

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 Seven		
7-3	Section 1.A: Computations – “NDOR designers should refer to the Roadway Design Computer Applications Unit for assistance with the earthwork calculations computer programs.”	“NDOR designers should refer to the Business Technology Support Division – IT Support for assistance with the earthwork calculations computer programs.”
7-3 to 7-8	Section 1.A 2: Manual Computations	Remove this section, including Exhibits 7.2, 7.3, and 7.4
7-8	1.A.3 Balance Factors	1.A.2 Balance Factors
7-9	1.A.4 Distribution Analysis	1.A.3 Distribution Analysis

Page	Existing Text	Corrected Text
Chapter Seven		
7-10	1.A.4.a Haul Considerations	1.A.3.a Haul Considerations
7-10	1.A.5 Moisture Content	1.A.4 Moisture Content
7-10	Previous Section 1.A.5: Moisture Content – “ <u>EXHIBIT 7.5</u> should be used to estimate the amount of water that may need to be applied to obtain optimum moisture content when estimating grading costs. <u>EXHIBIT 7.5</u> is based on excavation quantities; adjustments are required when paying for the quantity “Earthwork Measured in Embankment”, (See Section 1.A.6.a).”	“ <u>EXHIBIT 7.2</u> should be used to estimate the amount of water that may need to be applied to obtain optimum moisture content when estimating grading costs. <u>EXHIBIT 7.2</u> is based on excavation quantities; adjustments are required when paying for the quantity “Earthwork Measured in Embankment”, (See Section 1.A.5.a).”
7-11	Exhibit 7.5 Map for Estimation Water Needed for Compaction	Exhibit 7.2 Map for Estimation Water Needed for Compaction
7-12	Exhibit 7.6 Example Grading Pay Items	Exhibit 7.3 Example Grading Pay Items
7-12	Exhibit 7.7 Additional Requirements for Earthwork Calculations	Exhibit 7.4 Additional Requirements for Earthwork Calculations
7-13	1.A.6 Example Calculations	1.A.5 Example Calculations
7-13	Previous Section 1.A.6: Example Calculations – “Grading items are summarized for the example cases in <u>EXHIBIT 7.6</u> .”	“Grading items are summarized for the example cases in <u>EXHIBIT 7.3</u> .”
7-13	1.A.6.a Case 1: Embankment (Fill) Only	1.A.5.a Case 1: Embankment (Fill) Only
7-13	Exhibit 7.8 Earthwork Quantities – Case 1	Exhibit 7.5 Earthwork Quantities – Case 1

Page	Existing Text	Corrected Text
Chapter Seven		
7-13	Previous Section 1.A.6.a: Case 1: Embankment (Fill) Only – “To determine the quantity of water that needs to be applied for compaction, the measured volume of embankment must be adjusted for shrinkage by multiplying it by the balance factor, since <u>EXHIBIT 7.5</u> is based on excavation quantities, (for “Embankment”, a balance factor of 1.5 shall be used when calculating “Water Applied”).”	“To determine the quantity of water that needs to be applied for compaction, the measured volume of embankment must be adjusted for shrinkage by multiplying it by the balance factor, since <u>EXHIBIT 7.2</u> is based on excavation quantities, (for “Embankment”, a balance factor of 1.5 shall be used when calculating “Water Applied”).”
7-14	Previous Section 1.A.6.a: Case 1: Embankment (Fill) Only – “The quantity of water that needs to be applied is determined by multiplying the adjusted volume of embankment by the number of gallons (liters) of water per cu. yd. (m ³) as indicated in <u>EXHIBIT 7.5</u> for the area in which the project is located.”	“The quantity of water that needs to be applied is determined by multiplying the adjusted volume of embankment by the number of gallons (liters) of water per cu. yd. (m ³) as indicated in <u>EXHIBIT 7.2</u> for the area in which the project is located.”
7-14	Previous Section 1.A.6.a: Case 1: Embankment (Fill) Only – “ <u>EXHIBIT 7.8</u> shows a typical earthwork table that should be included on the plans. See items 2, 3, 7 and 8 in <u>EXHIBIT 7.7</u> for additional information pertaining to an existing road.”	“ <u>EXHIBIT 7.5</u> shows a typical earthwork table that should be included on the plans. See items 2, 3, 7 and 8 in <u>EXHIBIT 7.4</u> for additional information pertaining to an existing road.”
7-14	1.A.6.b Case 2: Unbalanced – Mostly Embankment	1.A.5.b Case 2: Unbalanced – Mostly Embankment
7-14	Previous Section 1.A.6.b: Case 2: Unbalanced – Mostly Embankment – “Given the earthwork quantities in <u>EXHIBIT 7.9</u> , determine balance points for distribution analysis, the earthwork quantities for payment and the amount of water needed.”	“Given the earthwork quantities in <u>EXHIBIT 7.6</u> , determine balance points for distribution analysis, the earthwork quantities for payment and the amount of water needed.”

