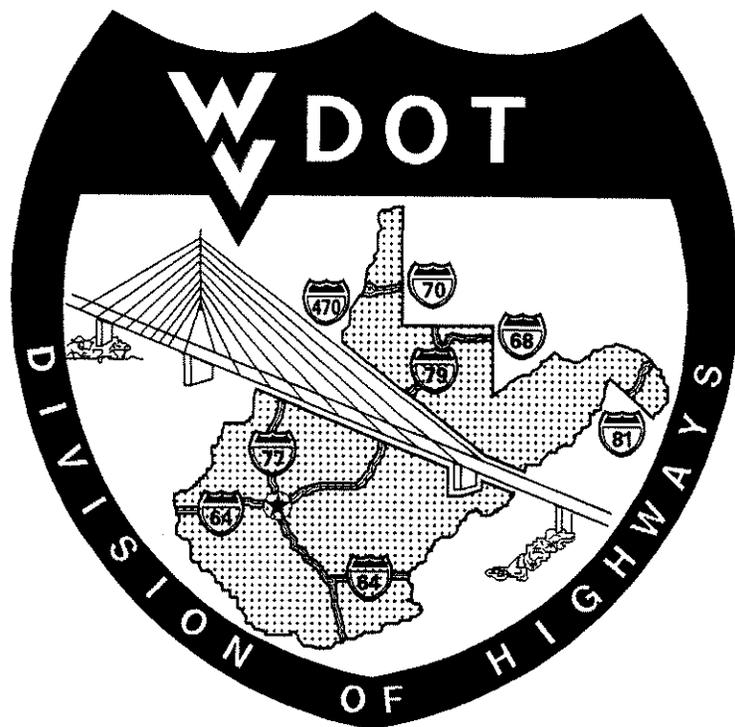


*WEST VIRGINIA*  
*DIVISION OF HIGHWAYS*  
*DESIGN GUIDE FOR SIGNING*



*TRAFFIC ENGINEERING DIVISION*

*DATE: APRIL, 1994*

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS

## DESIGN GUIDE FOR SIGNING

APRIL, 1994

PREPARED BY TRAFFIC ENGINEERING DIVISION, DESIGN SECTION

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WEST VIRGINIA DIVISION OF HIGHWAYS

DESIGN GUIDE FOR SIGNING

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WEST VIRGINIA DIVISION OF HIGHWAYS

DESIGN GUIDE FOR SIGNING

Section I - General

This publication supersedes all previously printed material concerning the subject matter, including but not limited to:

Interstate Signing Criteria

Appalachian Development Highways

Expressway Signing Criteria 1975

Motorists' Services Signing Criteria

Motorists' Services Signing Criteria for Expressways

Therefore, the purpose of this manual is to compile all information into one reference for the design of signs on West Virginia highways systems.

All signs and sign structures to be installed shall conform to the design guides set forth herein by the West Virginia Division of Highways. In addition to these criteria, the following listed publications shall be used where deemed applicable by the Division of Highways in the design of signs and sign structures:

1. West Virginia Standard Specifications for Roads and Bridges - Section 657, Roadside Sign Supports; Section 658, Overhead Sign Structures; Section 659, Sign Lighting; Section 661, Traffic Signs and Delineators (referred to as the Standard Specifications).
2. West Virginia Division of Highways Sign Fabrication Details (referred to as the Fabrication Manual).
3. Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, AASHTO (referred to as the AASHTO Support Specifications).
4. Manual on Uniform Traffic Control Devices for Streets and Highways, as approved by the Federal Highway Administration (referred to as the MUTCD).
5. West Virginia Division of Highways Standard Details Book for Signing, Signals, Lighting and Marking (referred to as Standard Details).

All federal standard publications, including MUTCD, shall always supersede this design guide and any other state-published standard if a conflict arises.

This design manual for DOH signing is intended to cover five categories of highways:

- (1) Fully controlled access - freeway (interstate highway)
- (2) Partially controlled access - expressway (APD)
- (3) Four-lane highways with design speeds  $\geq$  40 MPH
- (4) Two-lane highways  $\geq$  2 miles with design speeds  $\geq$  50 MPH.
- (5) Conventional roads - as detailed in MUTCD.

For the purpose of this manual, fully-controlled access facilities shall be freeways where the only access points are by interchanges; partially-controlled access facilities shall be all expressways where abutting property owners have no legal right of access to or from the roadway except at points designated by the Division of Highways. For the most part, these points will be limited to intersections constructed by the Division of Highways in the development of the expressway.

## Section II - Preparation of Sign Plans

A general outline of the sequence of events in the preparation of sign plans can be given as follows:

1. Prepare scaled base map showing all roadways to be signed and the right-of-way lines. Through roadway scales should be on either 1" = 200' or 1" = 100', depending on the amount of signing to be shown. For example, urban areas and highways with frequent intersections should be on 1" = 100'; interchange crossroad areas and congested intersections should be on 1" = 100' or 1" = 50'.
2. Determine what types of interchanges and/or intersections exist on the facility in accordance with Section III - Classification of Interchanges and Intersections.
3. Determine the names and route numbers to be used for each interchange and intersection. Also, a determination must be made to see if there is any need for supplemental signs and motorists' services signing.

Provision shall be made for motorists' services signs at all rural interchanges. Aid in the determination of the guide sign legend can be found in Section IV of these criteria and in Appendix A.

4. Determine what type of signs shall be erected for each class of interchange and intersection in accordance with Section V.
5. Using Sections VI, VII, VIII and IX of this publication on the uses and locations of guide, regulatory, service and warning signs, place all signing on the base map at the proper location with the proposed legend shown. At this point, these plans shall be submitted for preliminary field review and revision before proceeding to subsequent steps.
6. Design all guide signs, using Section X, and prepare guide sign fabrication sheets. Sign base layout (revised if necessary) along with fabrication sheets are then submitted for final field review.
7. Using Sections IX and X, begin preparation of the Estimate of Quantities Sheets. This requires numbering all sign assemblies (overhead assemblies to be numbered first, all signs on one structure to have same assembly number); placing a standard number showing the exact location of the sign by station number (or some other means); and showing the size and type of sign and determining supports. The support design makes use of material in this publication as well as the Standard Drawings and the Standard Specifications. Overhead sign supports and special bridge attachments are designed at this time. A preliminary office review is then held.
8. A summary of quantities sheet with appropriate bid items, a title sheet (if needed), and a general notes sheet shall be prepared. After this work has been accomplished, a final office review shall be conducted.
9. Plans shall be revised in accordance with comments derived from the final office review, and then the final plans shall be corrected and final tracings shall be submitted for contract letting.

### Section III - Classification of Interchanges and Intersections

#### Freeway Junctions

Interchanges between freeway routes, all of which have fully-controlled access, are defined as "Freeway Junctions" regardless of geometric design type.

Junctions are also considered to be major decision-making points where the effect of using an incorrect ramp for the intended route cannot be easily corrected, either by reversing direction on the second route or reentering the mainline.

#### Major Interchange

Freeway interchanges with other expressways and freeways, and also with high volume multilane highways, principal urban arterials and routes where the interchanging traffic is heavy or includes many drivers unfamiliar with the area. This applies to all freeway interchanges with US and WV numbered routes.

#### Intermediate Interchange

Those interchanges with urban and rural routes not in the category of major or minor interchanges, as defined herein. This applies to all freeway interchanges with Division of Highways maintained Local Service routes or city maintained streets. This also applies to all expressway interchanges.

#### Major Intersection

An intersection of an expressway with a principal urban arterial or major rural route where the intersection traffic is heavy or where many drivers may be unfamiliar with the area. This would include the intersection of expressways with US or WV numbered routes.

#### Intermediate Intersection

An intersection of an expressway with an urban or rural route which is not in the category of a major intersection. This would include the intersection of expressways with Division of Highways maintained Local Service routes or city maintained streets.

#### Minor Intersection

The intersection of any expressway which has partial or full control of access with a public road not on the State-maintained system. A public road would include,

but not be limited to, any road serving at least three residences, a commercial development with public access for either truck deliveries and/or patrons, or government-owned facilities such as hospitals, offices and recreational facilities.

#### Land Access Intersection

Any intersection on an expressway with full or partial control of access with a privately-owned road which serves only to provide access to a particular parcel of land.

#### Section IV - Guide Sign Legend

Only general guidelines can be given for the determination of the legend which will be shown on guide signs. The preliminary submission of sign plans shall establish the legend to be used.

In dealing with interchanges, the signing legend shall consist of the intersecting route number and the name of the interchange. The intersecting route number shall be either a US route, WV route or Local Service route. The name of the interchange shall be either the community served by the interchange or the intersecting road/street name. A maximum of two names may be shown for the interchange. Preferential order will be given as follows:

1. Incorporated cities within ten miles of the interchange. First preference is given to the closest city; however, if there is a larger city within ten miles, then preference may be given either to that city or both names may be used.
2. Unincorporated community with a post office within three miles of the interchange.
3. The name of the intersecting road or street. In cities served by more than one interchange, the names of the streets, in most cases, shall be given so as to provide positive identification of the interchanges.
4. If none of the above apply, then the route number alone will appear, unless some other reasonable name can be given to the interchange, such as Cooper's Rock State Park.

At "freeway junctions" the control destinations for the routes shall be used on the guide signs. These destinations may be found in Appendix A, Control & Intermediate Destinations for Guide Signing on Interstate and US & WV Numbered Highways.

In dealing with US and WV numbered route intersections, the legend for destination and mileage signs will also be determined from Appendix A, Control & Intermediate Destinations for Guide Signing on Interstate and US & WV Numbered Highways. If dealing with a newly numbered WV route, control and intermediate destinations will be determined by the Traffic Engineering Division.

More specific information on sign legend will be found in the discussion of each type of sign under Section VI, Guide Sign Use and Location.

## Section V - General Requirements for Signing Interchanges and Intersections

### Freeway Junctions

Two Mile, One Mile, One Thousand Feet and Exit Direction guide signs shall be installed at all freeway junctions, giving at least three notices. The sign messages should contain only the route shield, name of the next control destination on that route and appropriate distances and arrows to advise drivers of where the exit is located.

After passing through the interchange area, the driver shall see a confirmation assembly, a speed limit sign and a mileage sign, in that order.

Overhead signs are required at a distance of one mile and at the exit directional sign at the theoretical gore of each connecting ramp, and they may be used at the two-mile point. Additionally, overhead signing should be placed 1,000 to 1,500 feet in advance of the theoretical gore. For sample signing layout, see Figure 1.

