

<b><u>SUBJECT</u></b>	<b><u>PAGE NUMBER</u></b>
<b>A</b>	
AASHTO Publications .....	1-2
Access Board.....	1-2, 13-19
Access Control.....	1-11, 15-4, 15-8
Access Control Design .....	2-14, 15-9
Access Control on Interstates and Freeways .....	15-11
Access Control on Expressways and Four-Lane Divided Highways .....	15-11
Access Control on All Other Highways .....	15-11
Access Control on Side Streets and Roads.....	15-13
Access Control Spacing .....	15-12
Preliminary Access Control Determination .....	2-9
Public Notification.....	15-13
Access Control Letter.....	15-4, 15-10
Accessibility Requirements for Handicapped Individuals.....	Chapter Sixteen, 17-18
Acronyms, Abbreviations & Symbols.....	See the Glossary
ADA (Americans With Disabilities Act)	
Accessibility Guidelines .....	16-1, 17-18
Pedestrian Access During Construction .....	16-13
Pedestrian Access Review .....	16-13
Special Provisions .....	16-14
3R Projects .....	17-18
ADA Upgrades – Cost Sharing.....	16-14
Municipal Share, Population of 5000 or Less .....	16-14, B-33
Municipal Share, Population Over 5000 .....	16-14, B-36
Municipal Share, Sidewalks and Curb Ramps.....	16-14, B-36
Added Sheet .....	11-24
Addendums.....	11-19
Additional Survey .....	2-4, 2-7, 2-8, 17-6
Aerial Lines .....	10-26
Aerial Sheets .....	11-2, 11-14, 15-2
Aerial Photo Sheet Preparation .....	2-9
Aggregates	
Gravel Embedment .....	8-4, 12-25, 14-8
Surfacing Aggregates.....	8-4
Surfacing Aggregates, Quantity Computations.....	8-11, 12-31
Agreements .....	12-2, 13-19, B-5
Agreement Checks.....	2-27, 2-28
City Agreements.....	2-13, 10-30
Covenant Relinquishment Agreement .....	2-15, 15-22, B-42
Final Relinquishment Agreement (FRA) .....	2-27, 2-29, 2-31, B-44
Initiate Agreements .....	2-13
Irrigation Agreements .....	2-14
Railroad Agreements.....	2-14
Air Quality .....	13-14
Airway Highway Clearances.....	10-12

<b><u>SUBJECT</u></b>	<b><u>PAGE NUMBER</u></b>
<b>A</b>	
Alignment	
Alignment Design Values .....	3-36, Appendix F
Combination of Horizontal and Vertical Alignment .....	3-35
Alignment and Control Point Sheets.....	11-2, 11-15
Appraisal.....	15-17
Appraisal Plans .....	15-2, 15-6
Archeological and Historical Features .....	13-16
Archiving the Project File .....	2-35
Arterial Roadways.....	1-6, 1-7, 1-8
Asphalt (Flexible Pavement) .....	8-10
Asphaltic Concrete Pavement Patching.....	8-9
Flexible Pavement Surfacing Quantity Computations .....	8-10
Asphalt Surfacing Under Guardrail .....	9-19
Cold Milling .....	8-8
Mailbox Turnouts.....	10-23, 17-14
Overlays.....	8-9, 17-1
Pavement Item Checklist.....	12-30
Template Correction.....	8-9
At-Grade vs Interchange Recommendations.....	14-2
Auxiliary Lanes.....	6-26
Clear Zone Requirements for Auxiliary Lanes .....	6-27
Climbing Lanes .....	3-21, 17-7
Lane Configuration.....	14-2, 17-14
Left-Turn Radii .....	4-18
Transition .....	4-23, 6-24
Turn Lanes.....	See Turn Lanes
Axis of Rotation.....	3-5, 6-26
<b>B</b>	
Balance Factors (Earthwork).....	7-3, 17-15
Balance Points (Earthwork).....	7-2, 11-16
Barriers (Roadside).....	9-1, 9-5, 17-16
Barrier Offsets in Construction Zones.....	14-5
Concrete Protection Barrier .....	9-5, 9-14, 9-20, 9-30
Inertial Barriers.....	9-42
Justification .....	9-2
Median Barrier Treatments.....	9-29, 9-30
Base Plans.....	11-1, 11-2
Benefit/Cost Analysis .....	9-4, 9-29, 17-7, 17-10, 17-12
Beveled Edge .....	6-3, 17-16, Appendix I
Bid Comparison and Analysis .....	12-2

<b><i>SUBJECT</i></b>	<b><i>PAGE NUMBER</i></b>
<b>B</b>	
Bike Lane - Highway Intersections .....	4-19
Bikeways.....	16-2, 16-4
Border Sheets .....	11-6
Borrow Pits .....	7-7
Borrow Alternatives .....	7-7
Borrow Pit Restoration .....	7-7
Excavation-Borrow Pay Item .....	7-16, 7-17
Brick Removal.....	8-9
Bridge Approach Sections.....	9-5, 9-20, 9-24, 9-41
Bridge Pay Items (Preliminary Cost Estimate).....	12-11, 12-21
Bridge Plan Sheets .....	11-17
Bridge Replaced with a Box Culvert.....	7-10
Bridge Structures .....	6-35, 10-6, 17-2, 17-3, 17-18, 17-21
Bridge Channel Work .....	13-13
Bridge Grades.....	3-21, 10-8
Grade Separations .....	10-8
High Embankments.....	10-9
Horizontal Curvature .....	10-6
Intersections.....	10-9
Load Ratings.....	2-6
Pedestrian Underpass.....	6-35
Skewed Structures .....	10-7
Stream Crossings.....	10-9
Superelevation .....	3-4, 10-6
3R Projects .....	17-3, 17-18
Underpass Sight Distance .....	3-34
Vertical Clearances .....	10-8
Vertical Curvature .....	10-8
Broken Back Curves .....	3-2
Build Notes for Intersections and Driveways .....	4-37
Bullnose Attenuators.....	9-5, 9-20, 9-24, 9-30
<b>C</b>	
Cable Guardrail.....	9-5, 9-10, 9-14, 9-15, 9-16, 9-20, 9-29, 9-31
Anchorage.....	9-20
Deflection Distance .....	9-14, 9-15, 9-31
Length of Need.....	9-10
Low-Tension .....	9-5, 9-10, 9-14
High-Tension.....	9-5, 9-14, 9-29
Pay Item Quantities.....	9-20
Cable Guardrail Transition to W-Beam Guardrail .....	9-5, 9-20
Pay Item Quantities.....	9-20

<b><u>SUBJECT</u></b>	<b><u>PAGE NUMBER</u></b>
<b>C</b>	
CADD Files	
Locking Procedure .....	2-33, 11-3, 11-19
Capacity Analysis.....	1-12, 4-11, 14-1
Categorical Exclusions (CE) (Class II Projects).....	2-18, 13-4
Cattle Passes.....	10-21, 10-22
Changes in Pavement Determination.....	8-2, 12-25
Change in Project Concept (Estimates).....	12-5, 12-8, 12-10
Change in Project Scope (Estimates).....	12-8, 12-10
Changes to Design Plans.....	2-33
Plan Revisions .....	2-33, 2-34, 11-19, 15-7
Channel Changes .....	13-12
Bridge Channel Work .....	13-13
Channelization (Roadway) .....	4-38
Islands.....	4-41
Medians .....	4-42
CICS1 .....	2-7, 12-6, 10-25
City and/or County Officials Meeting .....	2-22
City/County Utility Cost Reimbursement.....	10-25, B-32
Class I Environmental Classification .....	2-15, 2-18, 13-3, 13-16
Class II Environmental Classification .....	2-18, 2-21, 13-4
Class III Environmental Classification .....	2-15, 2-18, 13-4, 13-16
Clean Air Act.....	13-14
Clean Water Act.....	13-5, 13-11, 13-14, 13-17
Clearances	
Bridge Vertical Clearances .....	10-8, 16-7
Minimum Vertical Clearances for Overhead Facilities.....	3-34, 10-26
Vertical Clearances (Alignment Design) .....	3-34, 4-43
Clear Zone .....	See Lateral Obstacle Clearance
Climbing Lanes .....	3-21, 17-7
Cold Milling .....	8-8
Collector-Distributor Roads .....	1-7, 1-8
Comfort Criteria - Sag Vertical Curves .....	3-34
Communication Lines.....	10-26, 10-27
Compound Curves .....	3-2
Concrete (Rigid) Pavement.....	8-2
Concrete Shoulders.....	8-5
Joining Existing Pavement .....	8-4
Pavement Joints.....	8-3
Pavement Patching .....	8-9
Portland Cement Concrete Pavement Design Policy.....	8-2
Quantity Computations .....	8-10
Thickness .....	8-2
Tining .....	8-4
Concrete Median Barriers .....	9-5, 9-20, 9-30

