estimate

Right of Way

--

Superseded

2.1.4 Classification Number 4 - RESURFACING - METRIC
Work Type - EARTHWORK (must be calculated)

Route _____ Section/Contract # _____
 PM _____ UPC No. _____

	Unit	Quantity	x Unit Price	= Amount
Roadway Exc. Unclassified	C.M.		See (A)	
Removal of Conc. Base & Conc. Surface Courses	S.M.		18.00	
EARTHWORK TOTAL				=

A) See Construction Cost Estimate Work Sheet (Section 3.1) for the method to utilize the most recent price information available.

Work Type - GENERAL ITEMS

Item	Project Length (Km)	x Cost/KM	= Amount
Field Office		16,500	
Materials Field Laboratory		20,000	
GENERAL ITEMS TOTAL			=

Classification Number 4 - RESURFACING - Work Type - DRAINAGE

Item	Unit	Quantity	Cost	Amount
Reset Casting	Unit		425	=
Inlet *	Unit		2,865	
Pipe *	L.M.		340	
DRAINAGE TOTAL				

* Any drainage problems to be corrected shall be estimated and included.

Classification Number 4 -RESURFACING - Work Type - PAVEMENT - METRIC

3.6 M WIDE LANE (from subgrade up)

Pav't. Type	Description of Pavement	Cost/Linear Meter
A	250 mm R.C. Pavement	510
B	50 mm HMA Surf. Crs. & 200 mm HMA Base	200
C	75 mm HMA Surf. Crs. & 100 mm HMA Base	150
D	50 mm HMA Surf. Crs. & 50 mm HMA Base	70
E	Bridge Approach & Transition Slabs	510
	(Resurfacing Portion only F & G)	
F	50 mm HMA Surface Course	27
G	75 mm HMA Surface Course	40
H	Milling 50 mm	10

Computation Table for Pavement. Cost

Type	Cost	X	Length	X	Pavement *W.F.	=	Amount	
PAVEMENT TOTAL							=	

*Width Factors = Ratio of 3.6 meter wide lane to actual pavement width.

Example = actual pavement width = 7.5 meters = $\frac{7.5}{3.6} = 2.05$ W.F.

Classification No. 4 - RESURFACING - Work Type - INCIDENTAL ITEMS - METRIC

Item	Cost / L.M.	x Quantity	= Amount
Beam Guide Rail	55/L.M.		
Fence 1.8 Meter High	60/L.M.		
225 mm X 400 mm Conc. Vertical Curb	45/L.M.		
375mm X 1040 mm Conc. Barrier Curb	165/L.M.		
600mm X 1040 mm Conc. Barrier Curb	240/L.M.		
600mm X Variable Conc. Barrier Curb	150/L.M.		
Sign Bridge	308,000		
Cantilever Sign Structure	60,500		
INCIDENTAL ITEMS TOTAL			=

Work Type - Work Type - LANDSCAPE

The meter measurement is for each side of the roadway or ramp that requires landscaping. For example: If a road is widened on one side only the cost = 13.50 per meter. If the road is widened on both sides the cost is 27.00 per meter.

Pavement Edge Length in Meters	Cost per pavement edge for Topsoil & Seeding	Amount
	X 12.50	
LANDSCAPE TOTAL		=

Classification No. 4 - RESURFACING – SUMMARY Page 1 of 3 - METRIC

Route _____ Section/Contract # _____
 PM _____ UPC No. _____

Work Type	Totals from previous pages
Earthwork	
Pavement	
Culverts	
Bridges	
Drainage	
Incidental Items	
Landscape	
Noise Abatement	
General Items	
PROJECT SUBTOTAL	=

