

APPENDIX G

SIGNAGE AND STRIPING SUPPLEMENT



DOUGLAS COUNTY

SIGNAGE AND STRIPING

SUPPLEMENT

**TO DOUGLAS COUNTY ROADWAY DESIGN &
CONSTRUCTION STANDARDS**

July 2003

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SIGNAGE AND STRIPING SUPPLEMENT

JULY 2003

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1.00: GENERAL REQUIREMENTS

Because the County will maintain the traffic control devices on public rights-of-way, all traffic control devices shall be fabricated and installed in accordance with Douglas County Standards (See Attachment SS-A, Signage and Striping Notes, Note A). The Douglas County Signage and Striping Notes shall be included in all sets of construction plans.

The "Engineer" refers to the Douglas County Engineer and/or authorized agent or representative.

Permanent signage and striping shall be completely in place before any new roadway is opened to the public. These standards are to be used in conjunction with other applicable Douglas County Standards.

Signage installed onto traffic signal equipment shall conform to the Colorado Department of Transportation standards and specifications and the Douglas County Signal Specifications.

All signage and striping installations shall conform to the latest version of "Manual on Uniform Traffic Control Devices" (MUTCD), the latest version of the Colorado Supplement to the MUTCD and the latest version of the Colorado Supplement to Standard Highway Signs.

2.00: SIGNAGE CRITERIA

2.10: BACKING PLATES

Aluminum blanks shall be 0.080 gauge, except for signs larger than 36 x 36 inches, which shall be 0.100 gauge aluminum.

2.20: POSTS AND ANCHOR POSTS

2.20a: All ground mounted signs shall be mounted on standard 12 gauge, two inch by two inch (2"x2") galvanized steel tub posts, all four sides punched with 3/8" holes at one inch (1") centers. Posts must be of appropriate length to pass the MUTCD specifications for the location, and must meet the Federal breakaway standards. Anchor posts are to be two and one-fourth inch by two and one-fourth inch by three feet (2 1/4" x 2 1/4" x 3') tubing with all four sides punched with 3/8" holes at one inch (1") centers, driven down to 4" above grade. Longer anchor posts may be required by the Engineer because of soil composition and compaction.

2.30: STREET NAME SIGNS

2.30a: Street names and 100-block designations are to be obtained from the Douglas County Community Development Department for all intersections except for the intersection of two local streets.

2.30b: Refer to Street Name Sign Detail in Attachment SS-B (SS-3) for street name sign sizes.

2.30c: All public road street name signs shall include the Douglas County logo (except for allowances listed below in Section 2.40).

2.30d: All ground mount street name signs shall be high intensity material (E.C. film process is required). All overhead mounted street name signs shall be Diamond Grade-Long Distance Performance (LDP) material or equivalent. For additional information on overhead mounted street name signs, refer to the Douglas County Traffic Signal Standards and Specifications.

2.30e: Street Name sign coloring shall be white legend on green background.

2.30f: Street name sign assembly shall be as shown in Attachment SS-B, Drawing Number SS-2. When street name assembly is combined with regulatory signs, sign placement for the regulatory sign shall govern.

2.40: CRITERIA ON SPECIAL ALLOWANCES FOR STREET NAME SIGN VARIATIONS

2.40a: Plans for any variances must be submitted to and reviewed by the Douglas County Department of Public Works. Specific variances from County standards must be listed in the special footnote box on the first page of the plans.

2.40b: Only Metro Districts may apply for variances. The Metro District must submit a draft agreement to be reviewed by the Engineering Division and the County Attorney.

2.40c: The agreement is to be addressed to the Department of Public Works and the Douglas County Commissioners. It must identify that it is the requesting Metro District's responsibility for maintenance and supply in perpetuity of their specific signs and materials. It must stipulate that the District shall respond within 24 hours after notification by the Douglas County Traffic Services Division that maintenance or repair is required.

2.40d: This agreement will be recorded; and notification of the book and page number will be returned to the Metro District.

2.50: DESIGNER'S RESPONSIBILITY

These standards are intended for typical applications of signage and striping for standard conditions. These standards do not alleviate the responsibility of the designer from sound engineering judgment, or from exceeding minimum standards in specific cases where conditions warrant.

3.00: STRIPING CRITERIA

3.10: MATERIAL

Long Line, Words and Symbols:	<p><u>For concrete surface</u> – methyl-methacrylate, epoxy paint, hot applied thermoplastic, inlayed tape (Stamark), alkyd base low V.O.C., or as specified.</p> <p><u>For asphalt surface</u> – paint, hot applied thermoplastic (90mil), inlayed tape (Stamark), methyl-methacrylate, epoxy paint, or as specified.</p>
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3.20: DIMENSIONS

Edge Line	5"
Skip	5"
White Channelizing	8"
Double Yellow	5" (3" gap)
Stop Bar	24" (4' from crosswalk)
Crosswalk Bar	1'x10' (Centered in lane or 6' apart)

3.30: USE OF STOP BARS

3.30a: Any stop sign controlled approach to a school crosswalk shall include a stop bar.

