

ERRATA for

Nebraska Department of Roads – Roadway Design Manual

June 2016

The Roadway Design Manual (*RDM*) was last updated in 2006. In the intervening years some design guidance has become obsolete, new/updated guidance has become available, offices of responsibility have changed, design procedures have been streamlined, etc. The NDOR is in the process of updating the *RDM* but, in the interim, the obsolete/incorrect guidance is being addressed through this document and a re-issued *RDM*. Page numbers cited in this document are referenced to the June 2016 Errata RDM. Deleted text will be shown in the June 2016 Errata RDM in green with a strike through (~~errata~~) and new/corrected text will be in red (**correct**). The following chapters have already been addressed:

- Contents (updated in June 2016)
- List of Exhibits (updated in June 2016)
- Chapter Three: Roadway Alignment (updated on June 17, 2011)
- Chapter Four: Intersections, Driveways and Channelization (updated on April 19, 2012)
- Chapter Six: The Typical Roadway Cross-Section (updated on February 18, 2016)
- Chapter Eight: Surfacing (updated on December 15, 2015)
- Chapter Nine: Guardrail and Roadside Barriers (updated on October 16, 2012)
- Chapter Sixteen: Pedestrian and Bicycle Facilities (added on February 8, 2016)
- Chapter Seventeen: Resurfacing, Restoration and Rehabilitation (3R) Projects (added on March 26, 2014)

The Index was updated in June 2016.

Page	Existing Text	Corrected Text
Chapter Twelve		
12-2		Add Section 1.A.5: Railroad Protective Liability Insurance (% of Work Near Railroad) This had been Section 22.B of Chapter Two.

Page	Existing Text	Corrected Text
Chapter Twelve		
12-3	<p>Section 1.B.4: Participation by Other Government Entities – “Cost sharing guidelines are outlined in NDOR Operating Instruction 60-11, “Municipal Cost Sharing” (Appendix F, “Selected NDOR Operating Instructions”). Guidelines for agreements are found in NDOR Operating Instruction 45-5, “Agreements” (Appendix F, “Selected NDOR Operating Instructions).”</p>	<p>“Cost sharing guidelines are outlined in NDOR Operating Instruction 60-11, “Municipal Cost Sharing” (Appendix B, “Selected NDOR Operating Instructions”). Guidelines for agreements are found in NDOR Operating Instruction 45-5, “Agreements” (Appendix B, “Selected NDOR Operating Instructions).”</p>
12-3	<p>Section 1.B.5: Utilities – “If utility work results in a betterment of the lines, the utility owner will be responsible for those costs, (See Chapter Thirteen: <u>Planning and Project Development</u>, Section 6, and NDOR Operating Instruction 45-1, “Utility Rehabilitation Negotiations”, Appendix F, “Selected NDOR Operating Instructions”, for further information).”</p>	<p>“If utility work results in a betterment of the lines, the utility owner will be responsible for those costs, (See Chapter Thirteen: <u>Planning and Project Development</u>, Section 6, and NDOR Operating Instruction 45-1, “Utility Rehabilitation Negotiations”, Appendix B, “Selected NDOR Operating Instructions”, for further information).”</p>
12-4	<p>Section 1.B.6: Railroad – “See Section 4.D, Chapter Thirteen: <u>Planning and Project Development</u>, Section 5.G, and NDOR Operating Instruction 45-2, “Utility and Railroad Payments” (Appendix F, “Selected NDOR Operating Instructions”) for further discussion.”</p>	<p>“See Section 4.D, Chapter Thirteen: <u>Planning and Project Development</u>, Section 5.G, and NDOR Operating Instruction 45-2, “Utility and Railroad Payments” (Appendix B, “Selected NDOR Operating Instructions”) for further discussion.”</p>