Other Items	Proj. Subtotal Range	Choice	Amount
Lighting, Traffic Stripes, Signs and Delineators		2% of Proj. Subtotal	
Maintenance of Traffic		7% of Proj. Subtotal	
Training		1% of Proj. Subtotal	
Mobilization	Project Cost(Mil.)	% of Proj. Subtotal	
	Less than 1.0	8% of Proj. Subtotal	
	1.0 to 5.0	8% of Proj. Subtotal	
	5.0 & above	8% of Proj. Subtotal	
Progress Schedule	Project Cost(Mil.)	\$	
	Less than 2.0	0	
	2.0 to 5.0	6,000	
	5.0 & above	8,000	
Clearing Site	Project Cost (Mil.)	\$	
	Less than 1.0	10,000	
	1.0 to 2.0	30,000	
	2.0 to 5.0	45,000	
	5.0 & above	50,000	
Construction Layout	Project Cost(Mil.)	\$	
	Less than 1.0	6,000	
	1.0 to 2.0	8,000	
	2.0 to 5.0	26,500	
	5.0 & above	31,000	
		PROJECT TOTAL	=

Classification No. 4 - RESURFACING – SUMMARY Page 2 of 3 - METRIC

Route _____ Section/Contract # _____
 PM _____ UPC No. _____

CONTINGENCIES & ESCALATION

	x	X	=
Project Total	(1+ C) Contingencies	1 + [0.01 (Y+1) (Y-2)] Y = Number of Years until midpoint of construction duration. If midpoint is less than 2 years no escalation is required.	Construction Cost for Initial Estimate

Project Cost(Mil.)	Contingencies (C) Percent	Average Construction Duration in Years
0-20	3%	1
Over 20	2%	2

CONSTRUCTION ENGINEERING AMOUNT

CONSTRUCTION ENGINEERING (CE)

Project Cost (Mil.)	% of Construction Cost
Less than 1.0	20.3%
1.0 to 5.0	14.9%
5.0 to 10.0	10.8%
10.0 & above	9.5%

CONTINGENCIES FOR CONSTRUCTION CHANGE ORDER

Total Federal Participating Items in Millions of \$	Construction Change Order Contingency Amount
\$0 to 0.1	\$6,000
0.1 to 0.5	25,000
0.5 to 5.0	25,000 + 4% of amount in excess of \$500,000
5.0 to 10.0	205,000 + 3% of amount in excess of \$5,000,000
10.0 to 15.0	355,000 + 2% of amount in excess of \$10,000,000
15.0 and Above	455,000 + 1.5% of amount in excess of \$15,000,000 with a maximum of \$500,000

For State Funded Projects, Contingencies for Change orders = 0

CONTINGENCIES =

UTILITIES RELOCATIONS BY COMPANIES/OWNERS

	x 0.025	=
--	---------	---

Construction Cost for Initial Estimate Utility Relocation Cost for Initial Estimate

or use utilities detailed estimates as soon as available.
 If there are no utility relocations on the project indicate "No Utilities" in the box above.

Classification No. 4 - RESURFACING – SUMMARY Page 3 of 3 - METRIC

Route _____ Section/Contract # _____
PM _____ UPC No. _____

ROW COST

If there is no ROW cost on the project indicate "No ROW" the box

--

SUMMARY

Construction Estimate for Initial

Construction Engineering (CE)

Contingencies

Utilities: Relocations By Companies/Owners

Total Estimate

Right of Way

--

Superseded

2.1.5 Classification Number 5 -BRIDGE REPAIR - Work Type - PAVEMENT - METRIC

3.6 M WIDE LANE (from subgrade up)

Pav't. Type	Description of Pavement	Cost/Linear Meter
A	250 mm R.C. Pavement	510
B	50 mm HMA Surf. Crs. & 200 mm HMA Base	200
C	75 mm HMA Surf. Crs. & 100 mm HMA Base	150
D	50 mm HMA Surf. Crs. & 50 mm HMA Base	70
E	Bridge Approach & Transition Slabs	510
	(Resurfacing Portion only F & G)	
F	50 mm HMA Surface Course	27
G	75 mm HMA Surface Course	40
H	Milling 50 mm	10

Computation Table for Pavement. Cost

Type	Cost	X	Length	X	Pavement *W.F.	=	Amount	
PAVEMENT TOTAL							=	

*Width Factors = Ratio of 3.6 meter wide lane to actual pavement width.

Example = actual pavement width = 7.5 meters = $\frac{7.5}{3.6} = 2.05$ W.F.