3.30b: Any multi-way stop controlled approach shall include a stop bar.

3.30c: Any approach to a signalized intersection which does not have a crosswalk shall include a stop bar (stop bars are not to be used on approaches to a signalized intersection that has crosswalks)

3.40: SURFACE PREPARATION

3.40a: New concrete pavement shall have all residues removed, such as mud, dirt, curing compound, etc. Removal shall be by water blasting, sand blasting or other method approved by the Engineer.

3.40b: New asphalt pavements shall be dry and free of dirt.

3.40c: For all re-striping on existing concrete or asphalt pavement, the surface shall be clean and dry. Cleaning shall be by water sweeping, air blasting, or other method approved by the Engineer. Surface grinding shall be performed where directed by the Engineer.

3.40d: Surface temperatures shall be 50° F and rising for all pavement marking applications except preformed plastic. Surface temperature shall be 60° F and rising for preformed plastic markings.

3.40e: When the surface temperature does not reach 50 degrees (seasonal), the Contractor may, on approval of the Engineer, substitute designated pavement markings with temporary marking materials to be replaced with permanent materials when weather dictates. Temporary pavement markings shall be refurbished as determined by the Engineer.

3.50: INSTALLATION

All pavement markings shall be applied per the manufacturer's recommendations, unless otherwise authorized by the Engineer.

3.60: PAVEMENT MARKING WARRANTY

The following warranty is required for pavement marking installations:

One year with normal traffic wear. Material will not peel or lift in this time period. Approval of all work must be obtained from the Douglas County Department of Public Works prior to the start of this warranty period.