Page	Existing Text	Corrected Text
Chapter Seven		
7-15	Exhibit 7.9 Earthwork Quantities – Case 2	Exhibit 7.6 Earthwork Quantities – Case 2
7-15	Previous Section 1.A.6.b: Case 2: Unbalanced – Mostly Embankment – “The quantity of water that needs to be applied is determined by multiplying the adjusted volume of embankment by the number of gallons (liters) of water per cu. yd. (m ³) as indicated in <u>EXHIBIT 7.5</u> for the area in which the project is located.”	“The quantity of water that needs to be applied is determined by multiplying the adjusted volume of embankment by the number of gallons (liters) of water per cu. yd. (m ³) as indicated in <u>EXHIBIT 7.2</u> for the area in which the project is located.”
7-15	Previous Section 1.A.6.b: Case 2: Unbalanced – Mostly Embankment – “ <u>EXHIBIT 7.9</u> shows an example of an earthwork table that shall be included on the plans. See items 2, 3 7 and 8 in <u>EXHIBIT 7.7</u> for additional information pertaining to this example.”	“ <u>EXHIBIT 7.6</u> shows an example of an earthwork table that shall be included on the plans. See items 2, 3 7 and 8 in <u>EXHIBIT 7.4</u> for additional information pertaining to this example.”
7-15	1.A.6.c Case 3: Balanced – Considerable Borrow Furnished by Contractor	1.A.5.c Case 3: Balanced – Considerable Borrow Furnished by Contractor
7-16	Previous Section 1.A.6.c: Case 3: Balanced – Considerable Borrow Furnished by Contractor – “Given the earthwork quantities in <u>EXHIBIT 7.10</u> , determine the balance points for the distribution analysis, the earthwork quantities for payment, and the amount of water needed.”	“Given the earthwork quantities in <u>EXHIBIT 7.7</u> , determine the balance points for the distribution analysis, the earthwork quantities for payment, and the amount of water needed.”

Page	Existing Text	Corrected Text
Chapter Seven		
7-16	<p>Previous Section 1.A.6.c: Case 3: Balanced – Considerable Borrow Furnished by Contractor – “The quantity of water that needs to be applied is determined by multiplying the adjusted volume of embankment by the number of gallons of water per cu. yd. (liters per m³) as indicated by <u>EXHIBIT 7.5</u> for the area the project is located.”</p>	<p>“The quantity of water that needs to be applied is determined by multiplying the adjusted volume of embankment by the number of gallons of water per cu. yd. (liters per m³) as indicated by <u>EXHIBIT 7.2</u> for the area the project is located.”</p>
7-17	<p>Previous Section 1.A.6.c: Case 3: Balanced – Considerable Borrow Furnished by Contractor – “<u>EXHIBIT 7.10</u> shows an example of an earthwork table that shall be included on the plans. See items 1, 4, 5, 6 and 8 in <u>EXHIBIT 7.7</u> for additional information pertaining to this example situation.”</p>	<p>“<u>EXHIBIT 7.7</u> shows an example of an earthwork table that shall be included on the plans. See items 1, 4, 5, 6 and 8 in <u>EXHIBIT 7.4</u> for additional information pertaining to this example situation.”</p>
7-17	<p>Exhibit 7.10 Earthwork Quantities – Case 3</p>	<p>Exhibit 7.7 Earthwork Quantities – Case 3</p>
7-17	<p>1.A.6.d Case 4: Balance – No Borrow</p>	<p>1.A.5.d Case 4: Balance – No Borrow</p>
7-17	<p>Previous Section 1.A.6.d: Case 4: Balance – No Borrow – “Given: The same existing highway, improvements and conditions as in Case 3 except that the earthwork quantities are those shown in <u>EXHIBIT 7.11</u>, determine the earthwork quantities and pay items.”</p>	<p>“Given: The same existing highway, improvements and conditions as in Case 3 except that the earthwork quantities are those shown in <u>EXHIBIT 7.8</u>, determine the earthwork quantities and pay items.”</p>
7-18	<p>Exhibit 7.11 Earthwork Quantities – Case 4</p>	<p>Exhibit 7.8 Earthwork Quantities – Case 4</p>