### Major Interchange

Two Mile, One Mile, One-Half Mile and Exit Direction guide signs shall be installed at all major interchanges. In urban areas an interchange sequence sign may be substituted for one of the advance guide signs. A total of three advance notices shall be posted. An Exit Direction sign is not considered an advance notice.

After passing through the interchange area, the driver shall see a confirmation assembly, a speed limit sign and a mileage sign, in that order.

The signing layout for the freeway is shown in Figure 2, and the signing within the interchange area will be as shown in Figure 3.

#### Intermediate Interchange

Two Mile, One Mile, One-Half Mile and Exit Direction guide signs shall be installed at all intermediate interchanges to give the driver a total of three advance notices. An intermediate interchange's signing has a smaller legend size than a major interchange, see Table I.

After passing through the interchange area, the driver shall see a confirmation assembly, a speed limit sign and a mileage sign, in that order.

The signing layout for the freeway is shown in Figure 2, and the signing within the interchange area will be as shown in Figure 3.

#### Major Intersection

A junction marker, an advance turn assembly, destination sign, a final turn assembly, a confirmation assembly, a mileage sign and a speed limit sign shall be installed at major intersections. The signing on the intersecting route will be as shown and described in Figure 4.

#### Intermediate Intersection

Signing on the expressway would normally consist of an intersection direction sign. Signing on the intersecting road and additional signing on the expressway would depend on the estimated traffic volumes expected on the intersecting road:

1. Estimated traffic volume less than 250 vehicles per day - A STOP sign shall be erected on the intersecting road.
2. Estimated traffic volume between 250 and 1,000 vehicles per day - A STOP sign shall be erected on the intersecting road. On the expressway an advance intersection sign and a confirmation assembly should be added. If the intersection is located within 1/4 mile or less of another intersection, an advance intersection sign shall not be added.

3. Estimated traffic volume greater than 1,000 vehicles per day - The intersecting road shall have a junction sign, a destination sign, a final turn assembly and a STOP sign. On the expressway an advance intersection sign, a confirmation assembly, a mileage sign and a speed limit sign shall be added.

Typical signing layout for the expressway is shown in Figure 5.

#### Minor Intersection

Signing for this type of intersection will include an intersection direction sign on the expressway with a STOP sign on the intersecting road.

The signing layout for the expressway is shown in Figure 6.

#### Land Access Intersection

Signing for this would consist of a sideroad or crossroad warning sign on the expressway and a STOP sign on the intersecting roadway.

The signing layout for the expressway is shown in Figure 7.

### Section VI - Guide Sign Use and Location

Unless otherwise stated in this design guide, signs shall be located as required by the Division of Highways' Standard Specifications, Standard Drawings, or the MUTCD. Care shall be taken to maintain a spacing of 800' to 1000' between all major guide signs including LOGO signs on the Interstate system.

If exit numbers are used, they shall be by the milepost system and placed at the top of sign in a Standard Exit panel. If no numbers are used, then the word EXIT shall appear in the last line of the sign when appropriate.

Specific locations for the following signs on highways shall be as indicated:

1. Two Miles

At freeway junctions and major interchanges, where spacing permits, this sign with a maximum of two destinations and route numbers shall be placed two miles from the exit gore.

2. One Mile

This sign shall be located at all freeway junctions and major and intermediate interchanges where spacing permits. The sign with a maximum of two destinations and a route number shall be placed one mile in advance of the exit gore. It shall have the same message as the Two Mile sign. If the situation

develops that a sign cannot be installed at the one-mile location, then the legend must be changed to indicate the correct distance. The legend on the sign shall be in one-quarter mile increments. At freeway junction interchanges, it shall be erected as an overhead sign.

3. One-Half Mile

This sign shall be erected one-half mile in advance of the exit gore at all interchanges. At freeway junctions this sign shall be erected 1,000' - 1,500' from the theoretical gore, with no distance message.

4. Exit Direction

This sign shall be erected at all interchanges at the beginning of the deceleration lane as a ground-mounted sign. Overhead signs shall be erected, where indicated, in the vicinity of the theoretical gore.

5. Exit Gore

This ground-mounted sign shall be used in all exit gores and shall be located at the gore of the interchange. It shall be a standard sign as shown in the Fabrication Manual, with interchange number if appropriate. Route markers may be used in lieu of an exit gore sign at freeway to freeway junctions.

6. Overhead Gore Sign

This sign shall be erected over the theoretical gore at all freeway junction interchanges or whenever conditions warrant its use as outlined under Item 28 of this section. It shall have the same message as the One Mile Sign.

7. Mileage Sign

For interchanges, this sign shall be located after every interchange at a minimum distance of 2,500 feet beyond the end of the acceleration lane. The legend shall include the name of the next interchange and the next control city. The sign may have a third line of legend which may be another control city or intermediate destination on the same route. The posted mileages shall be the distance from the sign location to the approximate center of the city named on the sign. If the city named is further than three miles from the expressway interchange, the intersecting

route number should be used on the sign in lieu of the city name. The mileage sign may be omitted if the distance between interchanges is less than two miles. Mileage signs on expressways with intersections shall be erected 500 to 700 feet beyond major intersections. Also, they shall be erected beyond intermediate intersections where the intersecting roads have 1,000 vehicles or more per day. Additionally, mileage signs shall be erected on expressways leaving incorporated communities and in rural areas at distances no greater than ten miles. This sign shall normally have two destinations, with a maximum of three destinations, and these destinations shall be of the following combination and as specified in Appendix A:

- a. Next intermediate and next control destination on the route;
- b. Next two control destinations if no intermediate is present;
- c. On overlapping routes, the next control destinations for each route.

The top line of the mileage sign shall have the shortest distance and the distance shown shall be from the center of the named destination.

8. Interchange Sequence Sign

Whenever a town is served by two or more interchanges, this sign shall be erected in advance of the first advance guide sign. It shall then be repeated, as space permits, after each interchange until there is only one interchange left. Between the next to the last interchange and the last interchange, a normal mileage sign shall be erected if space permits. On the interchange sequence sign, the name of the city shall be on the top line and then the next three interchanges shall be listed in order. As one interchange is passed, its name will be dropped from the sign and the name of the next interchange in the sequence added, then sequentially until there are only two interchanges left.

9. Confirmation Assembly

This assembly shall consist of a 36-inch by 36-inch route marker (36-inch by 45-inch for three digits) and a 30-inch by 15-inch cardinal marker

giving the appropriate route number or numbers. For interchanges it shall be located approximately 500 feet beyond the end of an acceleration lane and for intersection it shall be 100 to 250 feet beyond the intersection.

10. Ramp Directional Signs

This sign shall be used on all exit ramps at interchanges. When the intersecting crossroad is a US or WV numbered route, the sign shall be located 200 to 700 feet from the centerline of the crossroad. If the ramp is less than 800 feet in length from the gore and/or the crossroad carries no US or WV route, the sign will be located in a target position opposite the ramp terminus.

The legend of this sign shall be limited to three destinations and be consistent with the messages given on the advance guide signs, and/or the control destinations on the intersecting road. If the name of the road intersected was used on the freeway, then it may be necessary to show that name with a double-headed arrow beneath it.

11. Ramp Entrance Sign

When approaching an interchange on a crossroad, a driver encounters two entrance ramps (one for each direction) and, therefore, a ramp entrance sign shall be erected for his guidance at the second ramp. It shall be 0 to 50 feet from the second ramp and will show as one sign the route number, cardinal direction, control city and an appropriate arrow.

12. Junction Marker

This sign is to be used in advance on the expressway at intersections with US and WV numbered routes. This assembly is to be followed by the standard signing sequence. The sign is to be located 3/4 mile in advance of major intersections with the legend JCT, route number being junctioned and 3/4 MILE. Due to spacing of intersections, this sign may be changed to a 1/2-mile location.

13. Advance Turn Assembly

This assembly on the expressway shall be installed 1,000 to 1,500 feet in advance of intersections with US or WV numbered routes. It shall

consist of route marker (36-inch by 36-inch or 36-inch by 45-inch, for three digits), cardinal directions (30-inch by 15-inch) and appropriate arrows (21-inch by 28-inch). If junctioning with a route, it shall show the appropriate directions that the junctioning route takes with separate route markers and arrows for each cardinal direction. (No double-headed arrows allowed.) If two or more route numbers are running together and one of the routes turns off at the intersection, then the advance turn assembly will show all route numbers and cardinal directions with arrows indicating which routes leave, continue on or join the highway. This assembly is also to be used on crossroad in interchanges, see Figure 3.

14. Destination Sign

This sign shall be installed 700 to 1,000 feet in advance of expressway intersections with US or WV numbered routes. It shall show the control destinations for the various routes with the top line being for the straight ahead control destination, the second line for the control destination to the left and the third line for the control destination to the right. A maximum of three control destinations may be shown. This sign is also to be used on crossroad in interchange, see Figure 3.

15. Final Turn Assembly

This assembly on the expressway shall be installed 0 to 100 feet in advance of the intersection. When there is a left-turn lane of over 200 feet in length which has to be used by one of the routes, the final turn assembly will be erected at the beginning of the taper for the left-turn lane and a second final turn assembly showing only the route turning to the right will be erected nearer the intersection. The final turn assembly will have the same size sign and repeat whatever is shown in the advance turn assembly with the directional arrows appropriately changed to indicate the final turns. This assembly is also to be used on crossroad in interchanges, see Figure 3.

**16. Advance Intersection**

This sign should be installed at intermediate intersections that are located at least 1/4 mile or more from another intersection. This sign shall be located approximately 1,000 feet from the centerline of the crossroad. The road name and number shall be the first line of copy and the second line shall be the appropriate direction (NEXT RIGHT or NEXT LEFT). If two different road names occur at the intersection, the sign shall have four lines of legend as follows: (1) road name and number to the left, (2) NEXT LEFT, (3) road name and number to the right and (4) NEXT RIGHT. If the road name is the same on both approaches to the intersection, the second line of copy shall be 1/4 MILE.

**17. Intersection Direction**

This sign shall be erected at all intermediate and minor intersections as previously defined in these criteria. This sign shall be located approximately 250 feet from the centerline of the crossroad. It shall show the applicable names and numbers of the intersecting roads and be consistent with the Advance Intersection sign, if present. It shall have arrows on it to indicate proper directions and if a road goes in both directions, a double-headed arrow will be placed below the name and number.