Attachment SS-A
Signage and Striping Notes

Signage and Striping Notes
Revised 03/24/03

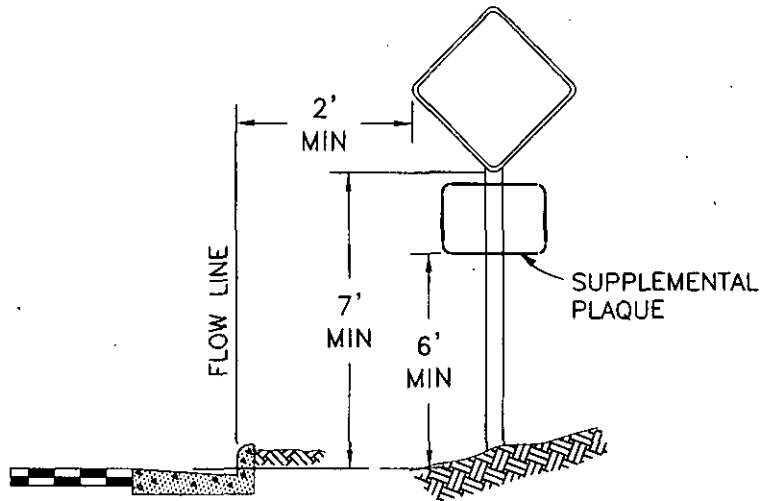
- A. ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE MOST RECENT VERSION OF THE FEDERAL *MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD)*, THE "*COLORADO SUPPLEMENTAL MUTCD*", THE *DOUGLAS COUNTY "ROADWAY DESIGN AND CONSTRUCTION STANDARDS MANUAL"* AND THE "*DOUGLAS COUNTY SIGNAGE AND STRIPING SUPPLEMENT*". FURTHER SPECIFICATIONS AND ILLUSTRATIONS ARE LOCATED IN THE COLORADO DEPARTMENT OF TRANSPORTATION (CDOT) "M AND S STANDARDS".
- B. A FIELD INSPECTION OF LOCATION AND INSTALLATION OF ALL SIGNS & MARKINGS SHALL BE PERFORMED BY DOUGLAS COUNTY. ALL DISCREPANCIES IDENTIFIED DURING THE FIELD INSPECTION MUST BE CORRECTED BEFORE THE TWO-YEAR WARRANTY PERIOD WILL BEGIN.
- C. THE CONTRACTOR INSTALLING SIGNS SHALL BE RESPONSIBLE FOR LOCATING AND PROTECTING ALL UNDERGROUND UTILITIES.
- D. TYPE III LIGHTED BARRICADES SHALL BE SET AT ENDS OF ROADWAYS, SEPARATING FINISHED (AND/OR ACCEPTED) AND UNFINISHED CONSTRUCTION AREAS AND SHALL BE MAINTAINED BY THE CONTRACTOR/DEVELOPER. A "ROAD CLOSED AHEAD" WARNING SIGN SHALL BE INSTALLED APPROPRIATELY IN ADVANCE OF THE TYPE III BARRICADES.
- E. SPECIAL CARE SHALL BE TAKEN IN SIGN LOCATION TO ENSURE AN UNOBSTRUCTED VIEW OF EACH SIGN.
- F. WHERE STOP SIGN CONTROL IS APPROPRIATE, 36" STOP SIGNS SHALL BE USED FOR APPROACHES TO ANY ROADWAY THAT IS CLASSIFIED AS A COLLECTOR OR GREATER.
- G. A 7-FOOT MINIMUM HEIGHT SHALL BE MAINTAINED FROM BOTTOM OF SIGN PANEL TO THE TOP GRADE OF SIDEWALK (AT TOP GRADE OF PAVEMENT EDGE WHERE NO SIDEWALK EXISTS).
- H. DELINEATION OF ROADWAYS SHALL BE AS SPECIFIED IN THE CDOT "M AND S STANDARDS".
- I. SIGNAGE AND STRIPING HAS BEEN DETERMINED BY INFORMATION AVAILABLE AT THE TIME OF REVIEW. PRIOR TO INITIATION OF THE ANY WARRANTY PERIOD, DOUGLAS COUNTY RESERVES THE RIGHT TO REQUIRE MODIFICATIONS TO EXISTING, OR INSTALLATION OF, ADDITIONAL SIGNAGE AND/OR PAVEMENT MARKING IF IT IS DETERMINED THAT AN UNFORESEEN CONDITION WARRANTS SUCH MODIFICATION ACCORDING TO THE MUTCD OR THE CDOT M AND S STANDARDS. ALL SIGNAGE AND STRIPING SHALL FALL UNDER THE REQUIREMENTS OF THE TWO (2) YEAR WARRANTY PERIOD FOR NEW CONSTRUCTION. ADDITIONALLY ALL PAVEMENT MARKINGS SHALL NOT LIFT OR PEEL DURING THE FIRST YEAR AFTER INSTALLATION.
- J. ON ALL SIGNAGE AND STRIPING PLANS, IN THE "ACCEPTANCE BLOCK", IN ADDITION TO THE COUNTY ENGINEER'S SIGNATURE AND DATE LINES, A SIGNATURE LINE AND A DATE LINE SHALL BE PROVIDED FOR THE "DIRECTOR OF PUBLIC WORKS" AND "TRAFFIC ENGINEER MANAGER".
- K. DIAMOND GRADE MATERIAL SHALL BE USED ON ALL STOP SIGNS AND OVERHEAD SIGNS. ALL OTHER ROADSIDE TRAFFIC CONTROL DEVICES SHALL BE HIGH INTENSITY GRADE REFLECTIVITY.
- L. ALL PUBLIC ROAD STREET NAME SIGNS SHALL HAVE DOUGLAS COUNTY LOGO ON LEFT SIDE OF SIGN.
- M. ALL REMOVED SIGNS SHALL BE RETURNED TO DOUGLAS COUNTY.
- N. CROSSWALKS: SHALL BE CONSTRUCTED OF MATERIAL SPECIFIED BY DOUGLAS COUNTY.
SHALL BE "LONGITUDINAL" TYPE.
SHALL LINE UP WITH HANDICAP RAMPS.
SHALL BE CENTERED ON LANE LINES SO AS TO BE STRADDLED BY VEHICLES.
- O. ALL PAVEMENT MARKING MATERIAL (INCLUDING WORDS AND SYMBOLS) SHALL BE AS FOLLOWS:
- FOR CONCRETE SURFACE:**
METHYL-MYTHACRALATE, EPOXY PAINT, HOT APPLIED THERMOPLASTIC, OR AS SPECIFIED. PAINT MAY BE USED WHEN APPROVED BY THE COUNTY.
- (SAND OR WATER BLAST CURING COMPOUND PRIOR TO INSTALLATION OF MARKINGS)
- FOR ASPHALT SURFACE:**
PAINT, HOT APPLIED THERMOPLASTIC (90MIL), INLAYED TAPE (STAMARK), METHYL-MYTHACRALATE, EPOXY PAINT, OR AS SPECIFIED.
- P. INSPECTION AND APPROVAL OF STRIPING AND CROSSWALK LAYOUT TO BE DONE BY DOUGLAS COUNTY ENGINEERING INSPECTION DEPARTMENT (CALL 303-660-7487) PRIOR TO APPLICATION OF FINAL STRIPING.
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Attachment SS-B