Page	Existing Text	Corrected Text
Chapter Twelve		
12-6	<p>Section 1.B.9: CICS1 Lookup – “The on-line lookup in CICS1 can provide facts and funding information (See Chapter Two: <u>Roadway Design Process</u>, Section 5.D, for CICS1 procedures).”</p>	<p>“The on-line lookup in CICS1 can provide facts and funding information. To enter the “Integrated Highway Inventory System:</p> <ol style="list-style-type: none"> 1. Click on the “Mainframe Sessions” icon. 2. Enter CICS1 by entering C1 and your DR# and password. 3. Select 2 – “Dept. of Roads”. 4. Select 5 – “Integrated Highway Inventory System”.
12-6	<p>Section 1.B.9: CICS1 Lookup – “The designer should notify the Project Scheduling and Program Management Section if any discrepancies are found between the information in CICS1 and the information presented on other project forms, such as Form DR 333, “Initial Project Data”, (See Section 5).”</p>	<p>“The designer should notify the Project Scheduling Section of the Program Management Division if any discrepancies are found between the information in CICS1 and the information presented on other project forms, such as Form DR 333, “Initial Project Data”, (See Section 5).”</p>
12-6	<p>Section 2.A: <u>General</u> – “The initial or beginning estimate (Status Code 10) is an estimate developed by the Project Scheduling and Program Management Section.”</p>	<p>“The initial or beginning estimate (Status Code 10) is an estimate developed by the Project Scheduling Section of the Program Management Division.”</p>
12-6	<p>Section 2.A: <u>General</u> – “At this early stage, the project costs are estimated on average per mile (kilometer) construction costs together with estimated costs for preliminary engineering, construction engineering and contingencies, utility costs, right-of-way costs, and costs for bridge work, (See Section 4 and <u>EXHIBITS 12.2 AND 12.3</u>).”</p>	<p>“At this early stage, the project costs are estimated on average per mile (kilometer) construction costs together with estimated costs for preliminary engineering, construction engineering and contingencies, utility costs, right-of-way costs, and costs for bridge work, (See Section 4 and <u>EXHIBIT 12.2</u>).”</p>

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12-7	Exhibit 12.1: Cost Estimates – Status Code 10: “ Project Scheduling and Program Management Section , based on DR-73 information.”	“ Project Scheduling Section of the Program Management Division , based on DR-73 information.”
12-8	Exhibit 12.2: Estimated Construction Costs Per Mile (Updated May 2006)	Remove this exhibit, it is out-of-date.
12-9	Section 2.C: <u>Change in Project Scope</u> – “For additional information see Chapter Two: <u>Roadway Design Process</u> , Section 5.B.”	Remove this text.
12-11	Section 4: CONTENTS OF COST ESTIMATES – “Project costs (See <u>EXHIBIT 12.3</u>) are subdivided into the following categories.”	“Project costs (See <u>EXHIBIT 12.2</u>) are subdivided into the following categories.”
12-11	Section 4.A: <u>Preliminary Engineering</u> – “The figures given in <u>EXHIBIT 12.3</u> are provided for the designer’s information, showing the percentages used by the Cost Estimating Unit of the Construction Division in calculating the Preliminary Engineering costs for a project.”	“The figures given in <u>EXHIBIT 12.2</u> are provided for the designer’s information, showing the percentages used by the Cost Estimating Unit of the Construction Division in calculating the Preliminary Engineering costs for a project.”
12-12	Exhibit 12.3 Preliminary Cost Estimate Values/Cost Factors (for information only)	Exhibit 12.2 Preliminary Cost Estimate Values/Cost Factors (for information only)
12-12	Previous Exhibit 12.3: Preliminary Cost Estimate Values/Cost Factors (for information only) – Chapter Section 4.B.2: Fencing – “\$14,000/mile for two sides of the roadway (\$8700/km)”	“Contact Right-of-Way ”