Classification No. 5 - BRIDGE REPAIR - METRIC
Work Type - INCIDENTAL ITEMS

Item	Cost / L.M.	x Quantity	= Amount
Beam Guide Rail	55/L.M.		
Fence 1.8 Meter High	60/L.M.		
225 mm X 400 mm Conc. Vertical Curb	45/L.M.		
375mm X 1040 mm Conc. Barrier Curb	165/L.M.		
600mm X 1040 mm Conc. Barrier Curb	240/L.M.		
600mm X Variable Conc. Barrier Curb	150/L.M.		
INCIDENTAL ITEMS TOTAL			=

Work Type - BRIDGE

Cost to be provided by BUREAU OF STRUCTURAL ENGINEERING

Classification No. 5 - BRIDGE REPAIR- SUMMARY Page 1 of 3 - METRIC

Route _____ Section/Contract # _____
 PM _____ UPC No. _____

Work Type	Totals from previous pages
Earthwork	
Pavement	
Culverts	
Bridges	
Drainage	
Incidental Items	
Landscape	
Noise Abatement	
General Items	
PROJECT SUBTOTAL	=

Other Items	Proj. Subtotal Range	Choice	Amount
Lighting, Traffic Stripes, Signs and Delineators		1% of Proj. Subtotal	
Maintenance of Traffic		7% of Proj. Subtotal	
Training		1% of Proj. Subtotal	
Mobilization	Project Cost(Mil.)	% of Proj. Subtotal	
	Less than 1.0	8% of Proj. Subtotal	
	1.0 to 5.0	5% of Proj. Subtotal	
	5.0 & above	5% of Proj. Subtotal	
Clearing Site	Project Cost (Mil.)	\$	
	Less than 1.0	2,000	
	1.0 & above	3,000	
Construction Layout	Project Cost(Mil.)	\$	
	Less than 1.0	4,000	
	1.0 & above	6,000	
PROJECT TOTAL			=

continued on next page

Classification No. 5- BRIDGE REPAIR- SUMMARY Page 2 of 3 - METRIC

Route _____ Section/Contract # _____
 PM _____ UPC No. _____

CONTINGENCIES & ESCALATION

	x	X	=
Project Total	(1+ C) Contingencies	1 + [0.01 (Y+1) (Y-2)] Y = Number of Years until midpoint of construction duration. If midpoint is less than 2 years no escalation is required.	Construction Cost for Initial Estimate

Project Cost(Mil.)	Contingencies (C) Percent	Average Construction Duration in Years
0-5	3%	1
Over 5	2.5%	2

CONSTRUCTION ENGINEERING (CE)

Project Cost (Mil.)	% of Construction Cost
Less than 1.0	14.9%
1.0 to 5.0	12.2%
5.0 to 10.0	10.8%
10.0 & above	9.5%
CONSTRUCTION ENGINEERING AMOUNT	

CONTINGENCIES FOR CONSTRUCTION CHANGE ORDER

Total Federal Participating Items in Millions of \$	Construction Change Order Contingency Amount
\$0 to 0.1	\$6,000
0.1 to 0.5	25,000
0.5 to 5.0	25,000 + 4% of amount in excess of \$500,000
5.0 to 10.0	205,000 + 3% of amount in excess of \$5,000,000
10.0 to 15.0	355,000 + 2% of amount in excess of \$10,000,000
15.0 and Above	455,000 + 1.5% of amount in excess of \$15,000,000 with a maximum of \$500,000

For State Funded Projects, Contingencies for Change orders = 0

CONTINGENCIES =

UTILITIES RELOCATIONS BY COMPANIES/OWNERS

	x 0.085	=
Construction Cost for Initial Estimate		Utility Relocation Cost for Initial Estimate

or use utilities detailed estimates as soon as available.
 If there are no utility relocations on the project indicate "No Utilities" in the box above.