<b><i>SUBJECT</i></b>	<b><i>PAGE NUMBER</i></b>
<b>C</b>	
Concrete Protection Barriers .....	9-5, 9-14, 9-20, 9-31
Condemnation.....	15-17
Construction Engineering (Cost Estimating).....	12-11, 12-14
Construction Items for Cost Estimates .....	12-15
Bridge Items.....	12-21
Items Affecting Construction Costs.....	12-23
New Materials .....	12-16
Other Construction Items .....	12-23
Quantities.....	12-18
Sole Sourcing.....	12-17
Special Provisions.....	12-15
Specifications.....	12-15
Standard Pay Items.....	12-16
Traffic Control Items.....	12-20
Construction Location .....	12-23
Construction Joints .....	8-3
Construction Notes .....	See Standard Notes
Construction Schedule.....	12-23
Construction Under Traffic .....	12-24, 14-5, 16-13
Consultants.....	13-20
Contaminated Soils.....	13-18
Contents of Cost Estimates.....	12-11
Contingencies .....	12-14
Construction Items .....	12-15
Construction Engineering.....	12-14
Preliminary Engineering .....	12-11
Railroad.....	12-14
Right-of-Way.....	12-12
Utilities .....	12-14
Contingencies .....	12-14
Contract Preparation (Right-of-Way).....	15-17
Contraction Joints .....	8-3
Control Access.....	See Access Control
Corridor Protection.....	B-15
Corridor Protection Plans .....	15-2, B-15
Cost Estimate Contents .....	12-11
Cost Estimate Request Procedures .....	12-10
Changes.....	12-8, 12-10
Estimate Review .....	12-10
Routing from Designer .....	12-10
Timeliness.....	12-10

<b><u>SUBJECT</u></b>	<b><u>PAGE NUMBER</u></b>
<b>C</b>	
Cost Estimating.....	12-1
Change in Project Concept.....	12-8, 12-10
Change in Project Scope.....	2-5, 12-8, 12-10
Construction Items .....	12-15, 12-23
Contents of Cost Estimates .....	12-11
Items Often Overlooked or Omitted .....	12-24
Level of Estimate Detail.....	12-7
Request Forms.....	12-9
Request Procedures.....	12-10
Schedule of Estimates.....	12-7
Standard Pay Items.....	12-16
Uses of Cost Estimates .....	12-1
Cost Sharing .....	12-3, B-29
CICS1 Lookup.....	12-6
Federal Funding Programs.....	12-3
Funding Splits Defined by Stations.....	12-6
Lump Sum Funding Splits .....	12-6
Nonparticipating Items (Federal Funding).....	12-5
Participating (Federal Funding) .....	12-4
Participation by Others .....	12-5
Railroad .....	12-5
Routing from Designer .....	12-10
Salvaging Items.....	12-4
Statewide Transportation Improvement Program (STIP) .....	12-4
Utilities .....	12-5
Cost Updates .....	2-10, 2-16, 2-26, 12-8
Covenant Relinquishment Agreement.....	2-16, 2-29, 15-22, B-42
Crash Cushions and Impact Attenuators.....	9-20, 9-41, 9-42
Crest Vertical Curves .....	3-23, 3-30
Cross-Section Sheets	
Drainage Structure Cross-Section Sheets .....	11-17, 15-4
Roadway Cross-Sections Sheets .....	11-18, 15-4
Typical Cross-Section Sheets .....	11-5, 11-13, 15-4
Cross-Sections (Typical) .....	See Typical Cross-Sections
Crossovers.....	14-6
Crosswalks .....	4-19, 4-41, 14-2, 16-2, 16-7, 17-19, 17-20
Crowned Cross Slopes .....	6-1
Crushed Rock Quantity Calculations.....	8-4, 8-11
Culverts (Rural Driveway) .....	4-30
Culverts (3R).....	17-21
Curbs .....	6-18
Curb Cuts.....	4-32
Curb Design Considerations.....	6-21
Curbs and Flumes (Erosive Soils) .....	6-21, 17-5, 17-6
Curb Types .....	6-19

<b><i>SUBJECT</i></b>	<b><i>PAGE NUMBER</i></b>
<b>C</b>	
Curbs (Continued)	
Curb Warrants.....	6-18
Guardrail and Curbs.....	9-41
Roundabouts.....	4-5, 6-19, 17-13
Curb Ramps.....	4-19, 16-3, 16-8, 17-19, 17-20, B-21, B-33, B-36, Appendix H
Curves.....	See Horizontal Curves or Vertical Curves
Cut and Fill Areas.....	6-34, 7-2
Cut Slopes.....	6-29
<b>D</b>	
Daylighting.....	6-34, 7-7
Definitions & Terms.....	See the Glossary
Delegation of Authority.....	B-9
Deleted Sheet.....	11-24
Delineators.....	14-3
Departure from Standards.....	H-4
Design Exceptions.....	H-4
Oversight Authority for Departure from Standards.....	H-4
Procedure for Relaxation of the Minimum Design Standards.....	H-5
Procedure for When Desirable Design Conditions Cannot be Attained.....	H-5
Design Alternatives (Cost Estimating).....	12-2
Design Analysis and Evaluation.....	1-12
Accident Analysis.....	1-12
Capacity Analysis.....	1-12, 14-1
Economic Analysis.....	1-12
Design Controls.....	1-10
Access Control.....	See Access Control
Design Speed.....	1-10, 14-6, 17-5
Design Vehicle.....	4-4, 4-17, 14-6
Design Year Forecast Traffic.....	1-10, 2-7, 17-5, 17-9, 17-11
Fixed Obstacle Clearance (3R).....	6-27, 17-13, 17-16, 17-17, 17-21, 17-22
Lateral Obstacle Clearance (Clear Zone).....	1-11, 6-27, 9-2, 17-13, 17-14, 17-16
Sight Distance.....	See Sight Distance
Terrain.....	1-11
Urban/Rural.....	1-11
Design Exceptions.....	See Departure from Standards
Design Plan-In-Hand (Activity 5315).....	2-10, 17-5
Conduct the Plan-In-Hand Inspection.....	2-11
Plan-In-Hand Plans.....	2-10, 11-2
Plan-In-Hand Plan Distribution.....	2-11
Plan-In-Hand Report (Activity 5318/5338).....	2-5, 2-12