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Chapter Twelve		
12-12	<p>Previous Exhibit 12.3: Preliminary Cost Estimate Values/Cost Factors (for information only) – Chapter Section 4.B.4: Relocation Assistance</p>	<p>Add “Contact Right-of-Way”. Remove the following Project Cost Categories: “Owner Occupied Residence”, “Business Relocation” and “Farm/Ranch Headquarter Relocation”</p>
12-12	<p>Previous Exhibit 12.3: Preliminary Cost Estimate Values/Cost Factors (for information only) – Chapter Section 4.E: Construction Engineering – “8.0% of base Construction Costs”</p>	<p>“12% of base Construction Costs if > \$2 million, 5% of base Construction Costs if ≤ \$2 million”</p>
12-12	<p>Previous Exhibit 12.3: Preliminary Cost Estimate Values/Cost Factors (for information only) – Chapter Section 4.F: Contingencies – “4.0% of base Construction Costs”</p>	<p>“2.0% of base Construction Costs”</p>
12-12	<p>Previous Exhibit 12.3: Preliminary Cost Estimate Values/Cost Factors (for information only) – Chapter Section 4.G.5: Bridge – “Calculated by the Cost Estimating Unit based on Bridge Size and Type as supplied by the roadway designer (See <u>EXHIBIT 12.5</u>).”</p>	<p>“Calculated by the Cost Estimating Unit or supplied by Bridge based on Bridge Size and Type as supplied by the roadway designer (See <u>EXHIBIT 12.4</u>).”</p>
12-14	<p>Section 4.B.4: Relocation Assistance – “In 2003, relocation assistance payments averaged:</p> <ul style="list-style-type: none"> • \$30,000 for owner occupied residence relocation, • \$20,000 for business relocations, • \$65,000 for relocation of farm and ranch headquarters where no comparable properties were available.” 	<p>Remove this text.</p>

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12-14	Section 4.B.4: Relocation Assistance – “Contact the Right-of-Way Division Appraisal Unit for any updates/adjustments in relocation assistance costs.”	“Contact the Right-of-Way Division Appraisal Unit for relocation assistance costs.”
12-14	Section 4.D: Railroad – “See Chapter Two: <u>Roadway Design Process</u> , Section 21.B; Chapter Ten: <u>Miscellaneous Design Issues</u> , Section 1 and Chapter Thirteen: <u>Planning and Project Development</u> , Section 5.G for further discussion on railroad-involved projects.”	“See Section 1.A.5, Chapter Ten: <u>Miscellaneous Design Issues</u> , Section 1 and Chapter Thirteen: <u>Planning and Project Development</u> , Section 5.G for further discussion on railroad-involved projects.
12-15	Section 4.E: Construction Engineering – “Construction Engineering is estimated by the Cost Estimating Unit of the Construction Division at 8% of the cost of construction.”	“Construction Engineering is estimated by the Cost Estimating Unit of the Construction Division at 12% of the base cost of construction when it is over \$2 million and 5% of the base construction cost when it is less than or equal to \$2 million.”
12-15	Section 4.F: Contingencies – “Contingency costs are currently estimated by the Cost Estimating Unit of the Construction Division at 4% of the base cost of construction.”	“Contingency costs are currently estimated by the Cost Estimating Unit of the Construction Division at 2% of the base cost of construction.”
12-16	Section 4.G.2: Specifications – “The <u>Standard Specifications for Highway Construction</u> (Reference 12.3) and the <u>Supplemental Specifications to Standard Specifications for Highway Construction</u> , (Reference 12.4) define the scope and control of work, mobilization, and measurement and payment of all elements of construction.”	The <u>Standard Specifications for Highway Construction</u> (Reference 12.3) define the scope and control of work, mobilization, and measurement and payment of all elements of construction.”