Page	Existing Text	Corrected Text
Chapter Seven		
7-18	<p>Previous Section 1.A.6.d: Case 4: Balance – No Borrow – “EXHIBIT 7.11 shows an example of an earthwork table that shall be included on the plans. See items 4, 6, and 8 in EXHIBIT 7.7 for additional information pertaining to this example.”</p>	<p>“EXHIBIT 7.8 shows an example of an earthwork table that shall be included on the plans. See items 4, 6, and 8 in EXHIBIT 7.4 for additional information pertaining to this example.”</p>
7-19	<p>1.A.6.e Case 5: Excavation or Embankment in Urban Areas</p>	<p>1.A.5.e Case 5: Excavation or Embankment in Urban Areas</p>
7-19	<p>1.A.6.f Case 5A: More Excavation than Embankment in Urban Areas</p>	<p>1.A.5.f Case 5A: More Excavation than Embankment in Urban Areas</p>
7-19	<p>Previous Section 1.A.6.f: Case 5A: More Excavation than Embankment in Urban Areas – “Given the information in EXHIBIT 7.12, determine the earthwork quantities, pay items and the water that should be applied.”</p>	<p>“Given the information in EXHIBIT 7.9, determine the earthwork quantities, pay items and the water that should be applied.”</p>
7-19	<p>Exhibit 7.12 Earthwork Quantities – Case 5A</p>	<p>Exhibit 7.9 Earthwork Quantities – Case 5A</p>
7-19	<p>Previous Section 1.A.6.f: Case 5A: More Excavation than Embankment in Urban Areas – “The quantity of water that needs to be applied is determined by multiplying the adjusted volume of embankment by the number of gallons of water per cu. yd. (liters per m³) as indicated in EXHIBIT 7.5 for the area in which the project is located.”</p>	<p>“The quantity of water that needs to be applied is determined by multiplying the adjusted volume of embankment by the number of gallons of water per cu. yd. (liters per m³) as indicated in EXHIBIT 7.2 for the area in which the project is located.”</p>
7-20	<p>Previous Section 1.A.6.f: Case 5A: More Excavation than Embankment in Urban Areas – “See item 8 in EXHIBIT 7.7 for additional information pertaining to this example.”</p>	<p>“See item 8 in EXHIBIT 7.4 for additional information pertaining to this example.”</p>

Page	Existing Text	Corrected Text
Chapter Seven		
7-20	1.A.6.g Case 5B: More Embankment than Excavation in Urban Areas	1.A.5.g Case 5B: More Embankment than Excavation in Urban Areas
7-20	Previous Section 1.A.6.g: Case 5B: More Embankment than Excavation in Urban Areas – “Use the procedures described in Section 1.A.6.b.”	“Use the procedures described in Section 1.A.5.b.”
7-21	Section 1.B.2: Borrow Pit Restoration – “See the <u>Standard Specifications for Highway Construction</u> , (Reference 7.2), Section 207.”	“See the <u>Standard Specifications for Highway Construction</u> , (Reference 7.2), Section 208.”
7-22	Section 2: STAGED CONSTRUCTION/PHASING – “For additional information see Chapter Ten: <u>Miscellaneous Design Issues</u> , Section 11.”	“For additional information see Chapter Ten: <u>Miscellaneous Design Issues</u> , Section 9.”
7-23	Section 3.F: <u>Shear Lines</u> – “Earthwork volumes are calculated along the mainline to a set distance from the centerline, assuming that the earthwork has a vertical line at that location (See <u>EXHIBITS 7.13a AND 7.13b</u>).”	“Earthwork volumes are calculated along the mainline to a set distance from the centerline, assuming that the earthwork has a vertical line at that location (See <u>EXHIBITS 7.10a AND 7.10b</u>).”
7-24	Exhibit 7.13a Shear Lines (Cross-Section)	Exhibit 7.10a Shear Lines (Cross-Section)
7-25	Exhibit 7.13b Shear Lines (Plan)	Exhibit 7.10b Shear Lines (Plan)
7-31	Section 7: 3R PROJECT EARTHWORK	Remove this section. Refer to Chapter Seventeen: <u>Resurfacing, Restoration and Rehabilitation (3R) Projects</u> .
7-32	8. REFERENCES	7. REFERENCES
7-32	Previous Section 8: REFERENCES	Update Reference 7.2 from “1997 and current supplemental updates” to “2007”.