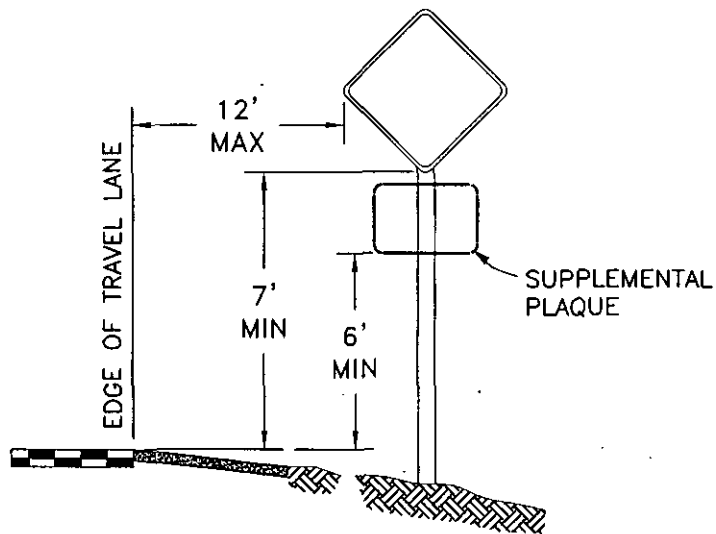
Signage and Striping Details

- SS-1: TYPICAL SIGN PLACEMENT DETAIL**
 - SS-2: STREET NAME SIGN ASSEMBLY**
 - SS-3: STREET NAME SIGN DETAIL**
 - SS-4: TYPICAL LOCATIONS – STOP SIGNS AND YIELD SIGNS**
 - SS-5: TYPICAL ‘NO OUTLET’ AND ‘DEAD END’ SIGN PLACEMENT**
 - SS-6: TYPICAL CROSSWALK MARKING**
-

URBAN



RURAL



DRAWING NUMBER

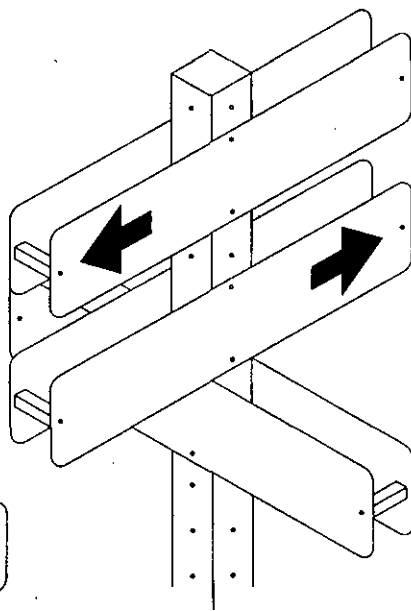
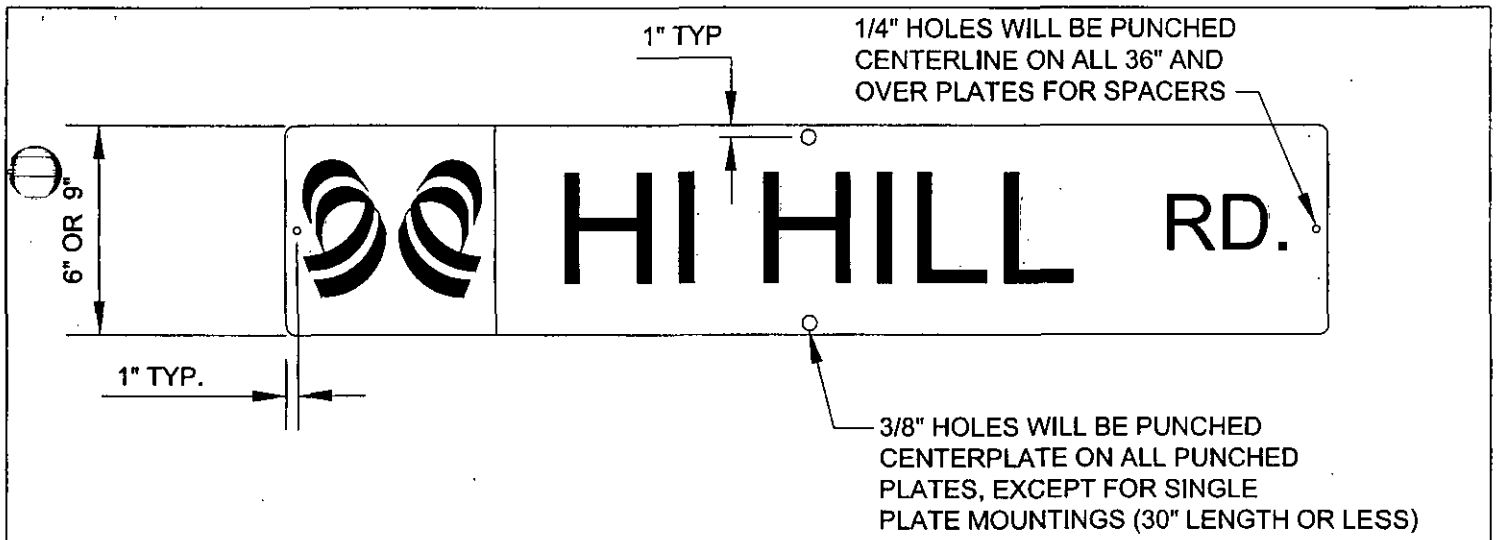
SS-1