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12-16	<p>Section 4.G.2: Specifications – “Items which are not covered by, or that differ from, the <u>Standard Specifications for Highway Construction</u> (Reference 12.3) or the <u>Supplemental Specifications for Highway Construction</u> (Reference 12.4) require special provisions, (See Section 4.G.7 and Chapter Two: <u>Roadway Design Process</u>, Section 9.A).”</p>	<p>“Items which are not covered by, or that differ from, the <u>Standard Specifications for Highway Construction</u> (Reference 12.3) require special provisions. Special provisions should be initiated during “Functional Design” and finalized during the “Final Plans Package & Review for PS&E” (See the <i>DPO</i> (Ref. 12.2), Clarity Task Codes 5428 and 5790).”</p>
12-17	<p>Section 4.G.3: Quantities – “The degree of accuracy applied to each unit of measure can be found in <u>EXHIBITS 12.7 & 12.8</u> at the end of this chapter.”</p>	<p>“The degree of accuracy applied to each unit of measure can be found in <u>EXHIBITS 12.6 & 12.7</u> at the end of this chapter.”</p>
12-17	<p>Section 4.G.3: Quantities – “<u>EXHIBIT 12.4</u> presents a partial listing of quantity calculation guidance found in this manual and in the <u>Drainage Design and Erosion Control Manual</u> (Reference 12.5).”</p>	<p>“<u>EXHIBIT 12.3</u> presents a partial listing of quantity calculation guidance found in this manual and in the <u>Drainage Design and Erosion Control Manual</u> (Reference 12.4).”</p>
12-17	<p>Section 4.G.3: Quantities – “The “Cost Estimate Checklist” (<u>EXHIBIT H</u> of the <u>Design Process Outline</u>, (Reference 12.2), the “Pavement Item Checklist” (<u>EXHIBIT 12.9</u>) the “Flexible Pavement Item Checklist” (<u>EXHIBIT 12.10</u>), the “Asphalt Cement Tonnage Table” (<u>EXHIBIT 12.11</u>), the “Asphalt Concrete Tonnage Table” (<u>EXHIBIT 12.12</u>) and the “Quantity Computations for Gravel and Crushed Rock” (<u>EXHIBIT 12.13</u>), are helpful references for items to be included in the cost estimate, (<u>EXHIBITS 12.9 THRU 12.13</u> may be found at the end of this chapter).”</p>	Remove this text

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12-18	Exhibit 12.4 Quantity Calculation Guidance Locations	Exhibit 12.3 Quantity Calculation Guidance Locations
12-18	Previous Exhibit 12.4: Quantity Calculation Guidance Location “Chapter 2, Section 22.B, Item Percent of Work Near Railroad”	Remove this line from the table.
12-18	Previous Exhibit 12.4: Quantity Calculation Guidance Location “Chapter 8, Section 3, Item Shoulder Construction”	“Chapter 8, Section 4, Item Shoulder Construction”
12-18	Previous Exhibit 12.4: Quantity Calculation Guidance Location “Chapter 8, Section 4.B.1, Item Cold Milling”	“Chapter 8, Section 5.B.1, Item Cold Milling”
12-18	Previous Exhibit 12.4: Quantity Calculation Guidance Location “Chapter 8, Section 4.C, Item Pavement Patching”	“Chapter 8, Section 5.C, Item Pavement Patching”
12-18	Previous Exhibit 12.4: Quantity Calculation Guidance Location “Chapter 8, Section 5, Item Surfacing Quantities”	“Chapter 8, Section 6, Item Surfacing Quantities”
	Previous Exhibit 12.4: Quantity Calculation Guidance Location “Chapter 10, Section 9, Item Old Road Obliteration”	“Chapter 10, Section 8, Item Old Road Obliteration”
12-18	Previous Exhibit 12.4: Quantity Calculation Guidance Location “Chapter 10, Section 11.B, Item Temporary Road Pay Items”	“Chapter 10, Section 9.B, Item Temporary Road Pay Items”
12-18	Previous Exhibit 12.4: Quantity Calculation Guidance Location “Chapter 10, Section 11.C, Item Crossovers”	“Chapter 10, Section 9.C, Item Crossovers”