**18. Rest Area Signing**

WEST VIRGINIA WELCOME CENTER signs shall be installed for the first rest area when entering the state on fully-controlled access facilities. The signing sequence for rest areas shall be similar to that used for interchanges. Advance notices shall consist of a two mile, one mile and REST AREA NEXT RIGHT signs. A gore sign stating REST AREA with an arrow shall also be erected. The advance signs shall show REST AREA with appropriate directional information. In a rest area with no toilet facilities, the advance rest area signs shall be supplemented with a

sign stating NO FACILITIES. A sign with the word message NEXT REST AREA XX MILES may be installed as a supplemental panel mounted below one of the advance rest area guide signs.

19. Roadside Park and Table Signing

A roadside park shall be defined as a rest area which has only outside toilet facilities along with picnic tables, open fireplaces, etc. A roadside table facility shall mean no toilet facilities are available. Signing for the park shall consist of a one mile advance sign and an exit direction sign at the entrance. Signing for the table area shall consist of a sign 1,000 feet in advance with a supplemental sign of ON LEFT or ON RIGHT and a sign with an arrow at the facility. Standard signs in the Fabrication Manual shall be used.

20. Weigh Station

The signing sequence shall include a one-mile advance sign, WEIGH STATION NEXT RIGHT sign and a gore sign. All of the signs shall be white on green in color with the legend WEIGH STATION. The NEXT RIGHT sign may have the legend 1/2 MILE on expressways where there are many intersecting roads. There shall be a supplemental sign on the NEXT RIGHT sign stating OPEN or CLOSED. A Regulatory Sign stating ALL TRUCKS COMMERCIAL VEHICLES NEXT RIGHT shall be located approximately 4000 feet from the weigh station gore sign.

21. Supplemental Signs

Destinations that are accessible from an interchange or intersection, other than places shown on the standard signing, may be shown on a supplemental sign. Such a sign may list one or two destinations with the appropriate exit panel (interchange) or the legend NEXT RIGHT (intersection). At interchanges it shall be installed 800 to 1,000 feet beyond the One Mile sign or motorists' service sign. At expressway intersections it shall be installed 1,000 feet in advance of the advance intersection sign, or if there are no advance intersection signs it shall be installed 1000 feet in advance of the Intersection Direction Sign or Destination Sign.

22. Interchange Exit Numbering

All Interstate highway interchanges will have exit numbers assigned to them based on the milepost system as required in the MUTCD, Section 2F-19.

23. City Name Sign & City Limit Sign

On Interstate highways and fully controlled-access highways only signs with the legend CITY LIMITS shall be installed where the corporate line crosses the route. On all other expressway facilities signs with the name of the city may be installed only when the corporate boundary crosses both sides of the highway. If the corporate boundary crosses just one side of the expressway, then only signs with the message CITY LIMITS can be installed.

24. Unincorporated Community Sign

Signs for unincorporated communities shall not be installed on fully or partially controlled-access facilities. Generally, in the case where there is a built-up area adjacent to a controlled-access facility, one of the access roads will be given the name of the unincorporated area, such as SMITHBURG ROAD.

25. Stream Name Sign

This sign should be used to show the name of the river or creek at all rivers and creeks that are spanned by structures 50 feet or more in length. The sign shall be installed a maximum of 25 feet in advance of the end of the bridge structure.

26. County Line Sign

This sign shall be used at all county lines to inform motorists of the county they are entering. It shall have a white legend on a green background. The sign shall be located at the point where the county line crosses the route. Two signs shall be installed at right angles to the roadway directly opposite one another facing traffic approaching in each direction. When the county line sign falls on the State line, only one sign shall be required on the inbound side of the route located at or very near the State line.

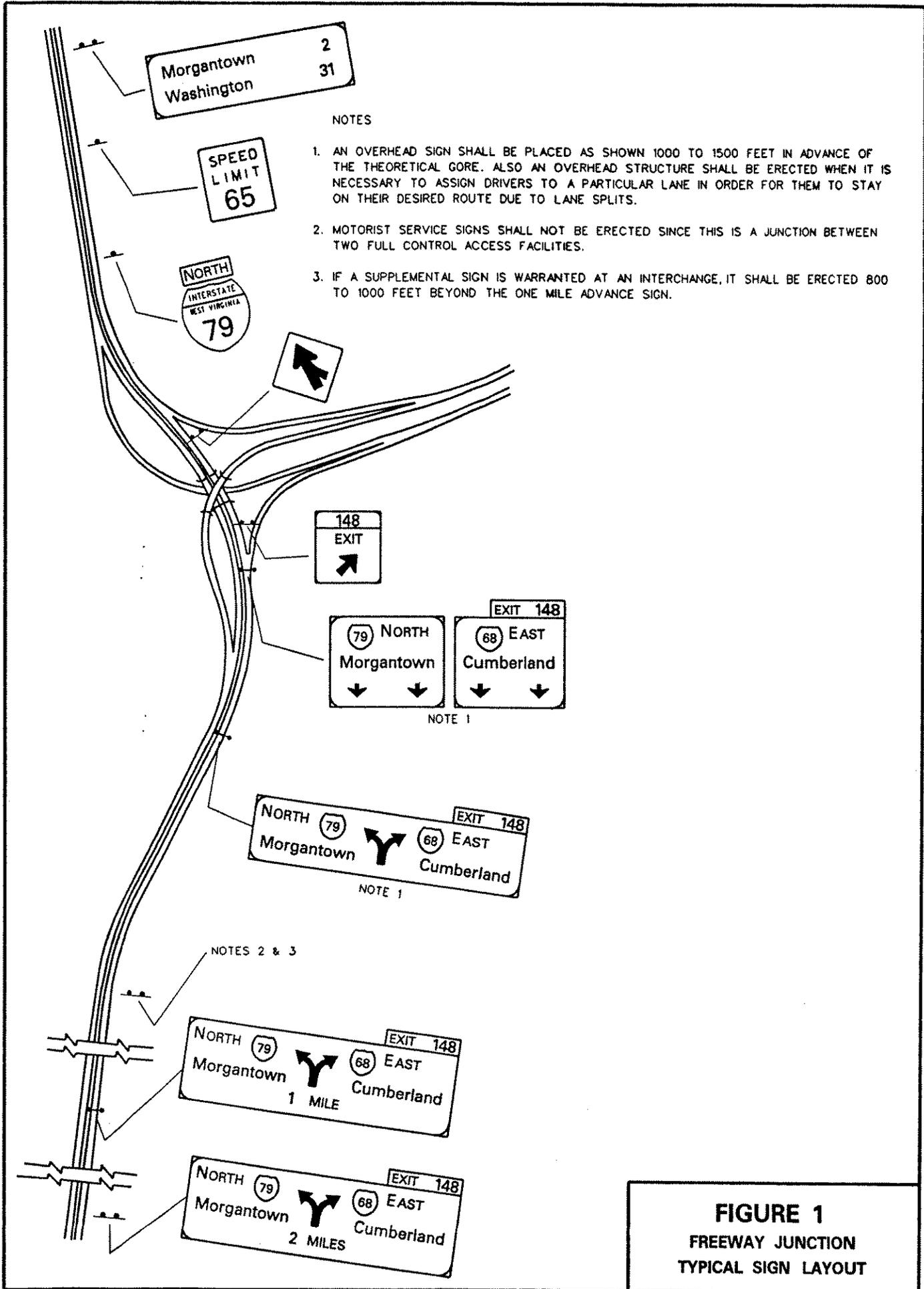
**27. Recreational Facility Sign**

Directional and destination signing for State Parks and State-sponsored attractions shall be in accordance with Traffic Engineering Directive #211 and shall have white legend on a brown background.

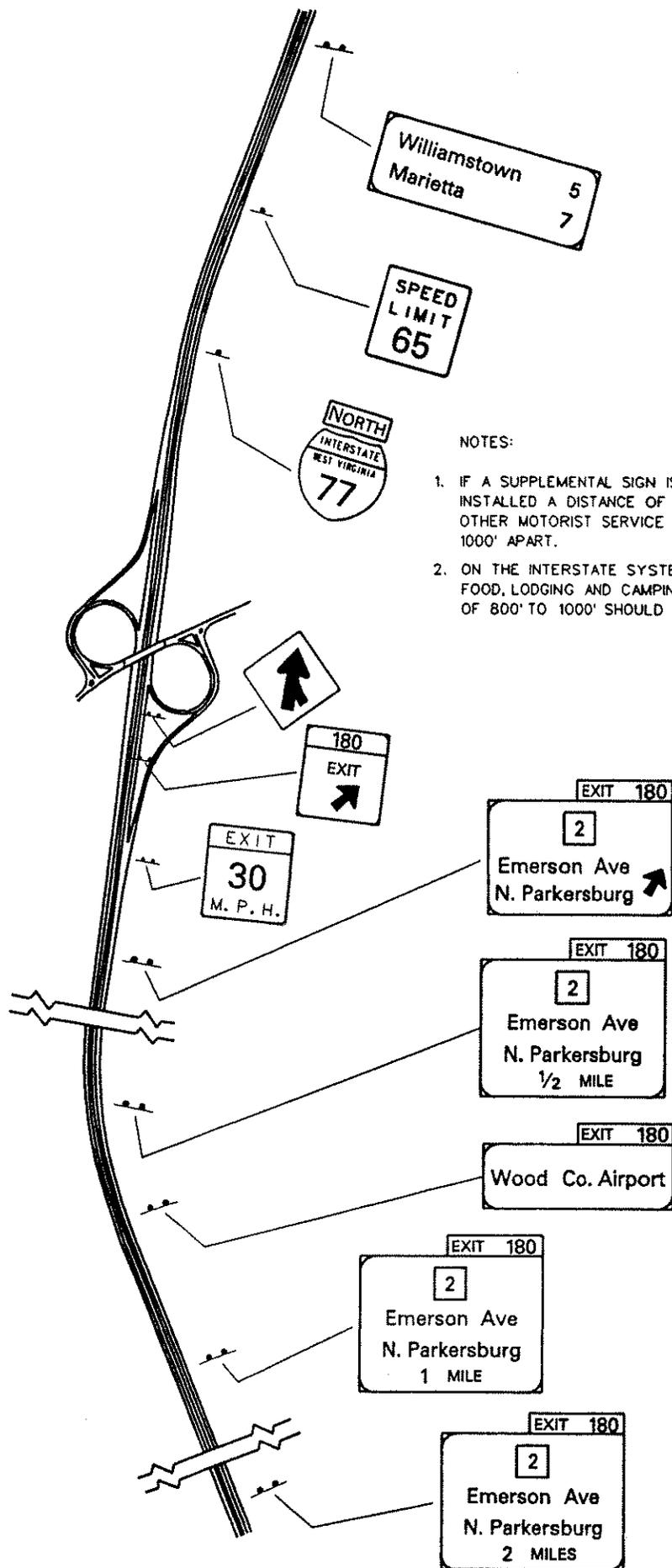
**28. Overhead Sign Installations**

Any one of the following factors may be used to evaluate the decision for using overhead signing at any location:

- a. traffic volume at or near capacity
- b. complex interchange design
- c. three or more lanes in each direction
- d. restricted sight distance
- e. closely spaced interchanges
- f. multilane exit ramps or roadways
- g. large percentage of trucks
- h. background of street lighting or outdoor advertising signs
- i. to maintain consistency of sign message locations throughout a series of interchanges
- j. insufficient lateral clearance for ground-mounted signs
- k. freeway junction (as defined herein)
- l. lane drops
- m. lefthand exit ramps
- n. high speed traffic



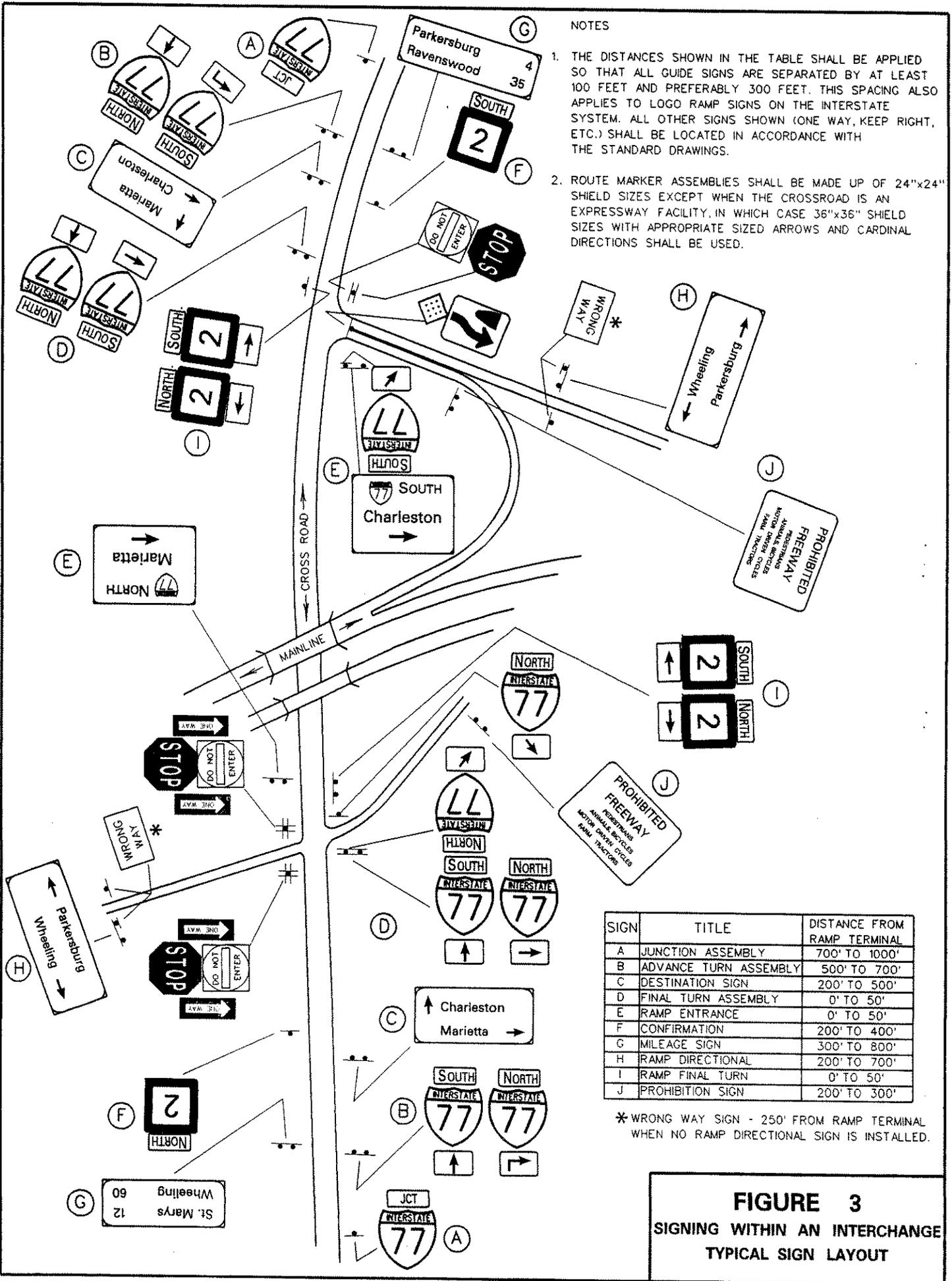
**FIGURE 1**  
**FREWAY JUNCTION**  
**TYPICAL SIGN LAYOUT**



NOTES:

1. IF A SUPPLEMENTAL SIGN IS WARRANTED AT AN INTERCHANGE, IT SHALL BE INSTALLED A DISTANCE OF 800' - 1000' IN ADVANCE OF THE 1 MILE SIGN OR ANY OTHER MOTORIST SERVICE SIGN. IT IS PREFERRED THAT SIGNS BE 800' TO 1000' APART.
2. ON THE INTERSTATE SYSTEM THERE MAY BE LOGO SIGNS PRESENT FOR GAS, FOOD, LODGING AND CAMPING. IN PLACING OTHER MAJOR GUIDE SIGNS A SPACING OF 800' TO 1000' SHOULD BE MAINTAINED FROM THESE LOGO SIGNS.

**FIGURE 2**  
**MAJOR OR INTERMEDIATE**  
**INTERCHANGE**  
**TYPICAL SIGN LAYOUT**



NOTES

1. THE DISTANCES SHOWN IN THE TABLE SHALL BE APPLIED SO THAT ALL GUIDE SIGNS ARE SEPARATED BY AT LEAST 100 FEET AND PREFERABLY 300 FEET. THIS SPACING ALSO APPLIES TO LOGO RAMP SIGNS ON THE INTERSTATE SYSTEM. ALL OTHER SIGNS SHOWN (ONE WAY, KEEP RIGHT, ETC.) SHALL BE LOCATED IN ACCORDANCE WITH THE STANDARD DRAWINGS.
2. ROUTE MARKER ASSEMBLIES SHALL BE MADE UP OF 24"x24" SHIELD SIZES EXCEPT WHEN THE CROSSROAD IS AN EXPRESSWAY FACILITY, IN WHICH CASE 36"x36" SHIELD SIZES WITH APPROPRIATE SIZED ARROWS AND CARDINAL DIRECTIONS SHALL BE USED.

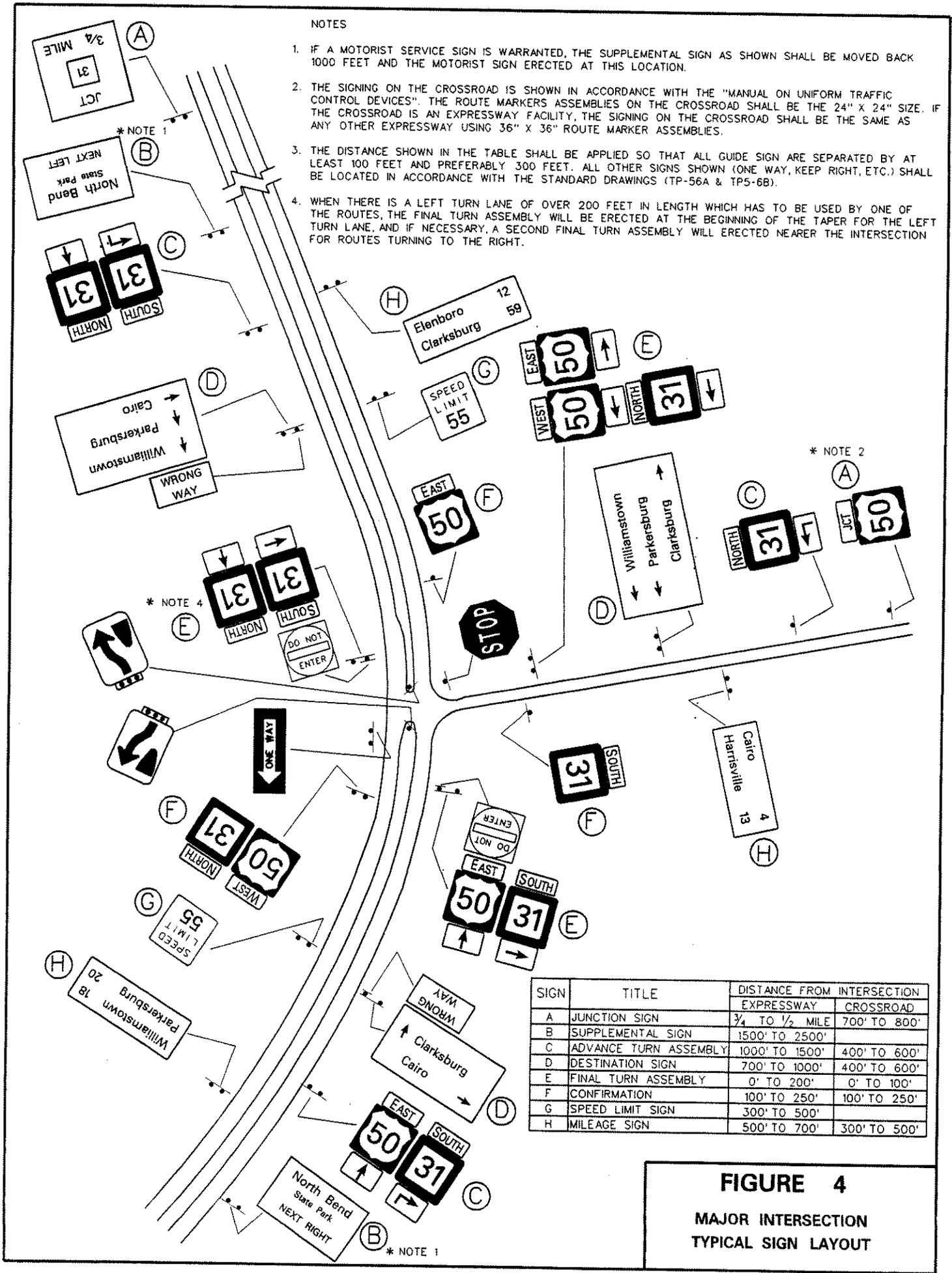
SIGN	TITLE	DISTANCE FROM RAMP TERMINAL
A	JUNCTION ASSEMBLY	700' TO 1000'
B	ADVANCE TURN ASSEMBLY	500' TO 700'
C	DESTINATION SIGN	200' TO 500'
D	FINAL TURN ASSEMBLY	0' TO 50'
E	RAMP ENTRANCE	0' TO 50'
F	CONFIRMATION	200' TO 400'
G	MILEAGE SIGN	300' TO 800'
H	RAMP DIRECTIONAL	200' TO 700'
I	RAMP FINAL TURN	0' TO 50'
J	PROHIBITION SIGN	200' TO 300'

\* WRONG WAY SIGN - 250' FROM RAMP TERMINAL WHEN NO RAMP DIRECTIONAL SIGN IS INSTALLED.