Classification No. 5- BRIDGE REPAIR- SUMMARY Page 3 of 3 - METRIC

Route _____ Section/Contract # _____
PM _____ UPC No. _____

ROW COST

If there is no ROW cost on the project indicate "No ROW" the box

--

SUMMARY

Construction Estimate for Initial

Construction Engineering (CE)

Contingencies

Utilities: Relocations By Companies/Owners

Total Estimate

Right of Way

--

Superseded

2.1.6 Classification Number 6 - INTERSECTION IMPROVEMENT - METRIC
Work Type - EARTHWORK (must be calculated)

Route _____ Section/Contract # _____
 PM _____ UPC No. _____

	Unit	Quantity	x Unit Price	= Amount
Roadway Exc. Unclassified	C.M.		See (A)	
Removal of Conc. Base & Conc. Surface Courses	S.M.		18.00	
Borrow Excavation, Zone 3	C.M.		See (A)	
EARTHWORK TOTAL				=

A) See Construction Cost Estimate Work Sheet (Section 3.1) for the method to utilize the most recent price information available.

Work Type - Work Type - LANDSCAPE

The meter measurement is for each side of the roadway or ramp that requires landscaping. For example: If a road is widened on one side only the cost = 13.50 per meter. If the road is widened on both sides the cost is 27.00 per meter.

Pavement Edge Length in Meters	Cost per pavement edge for Topsoil & Seeding	Amount
	X 12.50	
LANDSCAPE TOTAL		=

Classification Number 6 -INTERSECTION IMPROVEMENT - METRIC
Work Type - PAVEMENT

3.6 M WIDE LANE (from subgrade up)

Pav't. Type	Description of Pavement	Cost/Linear Meter
A	250 mm R.C. Pavement	5100
B	50 mm HMA Surf. Crs. & 200 mm HMA Base	200
C	75 mm HMA Surf. Crs. & 100 mm HMA Base	150
D	50 mm HMA Surf. Crs. & 50 mm HMA Base	70
E	Bridge Approach & Transition Slabs	510
	(Resurfacing Portion only F & G)	
F	50 mm HMA Surface Course	27
G	75 mm HMA Surface Course	40
H	Milling 50 mm	10

Computation Table for Pavement. Cost

Type	Cost	X Length	X Pavement *W.F.	= Amount
PAVEMENT TOTAL				=

*Width Factors = Ratio of 3.6 meter wide lane to actual pavement width.

Example = actual pavement width = 7.5 meters = $\frac{7.5}{3.6} = 2.05$ W.F.

Classification Number 6 -INTERSECTION IMPROVEMENT
Work Type - DRAINAGE - METRIC

Item	Unit	Quantity	Cost	Amount
Reset Casting	Unit		425	
Inlet *	Unit		2,865	
Pipe *	L.M.		240	
DRAINAGE TOTAL				

* Any drainage problems to be corrected shall be estimated and included.

Work Type - INCIDENTAL ITEMS

Item	Cost / L.M.	x Quantity	= Amount
Beam Guide Rail	55/L.M.		
Fence 1.8 Meter High	60/L.M.		
225 mm X 400 mm Conc. Vertical Curb	45/L.M.		
375mm X 1040 mm Conc. Barrier Curb	165/L.M.		
600mm X 1040 mm Conc. Barrier Curb	240/L.M.		
600mm X Variable Conc. Barrier Curb	150/L.M.		
Lighting Assembly (Includes wire, junction box, etc.) *	9,500/Unit		
Meter Cabinet (Lighting one per cross road)	11,000 Unit		
Complete Traffic Signal Installation at Typical Intersection	165,000		
INCIDENTAL ITEMS TOTAL			=

* For estimating purposes space lights 60 meters apart.

Classification No. 6 - INTERSECTION IMPROVEMENT – SUMMARY Page 1 of 3 - METRIC

Route _____ Section/Contract # _____
 PM _____ UPC No. _____

Work Type	Totals from previous pages
Earthwork	
Pavement	
Culverts	
Bridges	
Drainage	
Incidental Items	
Landscape	
Noise Abatement	
General Items	
PROJECT SUBTOTAL =	