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12-18	Previous Exhibit 12.4: Quantity Calculation Guidance Location “Chapter 10, Section 11.D, Item Temporary Surfacing”	“Chapter 10, Section 9.D, Item Temporary Surfacing”
12-18	Previous Exhibit 12.4: Quantity Calculation Guidance Location “Chapter 10, Section 12, Item Mailbox Turnouts/Supports”	“Chapter 10, Section 10, Item Mailbox Turnouts/Supports”
12-18	Previous Exhibit 12.4: Quantity Calculation Guidance Location “ Note: This is not a complete listing. The roadway designer should refer to the <u>Standard Specifications for Highway Construction</u> , (Reference 12.3), the <u>Supplemental Specifications for Highway Construction</u> , (Reference 12.4), and the appropriate Sections of the <u>Roadway Design Manual</u> , and the <u>Drainage Design and Erosion Control Manual</u> , (Reference 12.5), for guidance when computing project quantities.”	“ Note: This is not a complete listing. The roadway designer should refer to the <u>Standard Specifications for Highway Construction</u> , (Reference 12.3), and the appropriate Sections of the <u>Roadway Design Manual</u> , and the <u>Drainage Design and Erosion Control Manual</u> , (Reference 12.4), for guidance when computing project quantities.”
12-20	Section 4.G.5: Bridge Items – “The initial bridge cost estimates are calculated on the basis of the dimensions as shown in <u>EXHIBIT 12.5</u> until detailed bridge item quantities are available.”	“The initial bridge cost estimates are calculated on the basis of the dimensions as shown in <u>EXHIBIT 12.4</u> until detailed bridge item quantities are available.”
12-20	Section 4.G.5: Bridge Items – “For additional information see Chapter Ten: <u>Miscellaneous Design Issues</u> , Sections 2 and 8.”	“For additional information see Chapter Ten: <u>Miscellaneous Design Issues</u> , Sections 2 and 7.”
12-21	Exhibit 12.5 Dimensions to Use in Calculating Area of a Bridge Structure	Exhibit 12.4 Dimensions to Use in Calculating Area of a Bridge Structure

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12-22	<p>Section 4.G.6: Other Construction Items – “The roadway designer should check with the Right-of-Way Division to ascertain whether fencing has been included in the right-of-way costs or if it is to be handled as a construction cost, (See Section 4.B.2 and Chapter Ten: <u>Miscellaneous Design Issues</u>, Section 6 for further information).”</p>	<p>“The roadway designer should check with the Right-of-Way Division to ascertain whether fencing has been included in the right-of-way costs or if it is to be handled as a construction cost, (See Section 4.B.2 and Chapter Ten: <u>Miscellaneous Design Issues</u>, Section 5 for further information).”</p>
12-22	<p>Section 4.G.6: Other Construction Items – “The Planning and Project Development Division will provide information for cost items related to wetlands and noise walls (See Chapter Thirteen: <u>Planning and Project Development</u>, Sections 4.B and 4.D), for landscaping items (such as tree and shrub plantings), and erosion control items (See Chapter Ten: <u>Miscellaneous Design Issues</u>, Section 4, and the <u>Drainage Design and Erosion Control Manual</u>, Chapter Two: <u>Erosion Control</u>, Reference 12.5).”</p>	<p>“The Planning and Project Development Division will provide information for cost items related to wetlands and noise walls (See Chapter Thirteen: <u>Planning and Project Development</u>, Sections 4.B and 4.D), for landscaping items (such as tree and shrub plantings), and erosion control items (See Chapter Ten: <u>Miscellaneous Design Issues</u>, Section 3, and the <u>Drainage Design and Erosion Control Manual</u>, Chapter Two: <u>Erosion Control</u>, Reference 12.4).”</p>
12-22	<p>Section 4.G.6: Other Construction Items – “For further information, see Chapter Ten: <u>Miscellaneous Design Issues</u>, Section 13.”</p>	<p>“For further information, see Chapter Ten: <u>Miscellaneous Design Issues</u>, Section 11.”</p>
12-24	<p>Section 4.H.4: Detours – “For additional information see Chapter Ten: <u>Miscellaneous Design Issues</u>, Section 11.”</p>	<p>“For additional information see Chapter Ten: <u>Miscellaneous Design Issues</u>, Section 9.”</p>
12-24	<p>Section 4.H.5: Items Often Overlooked or Omitted – “<u>EXHIBIT 12.6</u> is a partial listing of estimate items which are often omitted and items subject to misinterpretation.”</p>	<p>“<u>EXHIBIT 12.5</u> is a partial listing of estimate items which are often omitted and items subject to misinterpretation.”</p>