<b><i>SUBJECT</i></b>	<b><i>PAGE NUMBER</i></b>
<b>D</b>	
Design Plans.....	11-1
Base Plans.....	11-2
Design Plans.....	11-3
Functional Design Plans.....	11-3
Initial Footprint Plans.....	11-2
Preliminary Design Plans.....	11-2
Design Plans to Utilities Section (Activity 5350).....	2-28
Design Preparation for Public Hearings (Activity 5323/5324).....	2-17
Design Process Outline (DPO).....	2-1
Design Relaxations.....	See Departure from Standards
Design Review Support Processes (Activity 5340).....	2-27
Design Speed.....	1-10, 14-6, 17-5
Temporary Roadway.....	14-6
3R Projects.....	17-5
Design Standards.....	1-1
3R Projects.....	17-3, 17-4
Design Vehicle (Intersection Turning Template).....	4-17
Roundabouts.....	4-4
Temporary Roadway.....	14-6
Design Year Forecast Traffic.....	1-10, 2-7, 17-5
3R Projects.....	17-5, 17-9, 17-11
Detail Sheet.....	11-25
Detours.....	2-8, 12-24, 12-25, 14-11
Distribution Analysis (Earthwork).....	7-3, 7-9
Ditch Widening.....	7-7
Dowel Bars.....	8-2, 8-3, 8-4
Downloadable Plan Border Sheets.....	11-6
Draft Environmental Assessment.....	2-15
Draft Environmental Impact Statement (DEIS).....	2-15
Drainage.....	2-8, 6-32
At Superelevation Transition.....	3-5, 3-21
Pavement Subdrains.....	8-4
Temporary Roads.....	14-6
Drainage Structure Cross-Section Sheets.....	11-17
Drainage and Hydraulic Information.....	11-10
Driveways.....	4-26
Build Notes for Driveways.....	4-37
Driveway Earthwork.....	7-17
Driveway Surfacing.....	4-34, 8-10
Rural Driveways.....	4-27
Rural Driveway Culvert Pipes.....	4-30
3R Projects.....	17-12
Urban Driveways.....	4-32
Dry Run (Public Hearing).....	2-17



<b><u>SUBJECT</u></b>	<b><u>PAGE NUMBER</u></b>
<b>E</b>	
Easements	
Permanent Easements .....	15-5
Railroad Easements .....	15-5
Temporary Easements .....	15-5
Earthwork .....	7-1, 17-15
Balances .....	6-34, 7-1
Balance Factors .....	7-3
Borrow Pits .....	7-7, 7-15, 7-16, 7-17
Bridge Replaced with a Box Culvert .....	7-10
Check Earthwork Information .....	2-32
Computations .....	7-2
Contaminated Soils .....	13-18
Cut and Fill Areas .....	6-34, 7-2
Data Requirements (Computations) .....	7-2
Distribution Analysis .....	7-3, 7-9
Driveways .....	4-27, 7-17
Earthwork Around Guardrail .....	7-11, 9-19
Earthwork Measured in Embankment .....	7-16
Established Quantities .....	7-16
Example Calculations .....	7-18
Excavation (Established Quantity) .....	7-16
Excavation and Excavation Borrow .....	7-16
Finalizing Roadway Earthwork .....	7-21
Haul Considerations .....	7-5
Moisture Content .....	7-5
Need for Additional Cross-Sections .....	7-11
Notations .....	11-16
Roadway Grading .....	7-17
Settlement Surcharge .....	7-31
Shear Lines .....	7-13
Staged Construction/Phasing .....	7-9
Subsidiary Earthwork .....	7-17
Temporary Roads .....	7-5, 14-6
3R Project Earthwork .....	17-15
Unsuitable Materials .....	7-10
Waste Alternatives .....	7-8
Waste Sites .....	7-7
Earthwork Data Sheets .....	11-16
Electrical Power Lines .....	10-26, 10-27
Embankment .....	7-16
Embankment Foundation Report .....	7-30
End Anchorage Assembly .....	9-20, 9-24
End Treatments (Guardrail Terminal Section) .....	9-13, 9-20, 9-24

<b><i>SUBJECT</i></b>	<b><i>PAGE NUMBER</i></b>
<b>E</b>	
Endangered Species (Wildlife Issues).....	13-15
Engineering and Contingencies .....	12-11, 12-14
Engineering Review .....	2-2, 13-2
Locations Studies.....	13-3
Environmental Classification .....	13-3
Class I Projects .....	13-4, 13-16
Class II Projects .....	13-4
Class III Projects .....	13-4, 13-16
Environmental Assessment (EA).....	13-4
Environmental Impact Statement (EIS) .....	13-3
Environmental Permits	
Section 10 of the Rivers and Harbors Act of 1899 .....	13-12
3R Projects .....	17-23
Wetlands and Section 404 Permits.....	13-5, 13-11
Environmental Studies	
Air Quality .....	13-14
Environmental Classification .....	13-3
Flood Plains .....	13-13
4 (f) Evaluation .....	13-4
Noise.....	13-14
6 (f) Lands.....	13-4
Social, Economic and Environmental Impacts.....	13-16
Water Quality .....	13-14
Wetlands .....	13-5, 13-11
Wildlife Issues .....	13-15
Erosion Control .....	6-33
Temporary Roads .....	14-6
Erosive Soils.....	6-21
Established Quantities .....	7-16
Estimate Review .....	12-10
Estimating (Cost) .....	12-1
Estimating	
Cost Update 1 (Activity 5403).....	2-10, 12-8
Cost Update 2 (Activity 5406).....	2-16, 12-8
Cost Update 3 (Activity 5408).....	2-26, 12-8
Excavation .....	7-16
Expansion Joints.....	8-3
Expressway System.....	1-9
Access Control.....	15-11
New Four-Lane Divided Highway Using Existing Two-Lane Highway.....	6-26

<b><u>SUBJECT</u></b>	<b><u>PAGE NUMBER</u></b>
<b>F</b>	
Federal Agencies .....	13-19
Federal Classification (Highway System) .....	1-6
Federal Funding Programs.....	12-3
Highway Safety Improvement Program (HSIP).....	12-3
National Highway Performance Program (NHPP) .....	12-3
Rail Highway Crossings (RRZ).....	12-3
Surface Transportation Block Grant Program (STBG).....	12-3
Federal Highway Administration (FHWA) Publications .....	1-2
Fencing .....	10-21
Behind Retaining Walls .....	10-21
Cost Estimates .....	12-13
Sidewalks Adjacent to Steep Slopes .....	16-6
Snow Control.....	10-20
Festoon Outlets.....	10-30
Field Entrances	
Access Control .....	15-8
Earthwork .....	7-17
Grading .....	4-27
Surfacing .....	4-34
Type D Median Break.....	4-45
Width.....	4-27
Fill Slopes	
Evaluation (RSAP) .....	9-4, 17-16, 17-17
Fill Slopes (Parallel) .....	6-28
Fill Slopes (Transverse) .....	6-29
3R Projects .....	17-16, 17-17
Final Plan Review for P.S.& E.....	2-31, 2-33
Final Relinquishment Agreement (FRA).....	2-29
Finalizing Roadway Earthwork .....	7-21
Finding of No Significant Impact (FONSI).....	13-4
Fixed Obstacle Clearance .....	6-27, 17-13, 17-16, 17-17, 17-21, 17-22
Flare Rates (Guardrail) .....	9-13
Flexible Pavement .....	See Asphalt
Floodplains .....	13-13, 17-21
Floodplain/Floodway Permit.....	13-13, 17-21
Flumes (Erosive Soils) .....	6-21
Form DR-65 (Request for Agreement) .....	2-13
Form DR-73 (Highway Improvement Programming Request) .....	2-2, 8-1, 12-6, 13-2, 17-6
Form DR-280 (PS&E Required Sheet).....	2-32, 11-13
Form DR-342 (Project Information Sheet).....	2-10, 12-9
Form DR-343 (Project Quantity Sheet) .....	2-10, 12-9
Foundation, Base and Surface Courses.....	8-11
4(f) Evaluation.....	13-4
Freeway.....	4-43, 15-11, 17-4