Other Items	Proj. Subtotal Range	Choice	Amount
Lighting, Traffic Stripes, Signs and Delineators		3% of Proj. Subtotal	
Maintenance of Traffic		7% of Proj. Subtotal	
Training		1% of Proj. Subtotal	
Mobilization	Project Cost (Mil.)	% of Proj. Subtotal	
	Less than 5.0	9% of Proj. Subtotal	
	5.0 to 30.0	10% of Proj. Subtotal	
	30.0 & above	11% of Proj. Subtotal	
Clearing Site	Project Cost (Mil.)	\$	
	Less than 1.0	15,000	
	1.0 to 2.0	30,000	
	2.0 to 5.0	45,000	
	5.0 to 10.0	115,000	
	10.0 to 20.0	220,000	
	20.0 to 30.0	240,000	
	30.0 to 40.0	250,000	
	40.0 & above	490,000	

Classification No. 6 - INTERSECTION IMPROVEMENT – SUMMARY Page 2 of 3 - METRIC

Route _____

Section/Contract _____

PM _____

UPC No. _____

Construction Layout	Project Cost(Mil.)	\$	
	Less than 1.0	7,000	
	1.0 to 2.0	20,000	
	2.0 to 5.0	42,000	
	5.0 to 10.0	87,000	
	10.0 to 20.0	160,000	
	20.0 to 30.0	270,000	
	30.0 to 40.0	490,000	
	40.0 & above	890,000	
PROJECT TOTAL		=	

CONTINGENCIES & ESCALATION

	x	X	=
Project Total	(1+ C)	$1 + [0.01 (Y+1) (Y-2)]$	Construction Cost
Contingencies		Y = Number of Years until midpoint of construction duration. If midpoint is less than 2 years no escalation is required.	for Initial Estimate

Project Cost(Mil.)	Contingencies (C) Percent	Average Construction Duration in Years
0-5	3%	1
Over 5	2.5%	2

CONSTRUCTION ENGINEERING (CE)

Project Cost (Mil.)	% of Construction Cost
Less than 1.0	36.5%
1.0 to 5.0	35.1%
5.0 to 10.0	12.2%
10.0 & above	10.5%
CONSTRUCTION ENGINEERING AMOUNT	

Classification No. 6 - INTERSECTION IMPROVEMENT – SUMMARY Page 3 of 3 - METRIC

Route _____ Section/Contract # _____
 PM _____ UPC No. _____

CONTINGENCIES FOR CONSTRUCTION CHANGE ORDER

Total Federal Participating Items in Millions of \$	Construction Change Order Contingency Amount
\$0 to 0.1	\$6,000
0.1 to 0.5	25,000
0.5 to 5.0	25,000 + 4% of amount in excess of \$500,000
5.0 to 10.0	205,000 + 3% of amount in excess of \$5,000,000
10.0 to 15.0	355,000 + 2% of amount in excess of \$10,000,000
15.0 and Above	455,000 + 1.5% of amount in excess of \$15,000,000 with a maximum of \$500,000

For State Funded Projects, Contingencies for Change orders = 0
 CONTINGENCIES

=

UTILITIES RELOCATIONS BY COMPANIES/OWNERS

	x 0.015	= <input style="width: 150px; height: 20px;" type="text"/>
--	---------	--

Construction Cost for Initial Estimate Utility Relocation Cost for Initial Estimate

or use utilities detailed estimates as soon as available.
 If there are no utility relocations on the project indicate "No Utilities" in the box above.

ROW COST

If there is no ROW cost on the project indicate "No ROW" the box

SUMMARY

Construction Estimate for Initial	
Construction Engineering (CE)	
Contingencies	
Utilities: Relocations By Companies/Owners	
Total Estimate	

Right of Way

**2.1.7 Classification Number 7 - SAFETY & TRAFFIC CONTROL - METRIC
Work Type - PAVEMENT**

Route _____ Section/Contract # _____
 PM _____ UPC No. _____

3.6 M WIDE LANE (from subgrade up)

Pav't. Type	Description of Pavement	Cost/Linear Meter
A	250 mm R.C. Pavement	510
B	50 mm HMA Surf. Crs. & 200 mm HMA Base	200
C	75 mm HMA Surf. Crs. & 100 mm HMA Base	150
D	50 mm HMA Surf. Crs. & 50 mm HMA Base	40
E	Bridge Approach & Transition Slabs	510
	(Resurfacing Portion only F & G)	
F	50 mm HMA Surface Course	27
G	75 mm HMA Surface Course	40
H	Milling 50 mm	10

Computation Table for Pavement. Cost

Type	Cost	X Length	X Pavement *W.F.	= Amount
PAVEMENT TOTAL				=

*Width Factors = Ratio of 3.6 meter wide lane to actual pavement width.