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Chapter Twelve		
12-25	Exhibit 12.6 Estimate Items Often Overlooked or Omitted	Exhibit 12.5 Estimate Items Often Overlooked or Omitted
12-25	Previous Exhibit 12.6: Estimate Items Often Overlooked or Omitted - “Engineering and Contingencies: Include 8% of the construction cost for Construction Engineering and 4% for Contingencies (Revision and Change Orders).”	“ Engineering and Contingencies: See <u>EXHIBIT 12.3</u> ”
12-25	Previous Exhibit 12.6: Estimate Items Often Overlooked or Omitted – “Hydrated Lime for Asphaltic Mixtures: This item shall be used with asphaltic concrete projects. See <u>EXHIBIT 12.10g.</u> ”	“ Hydrated Lime for Warm Mix Asphalt: This item shall be used with asphaltic concrete projects.”
12-26	Previous Exhibit 12.6: Estimate Items Often Overlooked or Omitted – “Jacking Pipes: (See the <u>Drainage Design and Erosion Control Manual</u> , Chapter One: <u>Drainage</u> , Section 13.C, Reference 12.5).”	“ Jacking Pipes: (See the <u>Drainage Design and Erosion Control Manual</u> , Chapter One: <u>Drainage</u> , Section 13.C, Reference 12.4).”
12-30	Section 5.C: <u>Highway Improvement Programming Request (DR Form 73)</u> – “The roadway designer will then send the revised form to the Project Scheduling and Program Management Section , (See Chapter Two: <u>Roadway Design Process</u> , Section 5.B, for additional information).”	“The roadway designer will then send the revised form to the Project Scheduling Section of the Program Management Division. ”
12-30	Section 5.D: <u>DR Forms 333 and 334</u>	Remove this sub-section, these forms are obsolete.
12-31	Exhibit 12.7 Pay Item Accuracy	Exhibit 12.6 Pay Item Accuracy
12-32	Exhibit 12.8 Rounding of Surfacing Item Quantities	Exhibit 12.7 Rounding of Surfacing Item Quantities

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12-33	Exhibit 12.9 Pavement Item Checklist	Exhibit 12.8 Pavement Item Checklist
12-34 to 12-43	Exhibits 12.10: “Flexible Pavement Items”, 12.11: “Asphalt Cement Tonnage Table”, and 12.12: “Asphalt Concrete Tonnage Table”	Remove these exhibits, they are out-of-date. Use the guidance given in “Estimating Quantities – 6-17-15” found at the end of the chapter
12-44	Exhibit 12.13 Quantity Computations for Gravel and Crushed Rock	Exhibit 12.9 Quantity Computations for Gravel and Crushed Rock
12-45 & 12-46	Exhibit 12.14 Surfacing Shapes	Exhibit 12.10 Surfacing Shapes
12-47	Exhibit 12.15 Fillets	Exhibit 12.11 Fillets
12-48 & 12-49	Exhibit 12.16 Areas of Circular Segments	Exhibit 12.12 Areas of Circular Segments
12-50	Section 6: REFERENCES	Add (<i>DPO</i>) to Reference 12.2. Update Reference 12.3 from “1997 and current supplemental updates” to “2007”. Remove Reference 12.4. Rename Reference 12.5 as 12.4.
	Post Section 6: REFERENCES	Add “Estimating Quantities in English and Metric” dated 6/17/15