**FIGURE 3**  
SIGNING WITHIN AN INTERCHANGE  
TYPICAL SIGN LAYOUT

NOTES

1. IF A MOTORIST SERVICE SIGN IS WARRANTED, THE SUPPLEMENTAL SIGN AS SHOWN SHALL BE MOVED BACK 1000 FEET AND THE MOTORIST SIGN ERECTED AT THIS LOCATION.
2. THE SIGNING ON THE CROSSROAD IS SHOWN IN ACCORDANCE WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES". THE ROUTE MARKERS ASSEMBLIES ON THE CROSSROAD SHALL BE THE 24" X 24" SIZE. IF THE CROSSROAD IS AN EXPRESSWAY FACILITY, THE SIGNING ON THE CROSSROAD SHALL BE THE SAME AS ANY OTHER EXPRESSWAY USING 36" X 36" ROUTE MARKER ASSEMBLIES.
3. THE DISTANCE SHOWN IN THE TABLE SHALL BE APPLIED SO THAT ALL GUIDE SIGN ARE SEPARATED BY AT LEAST 100 FEET AND PREFERABLY 300 FEET. ALL OTHER SIGNS SHOWN (ONE WAY, KEEP RIGHT, ETC.) SHALL BE LOCATED IN ACCORDANCE WITH THE STANDARD DRAWINGS (TP-56A & TP5-6B).
4. WHEN THERE IS A LEFT TURN LANE OF OVER 200 FEET IN LENGTH WHICH HAS TO BE USED BY ONE OF THE ROUTES, THE FINAL TURN ASSEMBLY WILL BE ERECTED AT THE BEGINNING OF THE TAPER FOR THE LEFT TURN LANE, AND IF NECESSARY, A SECOND FINAL TURN ASSEMBLY WILL ERECTED NEARER THE INTERSECTION FOR ROUTES TURNING TO THE RIGHT.

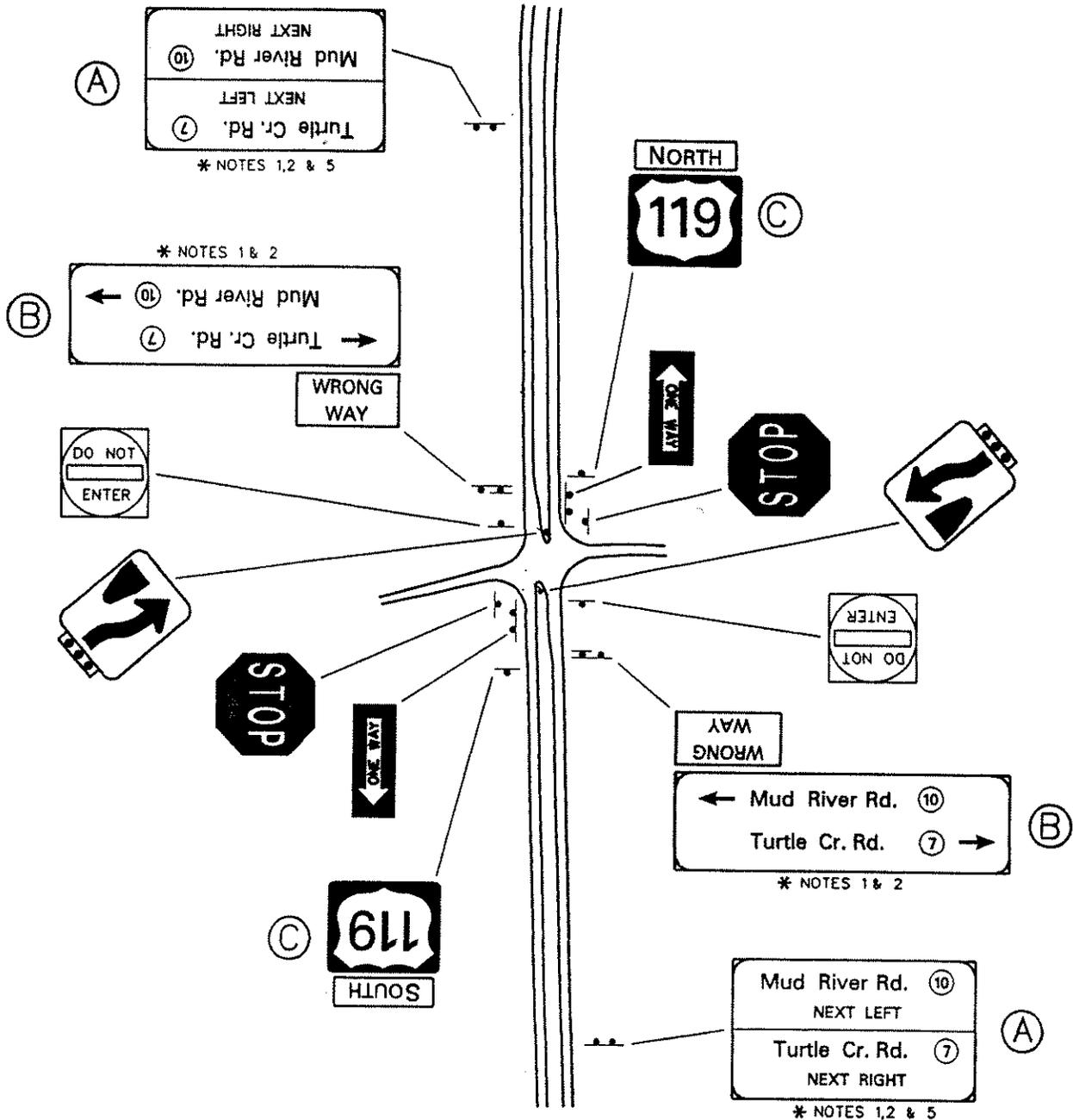


SIGN	TITLE	DISTANCE FROM INTERSECTION	
		EXPRESSWAY	CROSSROAD
A	JUNCTION SIGN	3/4 TO 1/2 MILE	700' TO 800'
B	SUPPLEMENTAL SIGN	1500' TO 2500'	
C	ADVANCE TURN ASSEMBLY	1000' TO 1500'	400' TO 600'
D	DESTINATION SIGN	700' TO 1000'	400' TO 600'
E	FINAL TURN ASSEMBLY	0' TO 200'	0' TO 100'
F	CONFIRMATION	100' TO 250'	100' TO 250'
G	SPEED LIMIT SIGN	300' TO 500'	
H	MILEAGE SIGN	500' TO 700'	300' TO 500'

**FIGURE 4**  
**MAJOR INTERSECTION**  
**TYPICAL SIGN LAYOUT**

NOTES

1. THE SIGNING LAYOUT IS FOR AN INTERSECTING ROADWAY WITH AN ESTIMATED TRAFFIC VOLUME BETWEEN 250 AND 1000 VEHICLES PER DAY. IF THE VOLUME IS LESS THAN 250, THE ADVANCE INTERSECTION SIGN AND CONFIRMATION ASSEMBLY ON THE EXPRESSWAY MAY BE ELIMINATED AS DISCUSSED IN SECTION V OF THIS MANUAL. IF THE TRAFFIC VOLUME IS GREATER THAN 1000, ADDITIONAL SIGNING SHALL BE ADDED AS DISCUSSED IN SECTION V.
2. THE SIGNING LAYOUT SHOWS AN INTERSECTION WITH TWO DIFFERENT LOCAL SERVICE ROUTES. IF THERE IS ONLY ONE LOCAL SERVICE ROUTE OR THE ROAD CROSSED THE EXPRESSWAY, THE LEGEND ON THE ADVANCE INTERSECTION AND INTERSECTION DIRECTION SIGNS SHALL BE ADJUSTED AS DISCUSSED IN SECTION VI PART 16 AND 17.
3. IF A SUPPLEMENTAL SIGN IS WARRANTED, IT SHALL BE ERECTED APPROXIMATELY 1000 FEET IN ADVANCE OF THE ADVANCE INTERSECTION SIGN.
4. ALL OTHER SIGNS SHOWN (ONE WAY, KEEP RIGHT, ETC.) SHALL BE LOCATED ACCORDANCE WITH THE STANDARD DRAWINGS.
5. IF THE INTERSECTION IS LOCATED WITHIN 1/4 MILE OR LESS OF ANOTHER INTERSECTION, THE ADVANCE INTERSECTION SIGN SHALL NOT BE INSTALLED.