APPENDIX B

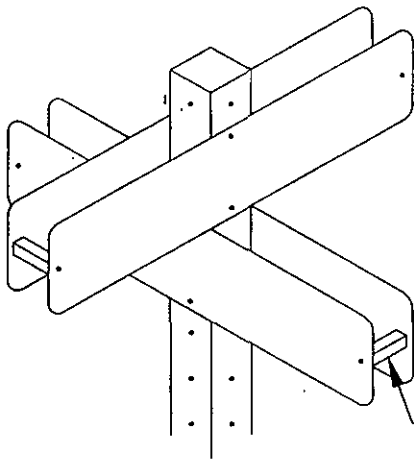
TYPICAL SIGN PLACEMENT DETAIL



DOUGLAS COUNTY

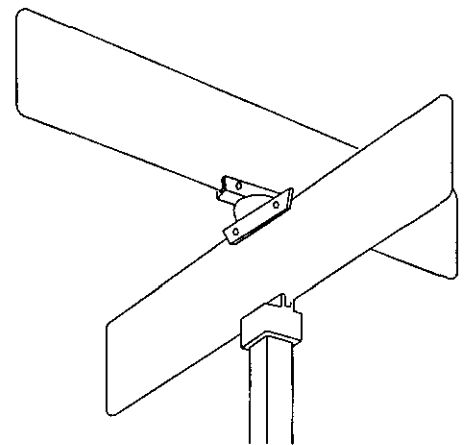


STREET SIGN ASSEMBLY WHEN STREET NAMES CHANGE



STANDARD STREET SIGN ASSEMBLY

1 3/4" SQUARE TUBING AS SPACER



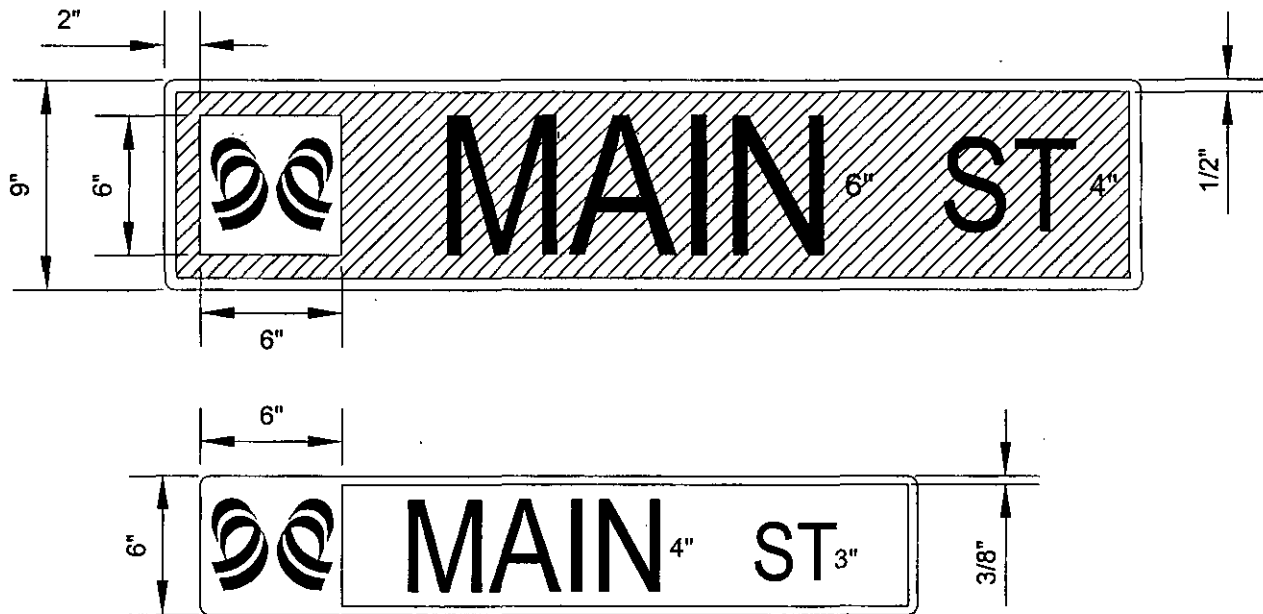
SINGLE PLATE MOUNTING DETAIL

NOTE: STREET NAME SIGN 30" LENGTH OR LESS USE SINGLE PLATE MOUNTING. FOR 36" AND GREATER USE DOUBLE PLATE MOUNTING.