<b><u>SUBJECT</u></b>	<b><u>PAGE NUMBER</u></b>
<b>F</b>	
Free-Flow Right Turn Lanes.....	4-25
Frontage Roads.....	4-9
Functional Classification	
Nebraska National Functional Classification.....	1-7
Nebraska State Functional Classification.....	1-7
Functional Design Plans.....	11-3
Funding.....	12-3
Federal Funding Programs.....	12-3
Lump Sum Funding Splits.....	12-6
Nonparticipating Items (Federal Funding).....	12-5
Participating (Federal Funding).....	12-4
Participation by Others.....	12-5
Railroad.....	12-5
State of Nebraska Funding.....	12-5
Utilities.....	12-5
Funding Splits Defined by Stations.....	12-6
<b>G</b>	
General Information Sheets.....	11-15
Geotechnical Features.....	6-34
Grade Control Structures (Channel Changes).....	13-12
Professional Engineer's Statement.....	13-12
Grades.....	3-21
Bridge Grades.....	10-8
Critical Length of Grade.....	3-21
Maximum Grades.....	3-21
Minimum Grades for Drainage.....	3-21
Temporary Roads Grades.....	14-7
Grading (Roadway).....	7-17
Gravel and Crushed Rock Quantity Calculations.....	8-11, 12-31
Gravel Embedment.....	8-4, 12-25, 14-8
Guardrail.....	9-1
Bridge Approach Sections/Special Bridge Approach Sections.....	9-6, 9-20, 9-24
Bullnose Attenuators.....	9-5, 9-20, 9-31
Cable Guardrail.....	See Cable Guardrail
Concrete Protection Barrier.....	9-5, 9-14, 9-20, 9-31
Cost Effectiveness Analysis (RSAP).....	9-4, 9-20, 17-16, 17-17
Culvert Mounted Guardrail Posts.....	9-20, 9-41
Curve Correction Factor for Lateral Obstacle Clearance.....	9-7, 9-10
Deflection Distance.....	9-14, 9-15
Earthwork Around Guardrail.....	7-11, 9-19
Fixed Obstacle Clearance.....	17-13, 17-16, 17-17, 17-21, 17-22
Flare Rate.....	9-13
Grading for Guardrail.....	6-35, 7-11
Guardrail Components.....	9-13
Guardrail and Curbs.....	9-41
Guardrail Design Procedures.....	9-6

**SUBJECT** **PAGE NUMBER**

**G**

Guardrail (Continued)

- Guardrail Design at Culverts .....9-41, 17-16, 17-17
- Guardrail at Intersections .....9-41
- Guardrail Over Low-Fill Culverts.....9-41
- Guardrail Spans with Posts Eliminated.....9-41
- Justification .....9-2
- Lateral Extent of Obstacle .....9-7
- Lateral Obstacle Clearance (Clear Zone) ..... 1-11, 6-27, 9-2, 9-7
- Midwest Guardrail System (MGS) ..... 9-5, 9-20, 9-31, 9-41
- Median Barrier Treatments ..... 9-5, 9-20, 9-29, 9-30, 9-31
- Options.....9-2
- Pay Item Quantities .....9-20
- Remove Guardrail .....9-20
- Runout Length.....9-7
- Runout Path .....9-10
- Semi-Rigid Guardrail ..... 9-5, 9-20, 9-31
- Surfacing Under Guardrail..... 9-19, 9-20, 9-31, 9-41
- 3R Projects .....17-16
- Thrie-Beam Guardrail..... 9-5, 9-20, 9-31
- Types of Barriers Used in Nebraska .....9-5
- W-Beam Guardrail ..... 9-5, 9-20, 9-31, 9-41
- W-Thrie Beam Transition Section.....9-20
- Guardrail End Treatments .....9-20, 9-24
- End Anchorage Assembly .....9-20, 9-24
- Guardrail End Treatment, Type I .....9-20, 9-24
- Guardrail End Treatment, Type II .....9-20, 9-24
- Low-Speed Roadways .....9-24

**H**

- Habitat (Wildlife Issues) .....13-15
- Handrails for Pedestrian Ramps and Stairs.....16-12
- Haul Considerations.....7-5
- Hazardous Materials .....13-17
- Guidelines for Handling Contaminated Soils on Highway R.O.W.....13-18
- Guidelines for Handling Petroleum Tanks/Leaks .....13-17
- Materials Prohibited or Restricted as Fill Materials .....13-17
- Headlight Distance .....3-31, 3-34
- High-Tension Cable Guardrail..... 9-5, 9-14, 9-31
- Highway Commission Statement.....2-19, 15-13
- Highway Improvement Programming Request (DR Form 73)..... 2-2, 8-1, 12-6, 13-2
- Highway Inventory System (CICS1) ..... 2-7, 12-6
- Highway Safety Improvement Program (HSIP) .....12-3
- Highway System Classification .....1-6
- Historic Sites .....13-4, 13-16
- Horizontal Alignment
- Combination of Horizontal and Vertical Alignment.....3-35
- Design Values .....3-36

<b><u>SUBJECT</u></b>	<b><u>PAGE NUMBER</u></b>
<b>H</b>	
Horizontal Alignment (Continued)	
Horizontal Alignment Data.....	3-36, 11-8
Horizontal Alignment Design .....	3-1
Horizontal Alignment, Intersections and Driveways .....	4-12
Preliminary Horizontal Alignment Design .....	2-6
3R Horizontal Alignment Design.....	17-8
Horizontal Curvature .....	3-2
Broken Back Curves.....	3-2
Compound Curves .....	3-2
Pavement Widening on Curves (Off-Tracking) .....	3-6, 17-11
Reverse Curves .....	3-2
Simple Curves.....	3-2
Spiral Transitions .....	3-2, 17-11
Superelevation .....	3-4, 17-11
HSIP (Highway Safety Improvement Program) .....	12-3
Hydrated Lime for Asphalt Mixtures .....	8-5
Hydraulic Considerations (3R Projects).....	17-21
<b>I</b>	
Impact Attenuators .....	9-20, 9-42
Improvement Values (Right-of-Way) .....	12-13
Individual Construction Notes.....	11-7
Inertial Barriers.....	9-42
Information Meeting Prior to Appraisal and Acquisition .....	2-21, 2-28, 15-17
Initial Project Review and Setup (Activity 5308) .....	2-2
Intelligent Transportation System .....	14-4
Intersections .....	4-1
Intersection Build Notes .....	4-37
Intersection Design Considerations.....	4-11
Bike Lane/Highway Intersections.....	4-19
Bridges.....	10-9
Capacity and Level of Service .....	4-11
Design Vehicle .....	4-17
Guardrail at Intersections .....	9-41
Horizontal Alignment.....	4-12
Intersection Skew.....	4-12
Intersections on Curved Alignments .....	4-16
On-Street Parking .....	4-18
Pedestrian Crossings .....	4-19, 14-2, 16-8
Profile.....	4-16
Radius Returns .....	4-17, 4-18
Railroad-Highway Crossings .....	4-19, 10-2
Sight Distance .....	4-11
Signs .....	4-19
3R Projects .....	17-12
Traffic Control .....	4-25, 14-2
Transit Services .....	4-18
Turn Lanes.....	4-19

<b><u>SUBJECT</u></b>	<b><u>PAGE NUMBER</u></b>
<b>I</b>	
Intersection Locations	
Frontage Roads .....	4-9
Intersection of Two State Highways .....	4-5
Rural Intersections .....	4-8
Urban Intersections .....	4-8
Intersection Surfacing .....	4-34
Intersection Surfacing Elevations .....	8-15
Intersection Types .....	4-2
Channelized Intersections .....	4-2
Roundabouts .....	4-3
Unchannelized Intersections .....	4-2
Interstate .....	1-7, 1-8
Access Control .....	15-11
Design Vehicle .....	4-17
3R Projects .....	17-4
Irrigation Agreements .....	2-14, B-10
Islands .....	4-4, 4-41
Items Affecting Construction Costs .....	12-23
Construction Location .....	12-23
Construction Schedule .....	12-23
Construction Under Traffic .....	12-24
Detours .....	12-24
Items Often Overlooked or Omitted .....	12-24
Site Specific Features .....	12-23
Urban/Rural Location .....	12-23
ITS .....	14-4
<b>J</b>	
Jacking Pipes .....	12-26
Joining Existing Pavement .....	8-4
Joint Access (Driveways) .....	4-27, 15-9
Joint Diagram .....	8-3
Joints (Pavement) .....	8-3
<b>K</b>	
K Values (Vertical Curves) .....	3-25, 3-30, 3-32, 10-8, 17-7
<b>L</b>	
Landscaping .....	10-18
Tree Planting and Removal .....	10-19
Roundabout Landscaping .....	10-19
Land Values .....	12-12
Lane Configuration .....	14-2, 17-14