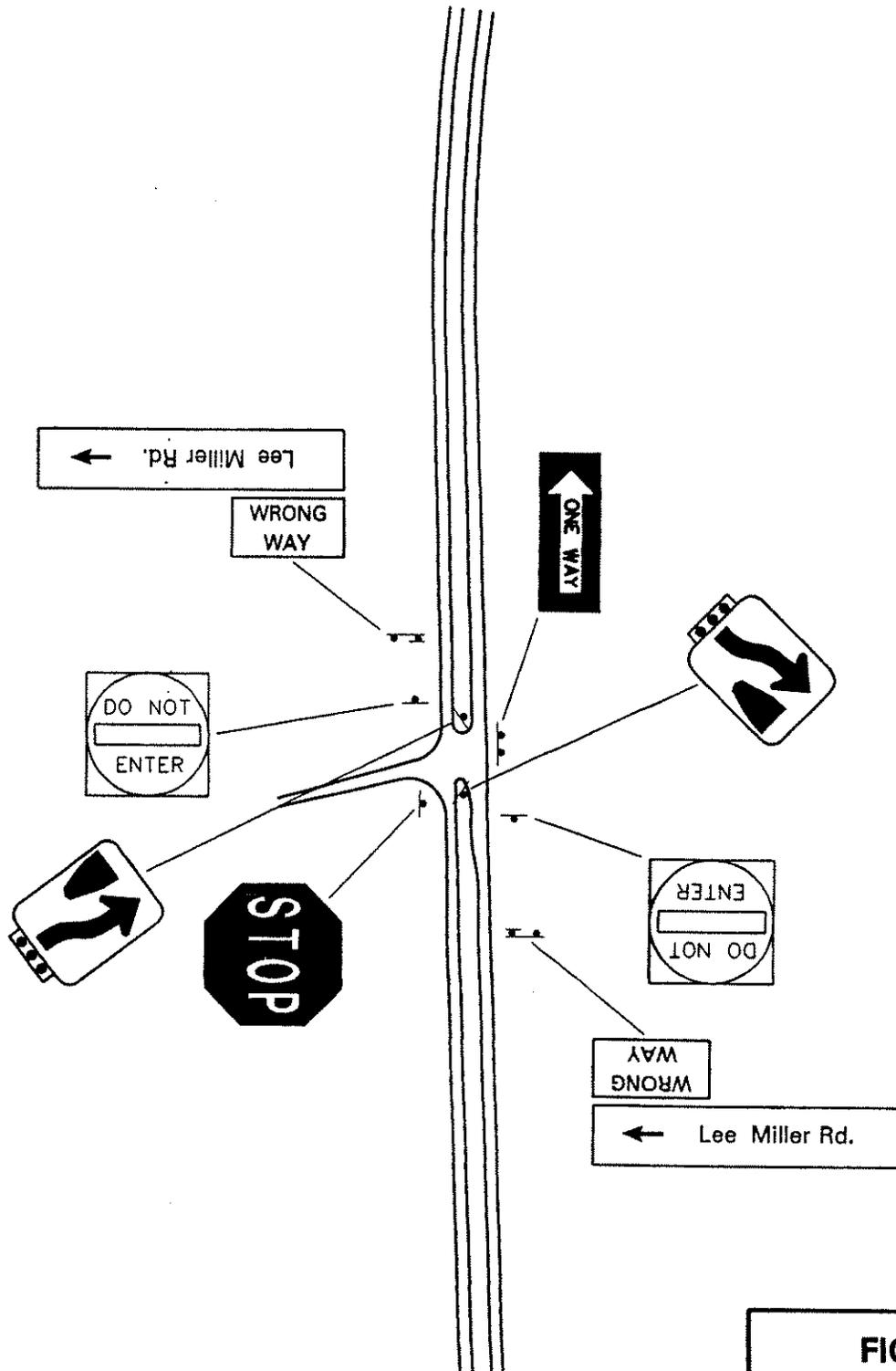


SIGN	TITLE	DISTANCE FROM CROSSROAD
A	Advance Intersection	800' to 1200'
B	Intersection Direction	100' to 300'
C	Confirmation	100' to 250'

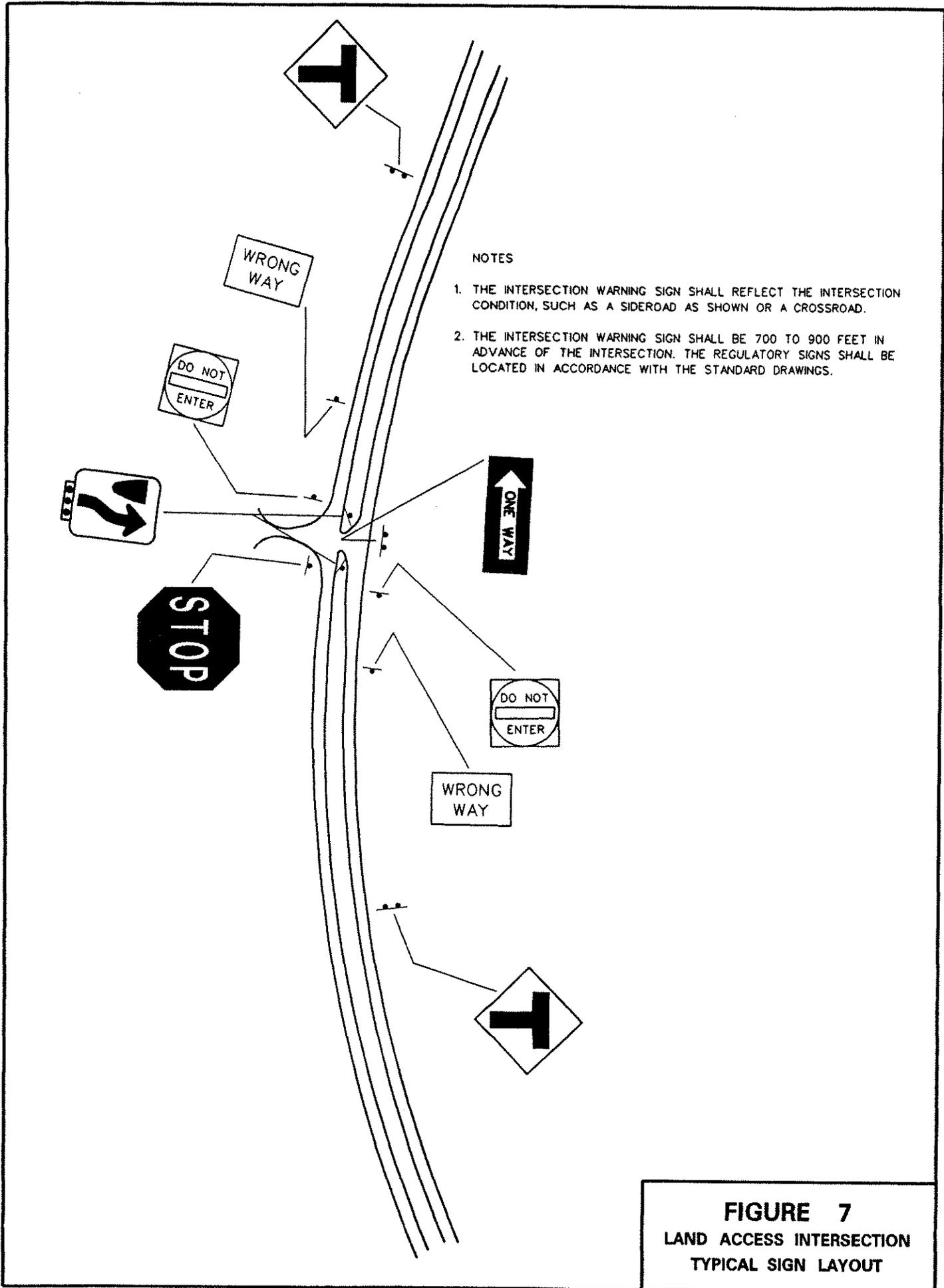
**FIGURE 5**  
INTERMEDIATE INTERSECTION  
TYPICAL SIGN LAYOUT

NOTES

1. THE INTERSECTION DIRECTION SIGN (LEE MILLER RD. IN THIS EXAMPLE) SHALL BE ERECTED 100 TO 300 FEET IN ADVANCE OF THE CROSSROAD.
2. IF WARRANTED IN A RURAL AREA ON PARTIAL CONTROL ACCESS EXPRESSWAY, A MOTORIST SERVICE SIGN SHALL BE ERECTED 800' TO 1200' IN ADVANCE OF THE CROSSROAD.
3. ALL OTHER SIGNS SHOWN (ONE WAY, KEEP RIGHT, ETC.) SHALL BE LOCATED IN ACCORDANCE WITH THE STANDARD DRAWINGS.



**FIGURE 6**  
MINOR INTERSECTION  
TYPICAL SIGN LAYOUT



**FIGURE 7**  
**LAND ACCESS INTERSECTION**  
**TYPICAL SIGN LAYOUT**

## Section VII - Regulatory Sign Use and Location

The following is a list of the most commonly used Regulatory Signs and how they should be used. Regulatory signs other than those specified may be required, such as NO PARKING signs; the MUTCD should be consulted for message, size and description of such signs. The sign design and standard number for all permissible regulatory signs may be found in the Fabrication Manual.

### 1. Speed Limit (R2-1)

A speed limit assembly should be located approximately 1,500 feet beyond the end of an acceleration lane at interchanges. The sign shall be erected 700 to 1,000 feet beyond the crossroad intersection with a State sign route. In rural areas with infrequent major intersections, the sign shall appear at least every five (5) miles. When speed zones are necessary along the route, signs for these zones, which include SPEED ZONE AHEAD and SPEED LIMIT XX signs, shall be erected in accordance with Figure 8. On fully or partially access-controlled facilities the sign panel size shall be 48-inch by 60-inch; on all other expressways, the sign panel size shall be 36-inch by 48-inch. A RADAR ENFORCED sign shall be used below the first speed limit sign on roads entering the State and below the first speed limit sign on roads as they enter counties or municipalities. When used, the RADAR ENFORCED sign shall be mounted on the same assembly with the speed limit sign and always below it.

### 2. No U Turn (R3-4)

Two signs, one facing each direction of travel, utilizing a back-to-back arrangement shall be located at each crossover used by the State Police or emergency and/or maintenance vehicles. The sign size shall be 24-inches by 24-inches. The signs shall also be located wherever there would be an apparent tendency for drivers to enter onto or cross over the median, such as at rest areas, etc. Where there is a traffic crossover in the

a traffic median, the NO U TURN signs shall be supplemented by an additional sign panel indicating AUTHORIZED VEHICLES ONLY (R8-12). This sign assembly shall be mounted at 45° to the roadway and shall be 24-inches by 24-inches in size and be back to back with the NO U TURN sign.

3. Slower Traffic Keep Right (R4-3)

This sign shall be used on four-lane sections where an up grade of 3% or more exists for 1/2 mile or more. This sign shall be erected just beyond the beginning of a multiple-lane pavement, and at selected locations on the median where there is a tendency of the motorist to drive in the left lane below the normal speed of traffic. This sign shall be used also in the sequence signing necessary for climbing lanes as shown in Figure 9. The sign size shall be 48-inches by 60-inches for fully and partially controlled-access facilities and 36-inches by 48-inches for all others.

4. Truck Lane 500 Feet (R4-6)

The signing for a truck lane shall be as shown in Figure 9. The sign size for fully and partially controlled-access facilities shall be 48-inches by 60-inches and 36-inches by 48-inches for all others.

5. Keep Right (R4-7)

A symbolic KEEP RIGHT sign shall be erected at the ends of medians, parkways, loading islands, and refuge islands, at traffic islands, and at underpass piers, where traffic is required to keep to the right. Where a median begins on an expressway, a 48-inch by 60-inch or 36-inch by 48-inch KEEP RIGHT sign will be erected within 50 feet of the median end and perpendicular to approaching traffic. At intersections where there are medians, a 24-inch by 30-inch KEEP RIGHT sign will be erected at 45° angle to face traffic turning left from a side road which has to go to the right of the median. Consult the typical detail sheets for Regulatory Sign Placement on Divided Highways in the Standard Drawings for more information.