DRAWING NUMBER
SS-2
 APPENDIX B

STREET NAME SIGN ASSEMBLY





All material shall be a minimum of high intensity grade reflectivity.

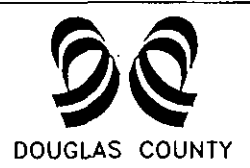
9" signs shall be used on all roads that are posted 30 mph or greater and shall be single faced.

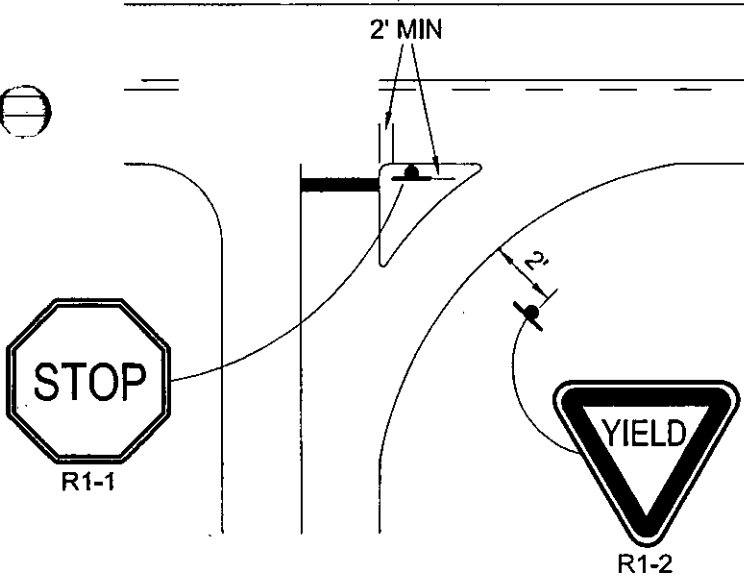
6" signs may be used on roads that are posted 25 mph or less. All 6" signs 36" in length and over shall be single faced.

Letter series shall be "C".