Example = actual pavement width = 7.5 meters = $7.5/3.6 = 2.05$ W.F.

Classification No. 7 - SAFETY & TRAFFIC CONTROL - METRIC
Work Type - INCIDENTAL ITEMS

Item	Cost / L.M.	x Quantity	= Amount
Beam Guide Rail	55/L.M.		
Fence 1.8 Meter High	60/L.M.		
QuadGuard	27,500/Unit		
Sign Bridge	308,000		
Cantilever Sign Structure	60,500		
Lighting Assembly (Includes wire, junction box, etc.) *	9,500/Unit		
Meter Cabinet (Lighting one per cross road)	11,000/Unit		
Complete Traffic Signal Installation at Typical Intersection	165,000		
INCIDENTAL ITEMS TOTAL			=

* For estimating purposes space lights 60 meters apart.

Work Type - EARTHWORK & LANDSCAPE

	Unit	Quantity	x Unit Price	= Amount
Roadway Exc. Unclassified	C.M.		35.00	
Removal of Conc. Base & Conc. Surface Courses	S.M.		18.00	
Borrow Excavation, Zone 3	C.M.		20.00	
EARTHWORK TOTAL				=

Roadway Excavation Unclassified and Borrow Excavation Zone 3 shall be calculated on a job-to-job basis depending on need. The prices include Topsoil and Seeding required.

Classification No. 7 - SAFETY & TRAFFIC CONTROL – SUMMARY Page 1 of 3 - METRIC

Route _____ Section/Contract # _____
 PM _____ UPC No. _____

Work Type	Totals from previous pages
Earthwork	
Pavement	
Culverts	
Bridges	
Drainage	
Incidental Items	
Landscape	
Noise Abatement	
General Items	
PROJECT SUBTOTAL	=

Other Items	Proj. Subtotal Range	Choice	Amount
Lighting, Traffic Stripes, Signs and Delineators		3% of Proj. Subtotal	
Maintenance of Traffic		7% of Proj. Subtotal	
Training		1% of Proj. Subtotal	
Mobilization	Project Cost (Mil.)	% of Proj. Subtotal	
	Less than 1.0	8% of Proj. Subtotal	
	1.0 to 5.0	8% of Proj. Subtotal	
	5.0 & above	8% of Proj. Subtotal	
Progress Schedule	Project Cost (Mil.)	\$	
	Less than 2.0	0	
	2.0 to 5.0	6,000	
	5.0 & above	8,000	
Construction Layout	Project Cost (Mil.)	\$	
	Less than 1.0	6,000	
	1.0 to 2.0	8,000	
	2.0 to 5.0	26,500	
	5.0 & above	31,000	
		PROJECT TOTAL	=

continued on next page

Classification No. 7 - SAFETY & TRAFFIC CONTROL - SUMMARY Page 2 of 3 - METRIC

Route _____ Section/Contract # _____
 PM _____ UPC No. _____

CONTINGENCIES & ESCALATION

	x	X	=
Project Total	(1+ C) Contingencies	1 + [0.01 (Y+1) (Y-2)] Y = Number of Years until midpoint of construction duration. If midpoint is less than 2 years no escalation is required.	Construction Cost for Initial Estimate

Project Cost(Mil.)	Contingencies (C) Percent	Average Construction Duration in Years
0-5	3%	1
Over 5	2.5%	2

CONSTRUCTION ENGINEERING (CE)

Project Cost (Mil.)	% of Construction Cost
Less than 1.0	21.6%
1.0 to 5.0	12.2%
5.0 to 10.0	12.2%
10.0 & above	12.2%

