# ANOKA COUNTY HIGHWAY DEPARTMENT

**Design Requirements Checklist for County Highway Modifications**

(To be submitted with plans and specifications)

**Development/Project Name:** _____

**County Highway No.(s):** _____

**Submittal Date:** _____

**The design shall meet State Aid Standards and the following:** Revised: May 16, 2016

| Design Detail | Desired Standard | Minimum Standard | Standard Achieved (Yes* or No** or NA) | Notes<br>* - if Yes, circle, highlight or note standard<br>** - if No provide value used with justification (additional documentation if necessary) |
|---|---|---|---|---|
| **ALL HIGHLIGHTED ITEMS MUST BE SHOWN IN PLANS AND/OR SPECIFICATIONS** | | | | |
| **GENERAL** | | | | |
| DESIGN YEAR | 20-yr traffic | Existing Traffic | | |
| DESIGN VEHICLE | WB-62 | WB-50 | | |
| DESIGN SPEED | Posted | | | |
| **VERTICAL ALIGNMENT** | | | | |
| HIGHWAY GRADE | | 0.5% Min | | |
| STREET APPROACH GRADE | 0.5% - 25' Landing | 2% - 20' Landing | | |
| ENTRANCE GRADES: | | | | |
| Residential | <10% | 15% Max | | |
| Commercial | <6% | 8% Max | | |
| BIKE PATH GRADE | Mn/DOT Bikeway Facility Design Manual | | | |
| **INTERSECTION ELEMENTS** | | | | |
| STREET/ENTRANCE APPROACH RADIUS | Design Vehicle | 30' - Turning Movements for Design Vehicle | | |
| STREET/ENTRANCE APPROACH | | Label width of approach/entrance | | |
| INTERSECTION DETAIL | | 1"=20' Scale of intersecton with pavement elevations shown | | |
| TRAFFIC SIGNAL | Contact ACHD Traffic Department If Applicable | | | |
| CROSSWALK | If signal | | | |
| STOP BAR | If signal | | | |
| ADA RAMP | All sidewalk/trail crossings | | | |
| SIGHT DISTANCE | MnDOT Road Design Manual Chapter 5 | | | |
| **CROSS SECTION ELEMENTS** | | | | |
| TYPICAL SECTION | Show widths, slopes, depths, materials, curb etc. | | | |
| CROSS SECTIONS - 1"= 20' SCALE | 50' Intervals, show ditches. | 100' Intervals, show ditches. | | |
| SECTION DEPTH AND MATERIALS: | | | | |
| Through Lane | Using R value and 20-yr ESALs | 2" Wear (SPWEB340C), 2" Wear (SPWEB340C), 2" Non-Wear (2.0" SPNW330C), 6" Cl 5 | | |
| Left Turn Lane | Using Through Lane R value and 20-yr ESALs | 2" Wear (SPWEB340C), 2" Wear (SPWEB340C), 2" Non-Wear (2.0" SPNW330C), 6" Cl 5 | | |
| Right Turn/Bypass Lane (See attached details) | Using Through Lane R value and 20-yr ESALs | Proj. ADT <= 5000: 2" Wear (SPWEB340C), 2" Wear (SPWEB340C), 6" Cl 5 | | |