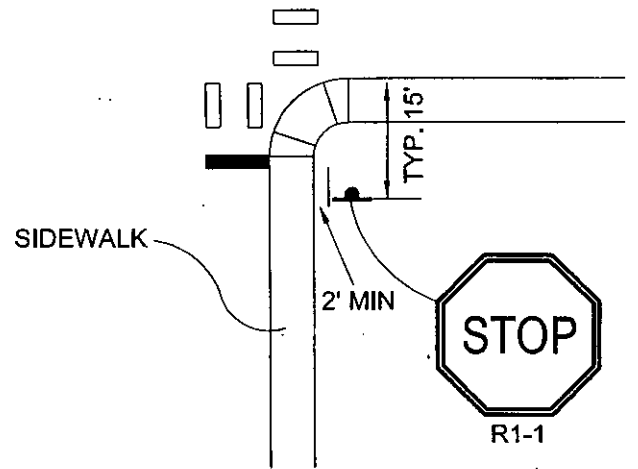
DRAWING NUMBER
SS-3
 APPENDIX B

GROUND MOUNTED
 STREET NAME SIGN DETAIL

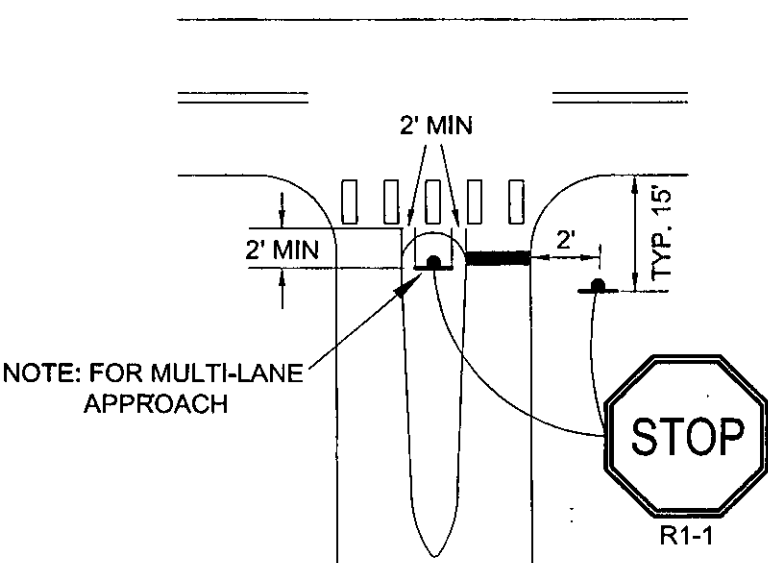




CHANNELIZED INTERSECTION



URBAN INTERSECTION



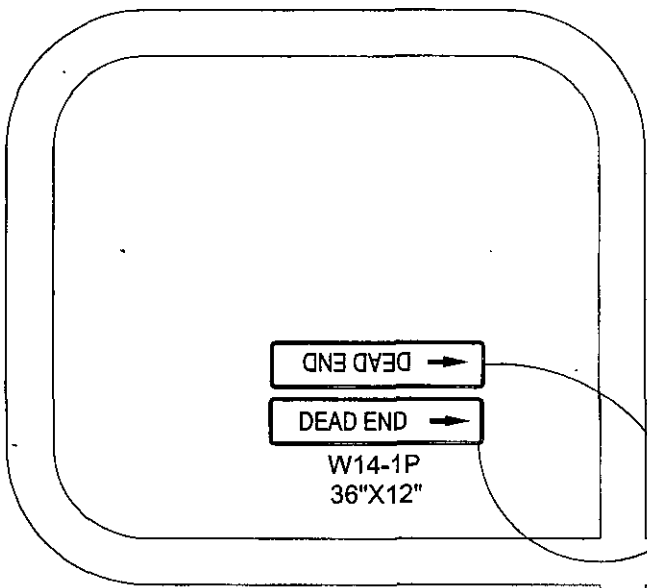
NOTE: FOR MULTI-LANE APPROACH

DIVISIONAL ISLAND

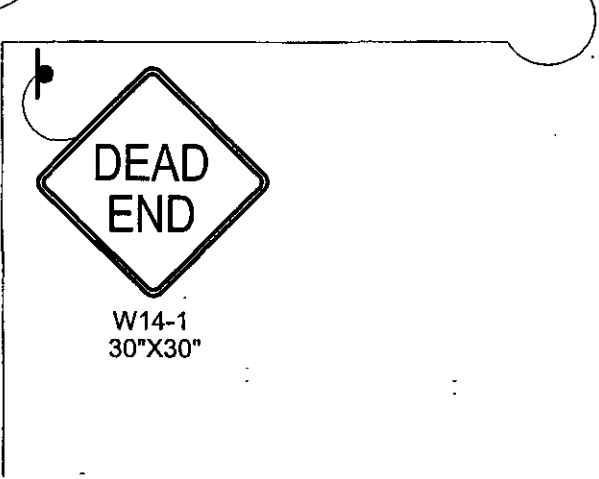
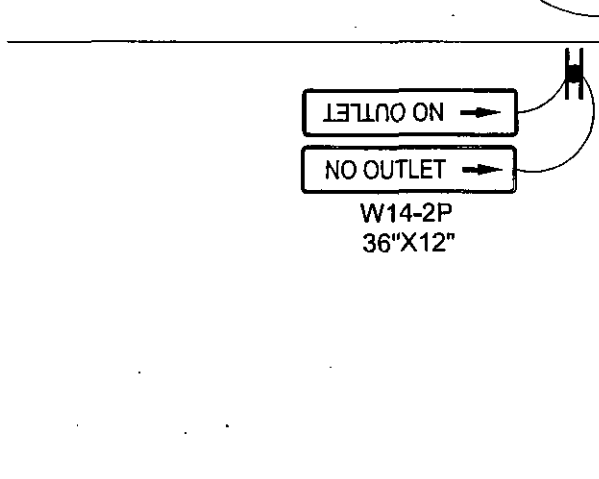
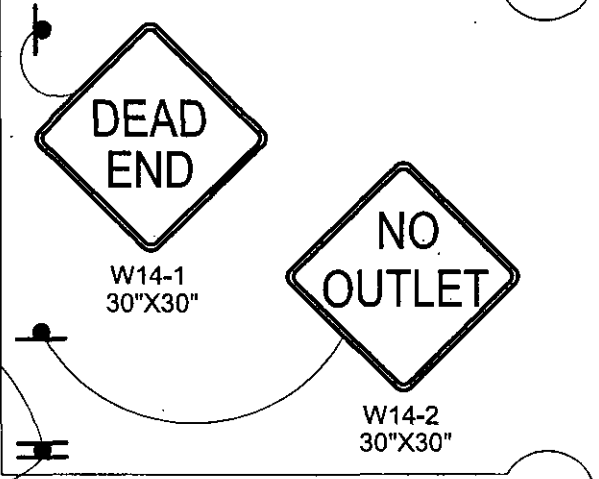
DRAWING NUMBER
SS-4
APPENDIX B