6. One Way (R6-1), Wrong Way (R5-1a) and Do Not Enter (R5-1)

These signs shall be erected at ramp terminals as shown in Figure 3. At intersections, these signs shall be erected as shown in the Standard Drawings on the typical detail sheets for Regulatory Sign Placement on Divided Highways.

7. Stop (R1-1)

A 36-inch by 36-inch STOP sign shall be erected at ramp terminals and at crossroads entering an expressway unless there is a traffic signal or a yield condition. Consult the typical detail sheets for Regulatory Sign Placement on Divided Highways in the Standard Drawings.

8. Yield (R1-2)

If traffic turning right at an intersection is separated by a right-turn channelization island, consideration should be given to the use of a 36-inch by 36-inch YIELD sign to control this right-turn traffic. The sign would be erected on the right near the location where the driver would have to hesitate in order to determine whether or not he can enter the traffic stream. If there is an adequate acceleration lane for traffic turning right onto a roadway, then neither a YIELD nor a STOP shall be needed.

9. Prohibited on Freeway (R5-5F)

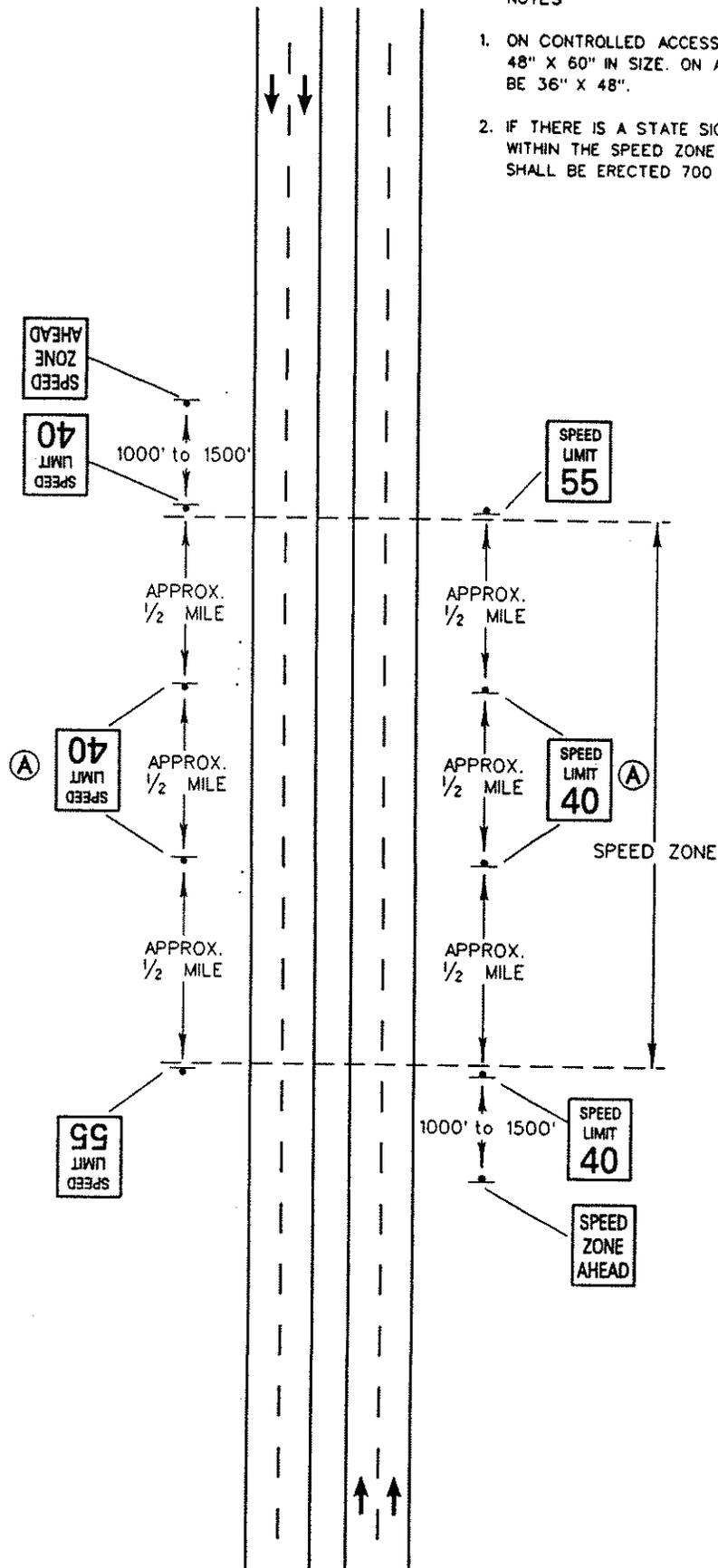
This sign prohibits pedestrians, animals, bicycles, motor-driven cycles, and farm tractors on a fully controlled-access expressway. It is to be erected on the right side of all entrance ramps approximately 200 to 300 feet from the crossroad intersection.

10. Emergency Stopping Only (R8-7)

This 48-inches by 36-inches sign should be used on expressway and freeway a short distance beyond an interchange entrance and at random intervals as needed, where scenic or other attractions create a tendency for the motorist to stop temporarily, and no turnout or rest area has been provided. At least one sign is recommended between two interchanges if location permits and does not conflict with other signs.

NOTES

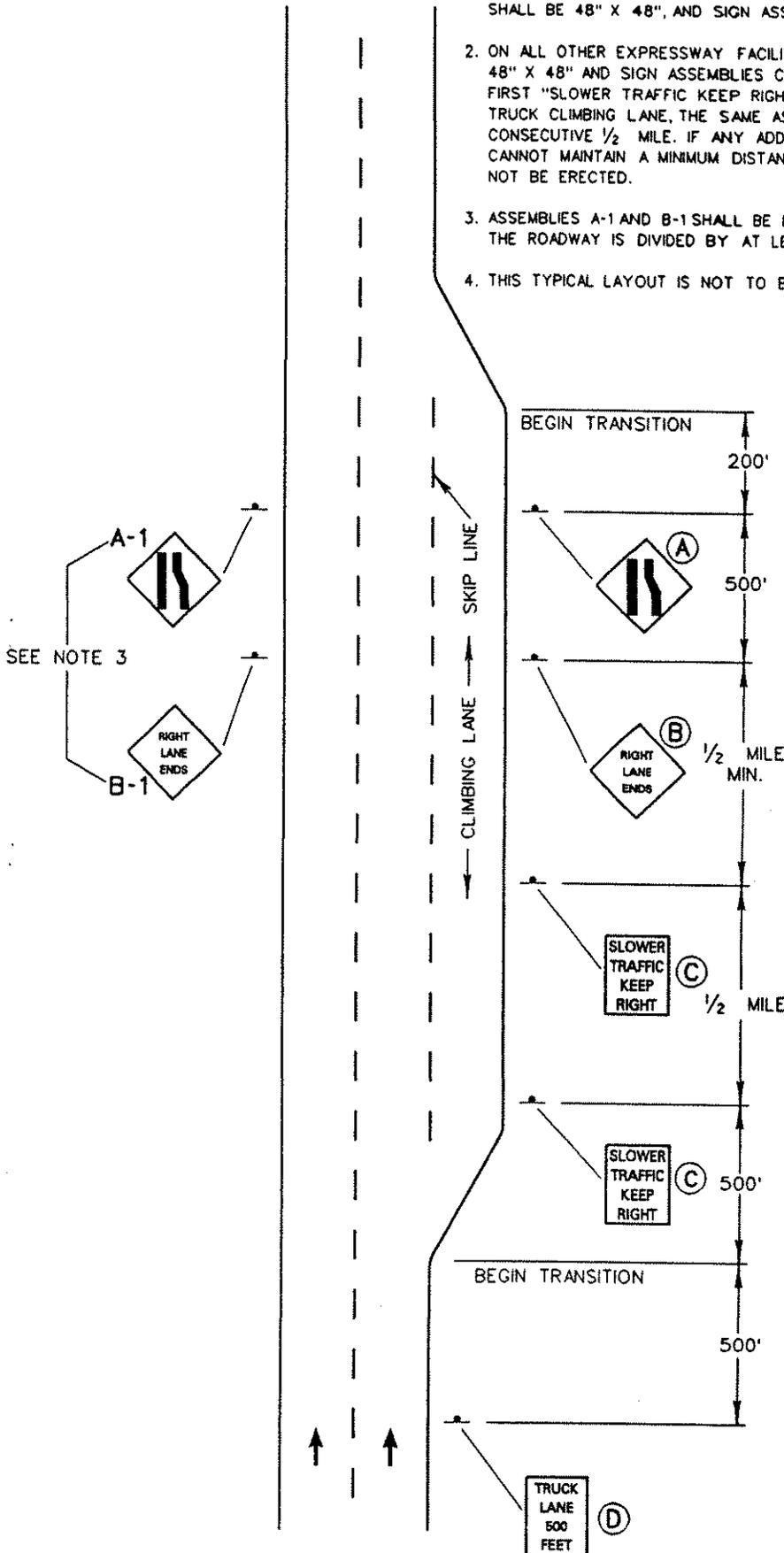
1. ON CONTROLLED ACCESS EXPRESSWAY FACILITIES, ALL SIGNS SHALL BE 48" X 60" IN SIZE. ON ALL OTHER EXPRESSWAYS THE SIGN SIZES SHALL BE 36" X 48".
2. IF THERE IS A STATE SIGNED ROUTE INTERSECTING THE EXPRESSWAY WITHIN THE SPEED ZONE AREA THEN A SPEED LIMIT SIGN (ASSEMBLY A) SHALL BE ERECTED 700 TO 1000 FEET BEYOND THE INTERSECTION.