<b><i>SUBJECT</i></b>	<b><i>PAGE NUMBER</i></b>
<b>L</b>	
Large Scale Plan Sheets.....	11-6, 11-11, 11-15
Large Tree Removal .....	12-26
Lateral Clearance to Work Zones (Temporary Roads) .....	14-5
Lateral Obstacle Clearance (Clear Zone).....	1-11, 6-27, 9-2, 9-7, 17-13, 17-14, 17-16
Clear Zone Requirements for Auxiliary Lanes .....	6-27
Lateral Extent of Obstacle .....	9-7
Level of Estimate Detail .....	12-7
Level Terrain .....	1-11
Liaison with other Agencies/Organizations .....	10-24, 13-19, 15-21
Lighting .....	4-5, 4-38, 10-30, B-30, B-37
3R Projects .....	17-18
Load Transfer Devices .....	8-3
Local and Regional Agencies .....	13-19, 15-21
Location Studies .....	13-2
Low-Tension Cable Guardrail.....	9-5, 9-14, 9-16, 9-31
Lump Sum Funding Splits .....	12-6
<b>M</b>	
Mailbox Turnouts and Supports .....	10-23, 17-14
Maintaining Traffic During Construction .....	14-5
Construction Under Traffic.....	14-5
Crossovers.....	14-6
Detours .....	14-11
Temporary Surfacing.....	14-6
Temporary Roads .....	14-6
Maintenance Projects.....	1-4
Major Collector Roadways .....	1-7, 1-8
Markings (Traffic).....	14-3
Maximum Grades.....	3-21
Rural Driveways .....	4-27
Maximum Superelevation Rate .....	3-4
Bridge Structures .....	10-6
Temporary Roads .....	14-7
3R Projects .....	17-11
Meetings .....	See Public Meetings
Median Barriers.....	9-5, 9-20, 9-29, 9-30
Median Breaks .....	4-44
Drainage .....	4-44
Type A.....	4-44
Type B.....	4-44
Type C .....	4-45
Type D .....	4-45



**SUBJECT** **PAGE NUMBER**

**M**

Medians ..... 4-42  
     Median Barrier Treatments ..... 9-29, 9-30  
     Median Breaks ..... 4-44  
     Median Break Drainage ..... 4-44  
     Median Types ..... 4-42  
     Median Uses ..... 4-42  
     Median Width ..... 4-43  
     3R Projects ..... 17-5, 17-13  
     Two-Way Left-Turn Lanes ..... 4-20  
 Midwest Guardrail System (MGS) ..... 9-5, 9-20, 9-31, 9-41  
 Migratory Bird Act ..... 13-15  
 Minimum Design Standards ..... See Nebraska Minimum Design Standards  
 Minimum Grades ..... 3-21  
 Minimum Horizontal Curve Radius ..... 3-2, 3-4  
 Minor Arterial Roadways ..... 1-7, 1-8  
 Moisture Content (Earthwork) ..... 7-5  
 MSE Walls ..... 10-21, 12-26  
 Municipal Cost Sharing ..... 12-5, 12-6, 16-14, 17-6, 17-18, B-7, B-29

**N**

National Environmental Policy Act (NEPA) ..... 12-2, 13-3, 13-16, 14-12  
 National Functional Classification ..... 1-7  
 National Highway Performance Program (NHPP) ..... 12-3  
 National Highway System (NHS) ..... 1-6, 17-4  
 Nationwide Permit (NWP) ..... 2-31, 13-11  
 NDOT Publications ..... 1-1  
 Nebraska Minimum Design Standards ..... 1-3  
     Relaxation of Minimum Design Standards ..... H-5  
 Nebraska National Functional Classification ..... 1-7  
 Nebraska State Functional Classification ..... 1-7  
 Need for Additional Cross-Sections ..... 7-11  
 NEPA (National Environmental Policy Act) ..... 12-2, 13-3, 13-16, 14-12  
 Negotiation Plans ..... 15-2, 15-6  
 New and Reconstructed Bridges ..... 10-6  
 New and Reconstructed Projects ..... 1-3  
 New Construction Materials ..... 12-16  
 "No Rise" Certificate ..... 13-14  
 Noise ..... 13-14  
 Notes ..... See Standard Notes

**O**

Object Markers ..... 14-3  
 Offset Right-Turn Lanes ..... 4-24, 17-14  
 Off-System Urban Projects ..... 1-5  
 Off-Tracking ..... 3-6  
 Old Road Obliteration ..... 10-22  
 On-Street Parking ..... 4-18, 10-32, 17-20  
 Overhead Signs ..... 3-34, 14-3

<b><i>SUBJECT</i></b>	<b><i>PAGE NUMBER</i></b>
<b>O</b>	
Overhead Clearance .....	3-34, 10-8
Overlays.....	8-9, 17-1
Ownership Plans.....	15-2, 15-3
<b>P</b>	
Parking .....	4-18, 10-32, 17-20
Passing Sight Distance .....	3-1, 3-31
Pavement Design Determination .....	8-1
Pavement Design Input.....	8-1
Pavement Determination Development .....	8-1
Pavement Edge Dropoffs .....	8-10
Pavement Edge Profile .....	3-6
Pavement Item Checklist .....	12-30
Pavement Item Quantities	
Flexible Pavement Items (Asphalt).....	12-30
Gravel and Crushed Rock Quantity Computations .....	8-11, 12-31
Hydrated Lime for Asphalt Mixtures.....	12-26
Pavement Item Checklist.....	12-30
Rounding of Pavement Quantities .....	12-29
Pavement Joints .....	8-3
Construction Joints.....	8-3
Contraction Joints .....	8-3
Expansion Joints .....	8-3
Joining Existing Pavement .....	8-4
Pavement Markings .....	14-3
Pavement Patching .....	8-9
Pavement Rehabilitation .....	8-8, 17-1
Pavement Subdrains.....	8-4
Pavement Types and Thicknesses.....	8-2
Pavement Widening on Curves (Off-Tracking) .....	3-6, 17-11
Pedestrian Access During Construction .....	16-13
Pedestrian Crossings.....	14-2, 16-7
Pedestrian Crossing Signals .....	14-4
Pedestrian Crosswalks.....	4-19, 4-41, 16-7, 17-19, 17-20
Pedestrian Ramps .....	16-10
Percentage of Work Near Railroads.....	10-1, 12-2
Permanent Easements.....	4-27, 6-32, 15-5, 15-9
Permits (Utilities on DOR Right-of-Way).....	2-7, 10-25
Petroleum Tanks /Leaks .....	13-17, 13-18
Phasing.....	7-9, 12-24, 14-5
Phasing Plan Sheets.....	11-15
Piggyback Plan Sheets .....	11-6, 11-11, 11-19
Pipelines .....	10-28
Pivot Irrigation Systems .....	15-4