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|---|---|---|---|---|
| | Using Through Lane R value and 20-yr ESALs | Proj. ADT 5000 TO 10,000: 1.5" Wear (SPWEB340C), 1.5" Wear (SPWEB340C), 2" Non-Wear (2.0" SPNW330C), 6" Cl 5 | | |
| | Using Through Lane R value and 20-yr ESALs | Proj. ADT => 10,000: 2" Wear (SPWEB340C), 2" Wear (SPWEB340C), 2" Non-Wear (2.0" SPNW330C), 6" Cl 5 | | |
| LANE WIDTH: | | | | |
| Through Lane | | 12' | | |
| Left Turn Lane | 13' | 12' | | |
| Right Turn Lane | 13' | 12' | | |
| SHOULDER WIDTH: | | | | |
| Urban | 8' | 2' (B-minor and below) | | |
| Rural (ADT>1500) | 8' | 6' (collector and below) | | |
| Rural (ADT<1500) | 6' | 2' or existing if greater | | |
| CURB REACTION DISTANCE | | 1' (median)<br>2' (outside) | | |
| CROSS SLOPES: | | | | |
| Through Lane | 2% | | | |
| Left Turn Lane | 2% | | | |
| Right Turn Lane | 2.5% | 2% | | |
| Shoulder | | Match adjacent lane | | |
| TURN LANE LENGTH (SEE ATTACHED DETAILS) | Based on Peak hour traffic | 300' | | |
| TURN LANE TAPER (SEE ATTACHED DETAILS) | 1:15 | 1:10 (only if 1:15 not possible) | | |
| TYPE OF CURB AND GUTTER: | | | | |
| With Design Speed >= 45mph | B424 | B418 (or match existing) | | |
| With Design Speed < 45mph | B624 | B618 (or match existing) | | |
| MEDIAN WIDTH | | 4' (at turn lanes) | | |
| MEDIAN SURFACE MATERIAL | Concrete | | | |
| INSLOPE: | | | | |
| Urban | | 1:4 inside clear zone<br>1:3 outside clear zone | | |
| Rural | | 1:4 inside clear zone<br>1:3 outside clear zone | | |
| BACKSLOPE | 1:4 | 1:3 | | |
| DITCH BOTTOM WIDTH | 8' | 5' | | |
| CLEAR ZONES: | | | | |
| Urban | | 10' | | |
| Rural | | 30' | | |
| Bike Path | | 2' | | |
| BIKE PATH WIDTH | | 8' | | |

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|---|---|---|---|---|
| BIKE PATH SURFACE | Bituminous | | | |
| RURAL: DISTANCE BETWEEN PATH AND THROUGH LANE | 22' | 10' (Design Speed < 40 mph) | | |
| URBAN: DISTANCE BETWEEN PATH AND GUTTER | 10' | 6.5' (2.5' paved at turn lane) | | |
| DISTANCE BETWEEN PATH AND RIGHT OF WAY | 4' | 2' (if no power poles) | | |
| RIGHT OF WAY WIDTH: | | | | |
| Principal Arterial | 150' | | | |
| Minor Arterial (urban) | 120' | | | |
| Minor Arterial (2-lane rural) | 120' | | | |
| Minor Arterial (4-lane rural) | 150' | 140' (no trail) | | |
| Collector | 120' | | | |
| **DRAINAGE** | | | | |
| GENERAL | Conform to NPDES Phase II Requirements | | | |
| HYDROLOGY | Rural areas and mixed urban and rural areas use SCS CN method | Urban areas with less than 25 acres use Rational method | | |
| DESIGN STORM (FOR DISCHARGE INTO COUNTY R/W): | | | | |
| Cities/Townships < 5000 | 5-year critical event | | | |
| Cities/Townships > 5000 | 10-year critical event | | | |
| DISCHARGE RATE (INTO COUNTY R/W) | Post-development < Pre-development | | | |
| *STORM SEWER* | | | | |
| DESIGN FREQUENCY | 10-year, 50-year at sags | | | |
| PIPE SIZE: | | | | |
| Laterals | 15" | 12" | | |
| Main | By Hydraulic Design | 15" | | |
| TYPE OF PIPE | RCP Design 3006 | | | |
| MAXIMUM SPREAD | MnDOT State Aid Manual | | | |
| PIPE COVER | | 2' | | |
| PIPE VELOCITY | | 3 ft./sec. | | |
| STRUCTURE TYPE | Precast Concrete | | | |
| CASTING ASSEMBLIES: | | | | |
| Catch Basins | MnDOT 816, 806, 825 | | | |
| Manholes | MnDOT 715,700-4 | | | |
| Drop Inlets | MnDOT 720 (Standard Plate 4140D) | | | |
| *CULVERTS* | | | | |
| DESIGN FREQUENCIES: | | | | |
| Street Approach/Driveway | 10-year | | | |
| Centerline | 50-year | | | |