TYPICAL LOCATIONS—STOP SIGNS
AND YIELD SIGNS





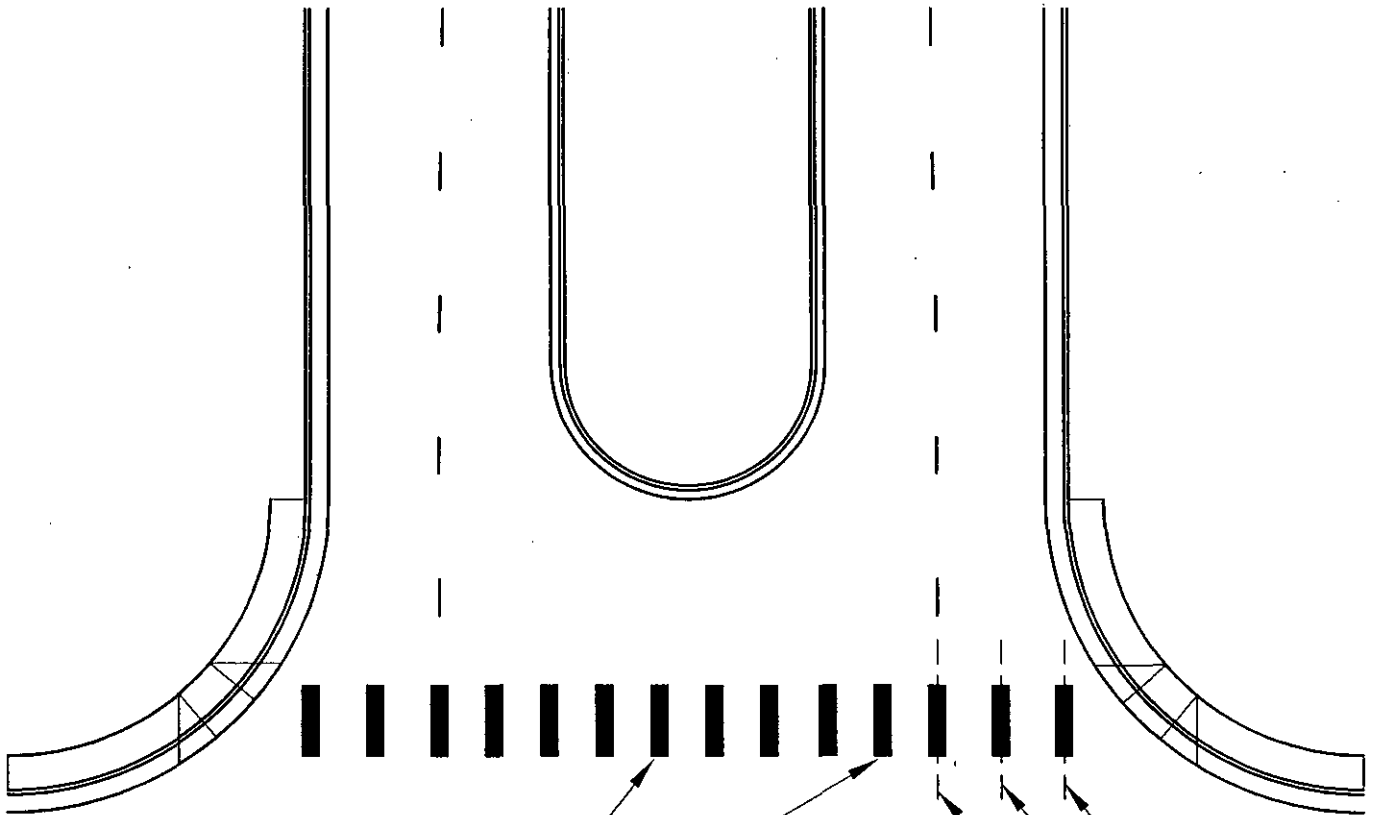
NOTE: NO OUTLET
AND DEAD END
PLATE MOUNTED ON
STREET NAME SIGN
ASSEMBLY



DRAWING NUMBER
SS-5
APPENDIX B

TYPICAL 'NO OUTLET' AND
'DEAD END' SIGN PLACEMENT





1'x10' BARS
 CENTERED: -ON LANE OR CHANNELIZING LINES
 -BETWEEN LANE LINES
 -ON FLOW LINE EXTENDED

DRAWING NUMBER

SS-6

APPENDIX B

TYPICAL CROSSWALK MARKING



DOUGLAS COUNTY