<b><i>SUBJECT</i></b>	<b><i>PAGE NUMBER</i></b>
<b>P</b>	
Plan Accuracy .....	Appendix F
Plan and Profile Sheets.....	11-2, 11-6, 11-7, 11-9, 11-11, 11-16, 11-19
Plan Border Sheets (Downloadable) .....	11-6
Plan-in-Hand .....	2-10, 2-11, 2-12, 16-3
3R Projects .....	17-5
Plan-in-Hand Plans (Preliminary Design Plans) .....	2-10, 2-11, 11-1, 11-2
Plan-in-Hand Report .....	2-12, 17-5, 17-6
Plan Revisions .....	2-33, 2-34, 11-19, 15-7
Plan Set Organization .....	11-11
Aerial Plan Sheets.....	11-14, 15-4
Alignment and Control Point Sheets.....	11-15
Bridge Plan Sheets .....	11-17
Drainage Structure Cross-Section Sheets .....	11-17, 15-4
Earthwork Data Sheets .....	11-16
General Information Sheet .....	11-15
Large Scale Plan Sheets.....	11-15
Phasing Plan Sheets .....	11-15
Plan and Profile Sheets.....	11-16
Preliminary Title Sheet .....	11-13
Right-of-Way Plan Sheets .....	11-17, 15-1
Roadway Cross-Section Sheets.....	11-18, 15-4
Soils and Material Survey Information Sheets .....	11-14
Summary of Quantities Sheets.....	11-14
Title Sheet.....	11-13
Traffic Sheets .....	11-16
Typical Cross-Section Sheets .....	11-13, 15-4
Plan Sheet Scales.....	11-11
Rural .....	11-11
Urban .....	11-11
Planning, Allocation, and Funding (Cost Estimating).....	12-1
Planning and Scheduling .....	13-1
Plans.....	See Design Plans
Posted Speed .....	1-10
Power Lines .....	3-34, 10-26, 10-27, 12-14
Preliminary Alignment Design for Bridge Hydraulics (Activity 5306/5312) .....	2-4
Preliminary Design Plans .....	11-1, 11-2
Preliminary Engineering (Cost Estimates).....	12-11, 12-26
Preliminary Roadway Design (Activity 5307/5309) .....	2-4
Preliminary Right-of-Way Design .....	15-2, 15-4
Preliminary Right-of-Way Plan Review (Activity 5345) .....	2-27, 15-6
Preliminary Title Sheet.....	11-13
Preparation of Final Plans Package/Final Plan Review for P.S. & E. (Activity 5369/5368) .....	2-31
Principal Arterial Roadways .....	1-7, 1-8
Priority Commercial System .....	1-9
Shoulder Width.....	6-2
Professional Engineer Seal and Signature .....	11-19
Profile Grade Line (Vertical Alignment) .....	3-20
Project Data Revision (Form DR-334).....	2-16, 2-26, 15-1

<b><u>SUBJECT</u></b>	<b><u>PAGE NUMBER</u></b>
<b>P</b>	
Project Information Sheet (Form DR-342) .....	2-10, 2-16, 2-26, 12-9
Project Numbering System.....	Appendix A
Project Rejected or Withdrawn From a Letting .....	11-30
Project Scope .....	2-5, 12-10
Project Scoping Changes.....	2-5, 12-10
Project Scope Review .....	2-5
Project Quantity Sheet (Form DR-343) .....	2-10, 2-16, 2-26, 12-9
Property Owners Pre-Hearing .....	2-19, 2-22
PS&E Required Sheet (Form DR-280).....	2-32, 11-13
Public Hearings.....	2-17
Dry Run.....	2-17
Public Information Meetings .....	2-19, 2-21, 13-3, 13-9, 13-20, 15-17
Public Interest Letters .....	15-20, Appendix C
Public Meetings.....	2-19, 16-13
City and/or County Officials Meeting .....	2-22
Information Meeting Prior to Appraisal and Acquisition.....	2-21, 15-17
Plan Requirements .....	2-20
Property Owners Pre-Hearing .....	2-22
Public Information Meetings .....	2-21, 13-3, 15-17
Public Notification of Wetlands Procedures .....	13-9
Public Participation and Input.....	13-19
<b>Q</b>	
Quantity and/or Pay Item Changes .....	11-25
Quantities (Cost Estimating).....	12-18
Quantity Calculation Guidance.....	12-19
<b>R</b>	
Radius Returns .....	4-17, 4-18
Rail Highway Crossings (RRZ).....	12-3
Railroads.....	10-1
Communication Lines.....	12-26
Cost Estimates .....	12-5, 12-14, 12-26
Funding.....	12-3, 12-5
Percentage of Work Near Railroads .....	10-1, 12-2
Railroad Agreements.....	2-14
Railroad Easements, Rights or Leases.....	15-5
Railroad-Highway Crossings .....	4-19, 10-1
Railroad-Highway Crossing Surfacing .....	10-2
Railroad Payments.....	B-3
Temporary Crossings/Signals .....	12-26
3R Projects .....	17-18
Raised Medians .....	4-42, 17-5, 17-13
Ramps (Pedestrian).....	16-10
Re-establish Land Monuments and Property Corners .....	15-21
Rehabilitation (Pavement).....	8-8, 17-1

<b><u>SUBJECT</u></b>	<b><u>PAGE NUMBER</u></b>
<b>R</b>	
Related Construction Items .....	12-27
Relinquishment and Abandonment .....	2-15, 2-29, 15-22, B-41
Relocation Assistance (Right-of-Way).....	12-13
Removal Items .....	2-27, 15-18
Removal Notes .....	2-27
Removal of Existing Surfacing .....	7-4, 7-8, 8-8
Cold Milling .....	8-8
Brick.....	8-9
Rural Projects.....	7-8
Urban Projects .....	7-9
Remove Guardrail.....	9-20
Remove Sign, Post, and Footing.....	12-27
Request for Agreement (Form DR-65) .....	2-13
Request Forms (Cost Estimating) .....	12-9
Form DR-333 (Initial Project Data) .....	2-4, 2-16, 2-26
Form DR-334 (Project Data Revision) .....	2-16, 2-26
Highway Improvement Programming Request (DR Form 73).....	2-2, 2-4, 2-5, 8-1, 12-6, 13-2
Project Information Sheet (DR Form 342) .....	2-10, 2-16, 2-26, 12-6
Project Quantity Sheet (DR Form 343).....	2-10, 2-16, 2-26, 12-6
Request Procedures (Cost Estimating) .....	12-10
Resurfacing, Restoration and Rehabilitation (3R) Projects .....	17-1
Accessibility Requirement for 3R Projects (ADA) .....	17-18
Bridges.....	17-2, 17-3, 17-18
Cost Sharing .....	17-18, B-29
Culverts.....	17-21
Design Guidelines .....	17-4
Design Year .....	17-5
Design Speed.....	17-5
Driveways and Intersections.....	17-12
Earthwork.....	17-15
Environmental Permits .....	17-23
Erosion Control .....	17-23
Fill Slopes .....	17-14
Guardrail Design Criteria .....	17-16
Horizontal Alignment Design .....	17-8
Hydraulic Considerations .....	17-21
Interstate .....	17-4
Lighting .....	17-18
Mainline Surfacing Taper Rate .....	17-15
National Highway System (NHS).....	17-4
Pavement Widening on Curves .....	17-11
Plan-in-Hand .....	17-5
Plan Sheets.....	11-19
Project Templates .....	17-3
Railroads.....	17-18
Raised Medians .....	17-5, 17-13
Safety Improvements .....	17-15
Seeding.....	17-23

<b><u>SUBJECT</u></b>	<b><u>PAGE NUMBER</u></b>
<b>R</b>	
Resurfacing, Restoration and Rehabilitation (3R) Projects (Continued)	
Shoulder Construction .....	17-13, 17-15
Spiral Transitions .....	17-11
Superelevation .....	17-11
Surfacing Equivalent .....	17-1
Temporary Roads .....	17-18
Vertical Alignment Design .....	17-7
Wetlands .....	17-23
Retaining Walls (MSE Wall) .....	6-34, 10-22, 12-26
Fencing Behind Retaining Walls .....	10-21
Reverse Curves .....	3-2
Revised Sheet .....	11-24
Revisions .....	2-33, 11-19, 15-7
Added Sheet .....	11-24
Deleted Sheet .....	11-24
Detail Sheet .....	11-25
Procedures .....	11-19
Project Rejected or Withdrawn From a Letting .....	11-30
Quantity and/or Pay Item Changes .....	11-25
Revised Sheet .....	11-24
Right-of-Way Revisions .....	15-7
Right-of-Way .....	6-32, 15-1
Right-of-Way Acquisition .....	15-17
Right-of-Way Certification .....	15-18
Right-of-Way Preliminary Cost Estimates .....	12-12
Fencing .....	12-13
Improvement Values .....	12-13
Other Right-of-Way Costs .....	12-13
Relocation Assistance .....	12-13
Rural Land Values .....	12-12
Urban Land Values .....	12-12
Right-of-Way Design (New) .....	15-4
Right-of-Way Design Plans (W) .....	15-2
Appraisal Plans .....	15-2, 15-6
Corridor Protection Plans .....	15-2
Finalized Half-Size Plans .....	15-2
Negotiation Plans .....	15-2, 15-6
Ownership Plans .....	15-2, 15-3
Preliminary Right-of-Way Design .....	15-2, 15-4
PS&E Plans .....	15-6
Revisions .....	15-7
Right-of-Way Design Review (Preliminary) .....	2-27, 15-6
Right-of-Way Markers .....	15-21
Right-of-Way Plan Sheets .....	11-17, 15-1
Right-of-Way Survey .....	15-1
Right-of-Way for Temporary Roads .....	14-6
Rigid Pavement .....	See Concrete Pavement
Roadside Barriers .....	9-1, 17-16