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|---|---|---|---|---|
| PIPE SIZE: | | | | |
| Driveway | By Hydraulic Design | 15" (18" if L >= 60') | | |
| Street Approach | By Hydraulic Design | 18" (24" if L>= 60') | | |
| Centerline | By Hydraulic Design | 24" | | |
| CULVERT TYPE: | | | | |
| Residential Driveway | CSP | | | |
| Commercial Driveway | RCP Design 3006 | | | |
| Street Approach | RCP Design 3006 | | | |
| Centerline | RCP Design 3006 | | | |
| PIPE COVER | | 2' | | |
| PIPE BEDDING | | Per Mn/DOT Guidelines | | |
| ALLOWABLE HEADWATER | | 1' from shoulder PI | | |
| SAFETY APRONS: | | | | |
| Perpendicular Pipe | If ≥ 30" pipe end inside clear zone | | | |
| Parallel Pipe | If pipe end inside clear zone | | | |
| SAFETY GRATES: | | | | |
| Perpendicular Pipe | If ≥ 30" pipe inside clear zone | | | |
| Parallel Pipe | If ≥ 24" pipe end inside clear zone | | | |
| TRASH GUARD | | If outlet, then all inlets | | |
| CONCRETE PIPE TIES | All Culvert Joints | Last 3 joints to outlet | | |
| *PONDS* | | | | |
| **NO PONDING ALLOWED IN ANOKA COUNTY RIGHT OF WAY** | | | | |
| GRADING PLAN | 1' contour interval | | | |
| TYPICAL SLOPES/BENCHES | 1:10 at NWL for 10'; 1:4 above and below NWL | 1:6 above and below NWL | | |
| PERMANENT POOL VOLUME | Per watershed district requirement | Equal to runoff from 2.5" rainfall | | |
| 100-YEAR WATER LEVEL | 1' below shoulder PI | | | |
| OUTLET STRUCTURE DESIGN | Control the proposed 1- or 2-year and 100-year runoff rates to pre-project rates. | | | |
| EMERGENCY SPILLWAY | Provide for events larger than 100-year | | | |
| *RIGHT OF WAY* | | | | |
| GENERAL ROW COVERAGE | The Right of Way for any county road enhancement has been acquired or the right to occupy and use non Right of Way property (via easement) has been acquired. | | | |
| GENERAL ROW COVERAGE | Construction limits for county road enhancements are completely within the right of way or covered by easement? | | | |
| ROADWAY ELEMENTS | County Road enhancements completely within the right of way or covered by easement? | | | |
| SIDEWALK ELEMENTS | Trail or walk elements completely within the right of way or covered by easement? | | | |
| CLEAR ZONES | County Road clear zone completely within the right of way or covered by easement? | | | |

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|---|---|---|---|---|
| EROSION CONTROL | | | | |
| REQUIREMENT | Conform to NPDES Phase II | | | |
| SILT FENCE | Placed around project perimeter. | All points of discharge off the project | | |
| ROCK ENTRANCES, 1.5" WASHED ROCK | Length 100' | Length 50' | | |
| REFERENCE | Mn/DOT Erosion Control Handbook, by Office of Environmental Services | | | |
| MISCELLANEOUS | | | | |
| LANDSCAPING/STREETSCAPING | Conform to ACHD Landscape/Streetscape Guidelines | | | |
| TURF ESTABLISHMENT: | | | | |
| Sod | Residential yards; commercial boulevards where irrigated | | | |
| Sod Type | Per Mn/DOT Spec 3878 | | | |
| Seed and Mulch | All other areas, including blvds that are not irrigated. | | | |
| Seed Type | 25-141 - ditches, 25-131 - boulevards | | | |
| Mulch Type | Type 1, Disk Anchored | | | |
| EROSION CONTROL BLANKET | On slopes 1:3 and steeper | | | |
| PAVEMENT MARKINGS: | | | | |
| Lane Markings | Epoxy | Latex | | |
| Pavement Messages, Arrows, X-Walks, Stop Lines | Durable Marking | | | |
| UTILITIES | Precon mtg. w/all area designs | Notify all utilities prior to const. to allow for relocation. | | |
| LIST OF STANDARD PLATES | All standard plates used in ACHD right-of-way | | | |

**NOTE (1) DESIGN REQUIREMENTS NOT TO BE CONSTRUED AS COMPREHENSIVE. ADDITIONAL ITEMS MAY BE REQUIRED.**

**NOTE (2) BETWEEN MAY 15TH AND OCT. 15TH ANOKA COUNTY CREWS MAY DO THE STRIPING WORK (COORDINATED THROUGH PERMIT**

SIGNATURE

DATE

MN P.E. REGISTRATION NUMBER

COMPANY