CONSTRUCTION ENGINEERING AMOUNT _____

CONTINGENCIES FOR CONSTRUCTION CHANGE ORDER

Total Federal Participating Items in Millions of \$	Construction Change Order Contingency Amount
\$0 to 0.1	\$6,000
0.1 to 0.5	25,000
0.5 to 5.0	25,000 + 4% of amount in excess of \$500,000
5.0 to 10.0	205,000 + 3% of amount in excess of \$5,000,000
10.0 to 15.0	355,000 + 2% of amount in excess of \$10,000,000
15.0 and Above	455,000 + 1.5% of amount in excess of \$15,000,000 with a maximum of \$500,000

For State Funded Projects, Contingencies for Change orders = 0

CONTINGENCIES _____ = _____

UTILITIES RELOCATIONS BY COMPANIES/OWNERS

_____	x 0.10	= _____
-------	--------	---------

Construction Cost for Initial Estimate _____ Utility Relocation Cost for Initial Estimate _____

or use utilities detailed estimates as soon as available.
 If there are no utility relocations on the project indicate "No Utilities" in the box above.

Classification No. 7 - SAFETY & TRAFFIC CONTROL - SUMMARY Page 3 of 3 - METRIC

Route _____ Section/Contract # _____
PM _____ UPC No. _____

ROW COST

If there is no ROW cost on the project indicate "No ROW" the box

--

SUMMARY

Construction Estimate for Initial

Construction Engineering (CE)

Contingencies

Utilities: Relocations By Companies/Owners

Total Estimate

Right of Way

--

Superseded

Attachment 2.1

Federal Non-Participating Construction Cost Estimation Work Sheet - Metric

Items of Work

Amount

Approach slabs with any of the following conditions:

- (a) if one-way traffic loading is less than 500 18-kip equivalent single axle load applications per day;
- (b) posted speed limit is less than 55 k.p.h.;
- (c) the abutments are not supported on pile foundations.

= _____

Fishing piers (or bridges) and pedestrian walkways for recreational access.

= _____

Greater than 2:1 mitigation of wetland sites. FHWA sometimes participates in greater than 2:1 replacement if FHWA considers the impact significant. Contact Project Manager for guidance.

= _____

Sometimes the use of liners for Wetland Mitigation Sites as they do not permit ground water recharge. Contact Project Manager for guidance.

= _____

Waterway openings and net fill requirements mandated by NJDEP when they differ from FHWA. requirements.

= _____

Structures less than 6.1 meters in span if BR/BH funds are being utilized for the project.

= _____

Sidewalks on bridges when there are no sidewalks on the approaches for pedestrians. Contact Project Manager for guidance.

= _____

Maintenance dredging if the dredged material is not used as a fill.

= _____

Maintenance operations such as cleaning existing pipes, drainage structures, ditches, repairing impact attenuators, mowing etc. FHWA sometimes participates in this work. Contact Project Manager for guidance.

= _____

Items of work paid for by other agencies or private developers.

= _____

Sometimes Memorial and/or Vanity Plaques on structures.

= _____

Type II Noise Barriers

= _____

BR/BH funds for approach work past the touchdown points for new / rehabilitated structures.

= _____

Proprietary items without proper justification. Contact Project Manager for guidance.

= _____

Additional items not listed above. (see next page)

= _____

= _____

Attachment 3.1

CONSTRUCTION COST ESTIMATE WORK SHEET

Utilize the Bid Price Report to complete

Route

Section/Contract #

		Reference Project Information			
		Route & Section			
		Municipality			
		County			
		Total Bid Price			
Item No.	Item Description	Bid Date			
		Work Class			
		Quantity			
	Unit Price for Estimating	Unit Price			
		Total Price			
		Quantity			
	Unit Price for Estimating	Unit Price			
		Total Price			
		Quantity			
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	Unit Price for Estimating	Unit Price			
		Total Price			
		Quantity			
	Unit Price for Estimating	Unit Price			
		Total Price			
		Quantity			
	Unit Price for Estimating	Unit Price			
		Total Price			

Revision History - A Summary of all changes to this Manual

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This manual incorporates and eliminates the following ADUs and APCs.

A	March 22, 1971	APC	Quarterly Updates of Engineers Estimates
A	March 19, 1971	APC	Quarterly Updates of Engineers Estimates

Superseded