**SUBJECT** **PAGE NUMBER**

**R**

Roadside Geometry (Side Slopes).....	6-28
Roadside Safety Analysis Program (RSAP).....	9-4, 17-16, 17-17
Roadway Cross-Section Sheets.....	11-18
Roadway Design (Activity 5325/5327).....	2-25
Roadway Design Review/Limits of Construction Plans (Activity 5335/5336).....	2-25
Roadway Functional Design (Activity 5316/5326).....	2-12
Roadway Grading.....	7-17, 17-15
Roadway Lighting.....	10-30
Costs.....	10-31, 10-32
Festoon Outlets.....	10-30
Guidelines for the Installation of Roadway Lighting.....	10-30
Interchange Lighting.....	10-32
Rural Continuous Lighting.....	10-32
Rural Intersection Lighting.....	10-31
3R Projects.....	17-18
Urban Lighting.....	10-30
Roadway Signs.....	4-19, 14-3
Minimum Vertical Clearance for Overhead Signs.....	3-34
Roadway Transitions.....	6-21, 6-24
Roller Coaster Profile.....	3-35
Rolling Terrain.....	1-11
Rollover Rates.....	6-24
Roundabout Intersections.....	4-3, 10-19, 16-1
Rounding of Pavement Item Quantities.....	12-29
RRZ (Rail Highway Crossings).....	12-3
RSAP (Roadside Safety Analysis Program).....	9-4, 17-16, 17-17
Rumble Strips.....	8-12, 17-11, 17-15, 17-16
Runoff Length (Superelevation).....	3-5, 3-36
Rural Driveways.....	4-27
Culvert Pipes.....	4-30
Earthwork.....	4-27, 7-17
3R Projects.....	17-12
Rural Interchanges.....	Appendix E
Rural Intersections.....	4-8
Design Vehicle.....	4-17
Intersection Radius.....	4-17
Lighting.....	10-31
Offset Right-Turn Lanes.....	4-24, 17-14
3R Projects.....	17-12
Turn Lanes.....	4-19
Rural Land Values.....	12-12
Rural Plan Sheet Scales.....	11-11

**S**

Safe Drinking Water Act.....	13-14
Safety Improvements (3R Projects).....	17-15
Safety Improvement Projects.....	1-5
Sag Vertical Curves.....	3-31

<b><u>SUBJECT</u></b>	<b><u>PAGE NUMBER</u></b>
<b>S</b>	
Salvage and Place Topsoil.....	12-27
Salvaging Items .....	12-4
Sawing Pavement.....	8-11
Scales (Plan Sheets).....	11-11
Schedule of Cost Estimates .....	12-7
Scoping Changes.....	2-5
Section 404 Permits.....	13-5, 13-11
Section 10 of the Rivers and Harbors Act.....	13-12
Seeding (3R Projects).....	17-23
Semi-Rigid Guardrail (W-Beam and Thrie-Beam) .....	9-5, 9-20, 9-31, 9-41
Settlement (Earthwork) .....	7-31
Shared Use Paths.....	16-4
Shear Lines (Earthwork) .....	7-13
Shoulders.....	6-2, 8-5
Concrete Shoulders.....	8-5
Priority Commercial System .....	6-2
Rollover Rates.....	6-24
Shoulder Construction.....	8-5, 12-27
Shoulder Construction (3R Projects) .....	17-13, 17-15
Shoulder Cross Slopes.....	6-3
Shoulder Subgrade Preparation .....	12-27
Shoulder Width and Type .....	6-2
Side Slopes.....	6-28, 17-13, 17-14
Sidewalks .....	16-5
Curb Ramps.....	16-8, 17-19, 17-20
Design Considerations .....	16-5
Fencing at Steep Slopes .....	16-6
Handrails for Pedestrian Ramps and Stairs.....	16-12
Municipal Cost Share .....	16-14, B-34, B-37
Pedestrian Crosswalks.....	4-19, 14-2, 16-7, 17-19, 17-20
Pedestrian Ramps.....	16-10
Pedestrian Underpass.....	16-7
Sight Distance.....	1-10, 3-1
Intersection Sight Distance.....	4-11, 17-12
Passing Sight Distance .....	3-31
Stopping Sight Distance .....	3-30, 3-31
Temporary Road Sight Distance.....	14-6
3R Projects .....	17-7
Underpass Sight Distance .....	3-34
Signal Control .....	4-25
Signalized Intersections .....	4-26, 14-4
Sign Supports .....	12-27
Signs .....	3-34, 4-19, 14-3
Simple Curves.....	3-2
6 (f) Lands.....	13-4
Skew Angle (Intersection) .....	4-12
Skewed Structures.....	10-7
Smoothing of Pavement Edge Profile.....	3-6



<b><u>SUBJECT</u></b>	<b><u>PAGE NUMBER</u></b>
<b>S</b>	
Snow Control .....	6-34, 10-20
Social, Economic and Environmental Impacts.....	13-16
Soil and Materials Survey Information Sheet.....	11-14
Soil, Subgrade and Situation Reports .....	7-28
Embankment Foundation Report.....	7-30
Soil Survey/Soil Situation Report.....	7-28
Subgrade Survey/Subgrade and Situation Report .....	7-29
Sole Sourcing .....	12-17
Special Ditches .....	6-32, 7-7, 7-11
Special Plans .....	11-4
Special Provisions.....	2-13, 12-15
Specifications.....	12-15
Spiral Transitions .....	3-2
3R Projects .....	17-11
Splitter Island .....	4-4, 6-19, 17-13
Staged Construction/Phasing (Earthwork).....	7-9
Standard Notes .....	11-7
Drainage and Hydraulic Information .....	11-10
Horizontal Alignment Data.....	11-8
Individual Construction Notes.....	11-7
Tabular Notes.....	11-7
Vertical Alignment Data.....	11-9
Standard Pay Items .....	12-16
Standard Symbols.....	11-6
Standard Typical Cross-Section Sheet.....	11-5, 11-13
Standard Plan Formats .....	11-6
Standard Plans .....	11-4
Standardized Special Plans .....	11-4
Standards (Design) .....	1-1
State Agencies.....	13-19
State Functional Classification .....	1-7
Station Equations.....	3-36, 11-9
Steps and Stairs.....	16-11
STP (Surface Transportation Program).....	12-3
Stop Control.....	4-12, 4-25
Stopping Sight Distance.....	3-30, 3-31
Headlight Distance .....	3-31, 3-34
Subdrains (Pavement) .....	8-4
Subgrade Preparation .....	8-5, 12-27
Subgrade Stabilization .....	12-27
Subgrade Survey/Subgrade and Situation Report.....	7-29
Subsidiary Earthwork .....	7-17
Summary of Quantities Sheet .....	11-14
Superelevation .....	3-4
Axis of Rotation .....	3-5
Bridge Structures .....	10-6
Maximum Superelevation Rate .....	3-4

<b><i>SUBJECT</i></b>	<b><i>PAGE NUMBER</i></b>
<b>S</b>	
Superelevation (Continued)	
Runoff Length.....	3-5
Smoothing of Pavement Edge Profile.....	3-6
Spiral Transitions .....	3-2, 17-11
3R Projects .....	17-11
Tangent Runout .....	3-5
Transition Length .....	3-5
Temporary Roads .....	14-7
Surface Transportation Program (STP).....	12-3
Surfacing.....	8-1
Intersections and Driveways.....	4-34
Quantity Computations.....	8-10
Surfacing Aggregates.....	8-4, 8-11
Temporary Roads .....	14-6, 14-8
Under Guardrail.....	9-19, 9-20, 9-31
Surfacing Elevations .....	8-15
Intersections.....	8-15
Urban Divided .....	8-15
Urban Undivided .....	8-15
Surfacing Equivalent (3R Projects).....	17-1
Surfacing/Pavement Item Quantities .....	See Pavement Item Quantities
Surfacing Under Guardrail .....	9-19, 9-20, 9-31
Survey (Right-of-Way).....	15-1
<b>T</b>	
Tabular Notes .....	11-7
Tangent Cross Slopes (Travel Lanes).....	6-1
Tangent Runout .....	3-5
Template Correction.....	8-9
Temporary Easements.....	14-6, 15-5
Temporary Roads .....	7-5, 14-6
Right-of-Way .....	14-6
Temporary Access .....	12-28
Temporary Access (ADA) .....	16-13, B-24
Temporary Railroad Crossings/Signals .....	12-26
Temporary Shoring .....	12-28
Temporary Surfacing .....	14-6, 14-8
Terrain .....	1-11
Three-leg Intersection .....	4-2
3R Projects .....	See Resurfacing, Restoration and Rehabilitation Projects
Thrie-Beam Guardrail.....	9-5, 9-20, 9-31
Tining.....	8-4
Title Sheet.....	11-13
Traffic Control .....	4-25
Signalized Intersections .....	4-26
Traffic Control Studies.....	14-2
Unsignalized Intersections.....	4-25
Traffic Control Items (Preliminary Cost Estimates).....	12-20, 12-28

<b><u>SUBJECT</u></b>	<b><u>PAGE NUMBER</u></b>
<b>T</b>	
Traffic Control Studies.....	14-2
Traffic Engineering Review .....	2-8
Traffic Engineering Studies .....	14-1
At-Grade vs Interchange Recommendations .....	14-2
Capacity Analysis .....	1-12, 14-1
Lane Configuration.....	14-2
Pedestrian Crossings .....	14-2
Safety Analysis.....	14-1
Traffic Control Studies.....	14-2
Volume Studies .....	14-2
Weaving Section Analysis .....	14-2
Traffic Plan Sheets.....	11-16
Traffic Signals .....	4-26, 12-20, 12-28, 14-4, 17-20
Pedestrian Crossing Signals .....	14-4
Traffic Through Construction.....	14-5
Transit Services .....	4-18
Transitions for Temporary Roads.....	14-7
Transition Lengths	
Auxiliary Lanes .....	4-23, 6-24
Superelevation .....	3-5
Travel Lanes .....	6-1
Cross Slopes.....	6-1
Widths .....	6-1
Tree Planting and Removal.....	10-19
Trenched Widening.....	12-28
Turn Lanes.....	4-19
Free-Flow Right-Turn Lanes.....	4-25
Offset Right-Turn Lanes .....	4-24
Turn Lane Bay Taper Rate .....	4-23
Turn Lane Length.....	4-23
Two-Way Left-Turn Lanes .....	4-20, 4-42
B Sheets (Typical Cross-Section).....	11-5, 11-6, 11-13
C Sheets (Summary of Quantities).....	11-14
D Sheets (Soil and Materials Survey).....	11-14
E Sheets (Aerial Photograph).....	2-9, 11-2, 11-6, 11-14, 15-4
F Sheets (Alignment and Control Point) .....	11-2, 11-6, 11-15
G Sheets (General Information) .....	11-2, 11-5, 11-6, 11-15
H Sheets (Phasing Plan).....	11-15
J Sheets (Large Scale Plans).....	11-6, 11-7, 11-11, 11-15
Two-Way Left-Turn Lanes.....	4-20, 4-42
Type _ Median Break .....	4-44
Typical Cross-Section Sheets .....	11-5, 11-6, 11-13
Typical Roadway Cross-Sections (3R Projects) .....	17-13

**SUBJECT** **PAGE NUMBER**

**U**

Unchannelized Intersections .....	4-2
Undercutting (Earth Shoulder Construction) .....	8-5
Underground Electrical Power and Communication Lines .....	10-27
Underpasses .....	6-35
Pedestrian Underpasses .....	16-7
Underpass Sight Distance .....	3-34
Unsignalized Intersections .....	4-11, 4-25
Unsuitable Materials .....	7-10
Unusual Circumstances (Cost Estimating) .....	12-28
Urban Driveways .....	4-32
Urban Intersections .....	4-8, 4-17
Urban Land Values .....	12-12
Urban Lighting .....	10-30
Urban Plan Sheet Scales .....	11-11
Uses of Cost Estimates .....	12-1
Agreements .....	12-2
Bid Comparison and Analysis .....	12-2
Design Alternatives .....	12-2
NEPA .....	12-2
Planning, Allocation, and Funding .....	12-1
Railroad Protective Liability .....	12-2
Utilities .....	2-9, 2-28, 6-35, 10-24, 12-3, 12-13, 12-27
Aerial Lines .....	10-26
Cost Estimates (Preliminary) .....	12-14, 12-28
City/County Utility Cost Reimbursement .....	10-25, B-3, B-29
Funding .....	12-3
Minimum Vertical Clearances for Overhead Facilities .....	3-34
Pipelines .....	10-28
Rehabilitation Negotiations .....	B-1
Underground Electrical Power and Communication Lines .....	10-27
Utility Accommodation on State Right-of-Way .....	10-25
Utility Liaison .....	10-24
Utility Permits on CICS1 .....	2-7
Utility Rehabilitation Plan Review .....	10-24
Utilities on Urban Projects .....	2-9, 12-28
Water Mains .....	10-29

**V**

Vertical Alignment	
Combination of Horizontal and Vertical Alignment .....	3-35
Preliminary Vertical Alignment Design (Bridge Hydraulics) .....	2-4
Railroad / Highway Grade Crossings .....	10-2
3R Vertical Alignment Design .....	17-7
Vertical Alignment Data .....	3-36, 11-9
Vertical Alignment Design .....	3-20
Vertical Alignment (Profile) at Intersections and Driveways .....	4-16
Vertical Clearances .....	3-34, 10-8, 10-26

<b><i>SUBJECT</i></b>	<b><i>PAGE NUMBER</i></b>
<b>V</b>	
Vertical Curves.....	3-23
Bridge .....	10-8
Crest Vertical Curves .....	3-30
Crest Vertical Curves, Stopping Sight Distance.....	3-30
Crest Vertical Curves, Passing Sight Distance .....	3-31
Design.....	3-25
Sag Vertical Curves.....	3-31
Sag Vertical Curves, Stopping Sight Distance .....	3-31
Sag Vertical Curves, Comfort Criteria.....	3-34
Sag Vertical Curves, Underpass Sight Distance .....	3-34
3R Projects .....	17-7
Vertical Curve Computations.....	3-23
Vertical Curve with Obstructions.....	3-34
Volume Studies.....	14-2
<b>W</b>	
W-Beam Guardrail .....	9-5, 9-20, 9-31, 9-41
W-Beam to Thrie-Beam Guardrail Transition Section.....	9-20
Walls (Retaining).....	6-34, 9-3, 10-22
Waste Sites.....	7-7
Waste Alternatives .....	7-8
Water Mains.....	10-29
Water Quality .....	13-14
Waterway Permits	
Floodway/Floodplain Permit .....	13-14
Nationwide Permit (NWP) .....	13-11
“No Rise” Certificate .....	13-14
Section 404 Permits .....	13-5, 13-11
Weaving Section Analysis .....	14-2
Wetlands.....	12-28, 13-5
Public Notification of Wetland Mitigation.....	13-9
3R Projects .....	17-23
Wetlands Definitions.....	13-5
Wetlands Procedures .....	13-5
Wildlife Issues.....	13-15
Working Days for Construction (Estimated).....	2-27
<b>Y</b>	
Yield Control .....	4-25