**FIGURE 8**  
SIGNING FOR SPEED LIMITS  
AND SPEED ZONES  
TYPICAL SIGN LAYOUT

NOTES

1. ON CONTROLLED ACCESS EXPRESSWAY FACILITIES SIGN ASSEMBLIES A AND B SHALL BE 48" X 48", AND SIGN ASSEMBLIES C AND D SHALL BE 48" X 60".
2. ON ALL OTHER EXPRESSWAY FACILITIES SIGN ASSEMBLIES A AND B SHALL BE 48" X 48" AND SIGN ASSEMBLIES C AND D SHALL BE 36" X 48". AFTER THE FIRST "SLOWER TRAFFIC KEEP RIGHT" SIGN IS ERECTED AT THE BEGINNING OF THE TRUCK CLIMBING LANE, THE SAME ASSEMBLY C SHALL BE ERECTED EVERY CONSECUTIVE 1/2 MILE. IF ANY ADDITIONAL "SLOWER TRAFFIC KEEP RIGHT" SIGN CANNOT MAINTAIN A MINIMUM DISTANCE OF 1/2 MILE FROM ASSEMBLY B, IT SHALL NOT BE ERECTED.
3. ASSEMBLIES A-1 AND B-1 SHALL BE ERECTED ON THE LEFT SIDE OF THE ROADWAY IF THE ROADWAY IS DIVIDED BY AT LEAST A 4 FT. MEDIAN.
4. THIS TYPICAL LAYOUT IS NOT TO BE USED AT THE END OF AN ACCELERATION LANE.



**FIGURE 9**  
SIGNING FOR TRUCK CLIMBING LANE  
TYPICAL SIGN LAYOUT

## Section VIII - Warning Sign Use and Location

The following is a list of the most commonly used warning signs and how they should be used on highways. Warning signs other than those specified may be required, such as HILL signs, and the MUTCD should be consulted for message, size and description of such signs. The sign design and standard number for all permissible warning signs may be found in the Fabrication Manual.

1. Merging Traffic (W4-1)

A 48-inch by 48-inch symbolic sign shall be erected on the through roadway approximately 500 feet in advance of the acceleration-lane gore where a grade separation design applies.

2. Lane Ends (W9-1) and Pavement Width Transition (W4-2)

These 48-inch by 48-inch signs shall be used to give advance notice of a reduction in the number of travel lanes, such as the end of climbing lanes, and transition from a four-lane to two-lane roadway. They shall be used as shown in Figures 9 and 10.

3. Divided Highway Ends (W6-2) and Divided Highway Begins (W6-1)

These symbolic 48-inch by 48-inch signs shall be used to warn traffic approaching or leaving a four-lane section of roadway which has a median. Divided Highway Ends symbol shall be used as shown in Figure 10 and the Divided Highway Begins symbol shall be used approximately 800 to 1,200 feet in advance of the beginning of the median.

4. Side Road (W2-2) or Crossroad (W2-1)

These 48-inch by 48-inch symbolic signs shall be used on a through highway to indicate the presence of an obscured crossroad intersection and also on partially controlled-access expressways in advance of Land Access intersections as previously mentioned. On all other expressways, the use of these signs on the expressway shall be limited to indicate the presence of a crossroad intersection which has insufficient sight distance for the through motorist to see an entering vehicle and come to a safe stop. They shall not ordinarily be used where there are other advance guide signs or warning signs that indicate the presence of the crossroad.

5. Exit Warning

The driver, when exiting from a high-speed roadway onto a ramp, needs to be given some warning of the roadway conditions he/she may expect to find on that ramp or at the ramp terminal. To accomplish this, there are several alternative signs. The most common sign is the 48-inch by 60-inch EXIT SPEED sign (W13-2) which shall be used when the roadway geometric operating conditions indicate the necessity of advising the driver of a maximum safe operating speed on the ramp. These conditions may involve restricted stopping sight distance caused by a vertical or horizontal curvature and/or similar conditions. In the case of an extreme horizontal curvature, such as a driver would encounter in a loop ramp, the EXIT SPEED sign should be replaced with a 48-inch by 48-inch RAMP CURVE sign (W1-9) with a 24-inch by 24-inch ADVISORY SPEED LIMIT sign (W13-1) relating to the safe operating speed of the loop. Placement of both type signs will be as shown on Standard Drawing TE15-1. On exit ramps which are relatively straight, an exit speed sign shall be replaced by a 48-inch by 48-inch STOP AHEAD sign (W3-1a). The STOP AHEAD sign should be placed as shown in Standard Drawing TE15-1 where it is related to the placement of the exit gore sign; however, on long exit ramps, the STOP AHEAD sign should not be placed further than 1,000 feet from the STOP sign. On exit ramps with traffic signals controlling the ramp terminal, a 48-inch by 48-inch SIGNAL AHEAD (W3-3) sign shall be used in lieu of the STOP AHEAD sign. If required, both an EXIT SPEED sign and SIGNAL AHEAD sign can be erected. On exit ramps with simple horizontal curves that cause exit speeds of 30 MPH or less, a 48-inch by 24-inch warning turn arrow (W1-6) shall be located on the outside of the curve to warn the motorist.

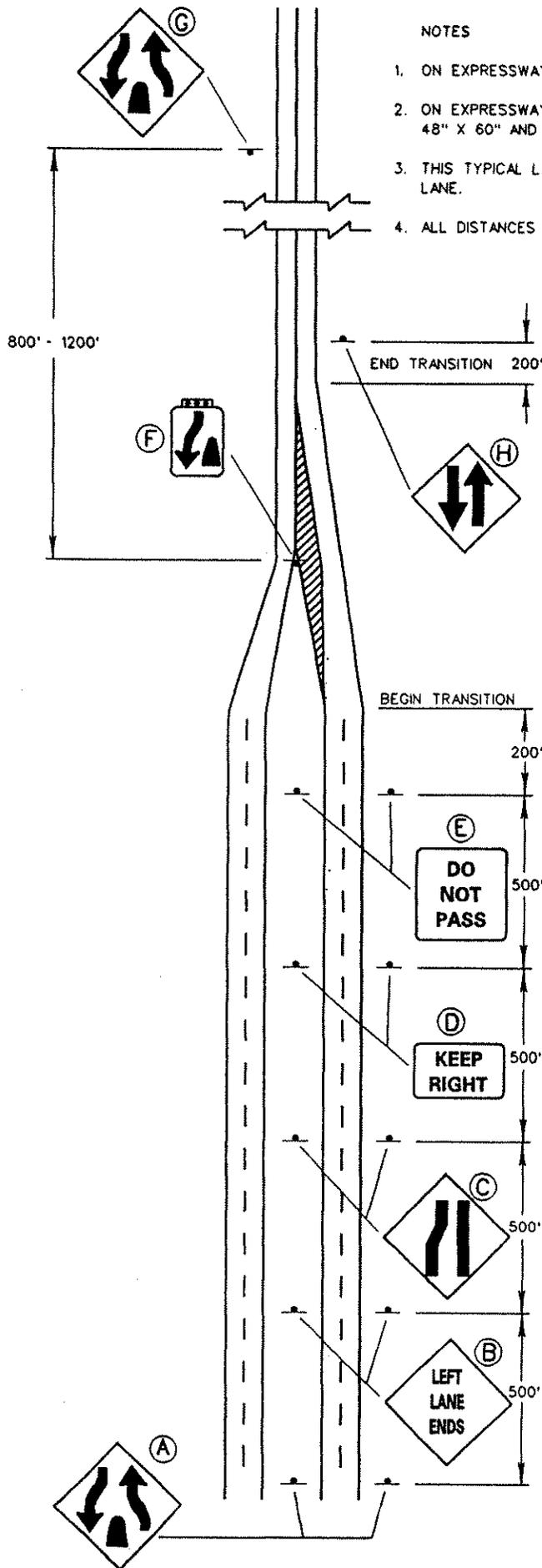
6. Curve and Turn Warning

On the mainline of an expressway or freeway, it may be necessary at times to erect warning signs for horizontal curves. These signs shall be erected when the safe operating speed of the curve is less than the legally posted speed limit. A CURVE WARNING sign (W1-2) shall be used on all curves

between 35 MPH and 60 MPH. These signs shall be 48-inch by 48-inch and where possible on four-lane facilities, a second sign shall be installed in the median to supplement the sign on the righthand side of the road. All curve signs shall have advisory speed plates (W13-1) which are 24-inch by 24-inch. The speed on these curves will be in five (5) mile increments and the appropriate speed will be determined by the degree of curvature and superelevation of the horizontal curve being marked. With curves having safe operating speeds of less than 35 MPH, a TURN sign shall be used (W1-1) and it will be installed similar to the curve sign. Location shall be as shown in Standard Drawing TE5-4.

7. Delineators

Delineators shall be located along the entire length of fully and partially controlled-access expressways. On the through roadway, single crystal delineators shall be located on 300-foot centers on tangents. On curves, the spacing of delineators in advance and in the curve shall be determined by the table shown on TE11-1 in the Standard Drawings. On the through roadway of other type expressways, single crystal delineators will be erected on the outside of curves of 2° or greater in advance and in the curve. Within interchange areas and left-turn lanes, amber and crystal delineators shall be located as shown in Standard Drawings on TE11-3 and TE11-4. Three-unit amber delineators (XR-3) shall be erected below KEEP RIGHT signs located at median opening for crossroad openings and on the top of any median or channelization island even though it may not have a KEEP RIGHT sign. Nine-unit amber delineators (XR-9) shall be erected below a KEEP RIGHT sign located where a median begins. (See TE11-1 and TE11-2 in the Standard Drawings.) Object Markers (XS-2R and XS-2L) 12-inch by 36-inch shall be erected at the edge of the end of bridges and bridge piers for delineation in accordance with TP5-2 in the Standard Drawings. However, they shall not be needed on bridges with full shoulder width.



NOTES

1. ON EXPRESSWAY FACILITIES, ASSEMBLIES A, B, C, G, AND H SHALL BE 48" X 48".
2. ON EXPRESSWAYS ASSEMBLY F SHALL BE 48" X 60", ASSEMBLY E SHALL BE 48" X 60" AND ASSEMBLY D SHALL BE 36" X 36".
3. THIS TYPICAL LAYOUT IS NOT TO BE USED AT THE END OF AN ACCELERATION LANE.
4. ALL DISTANCES BETWEEN SIGNS ARE MINIMUM AND PREFERABLE.

**FIGURE 10**  
SIGNING FOR LANE TRANSITION  
AND BEGIN & END DIVIDED HIGHWAY  
TYPICAL SIGN LAYOUT

Section IX - Service Signs

1. Interchanges (Partially Controlled Facilities)

Advance Service Signs (E10) shall be located 800 to 1,000 feet beyond the EXIT 1 MILE sign and shall list the appropriate services with NEXT RIGHT. Symbol Service Signs 24-inches by 24-inches with appropriate Final Turn Arrows 15-inches by 21-inches shall be mounted below the Ramp Directional Sign.

2. At-Grade Intersections

On partially controlled facilities service signing for "at-grade" intersections shall be the following:

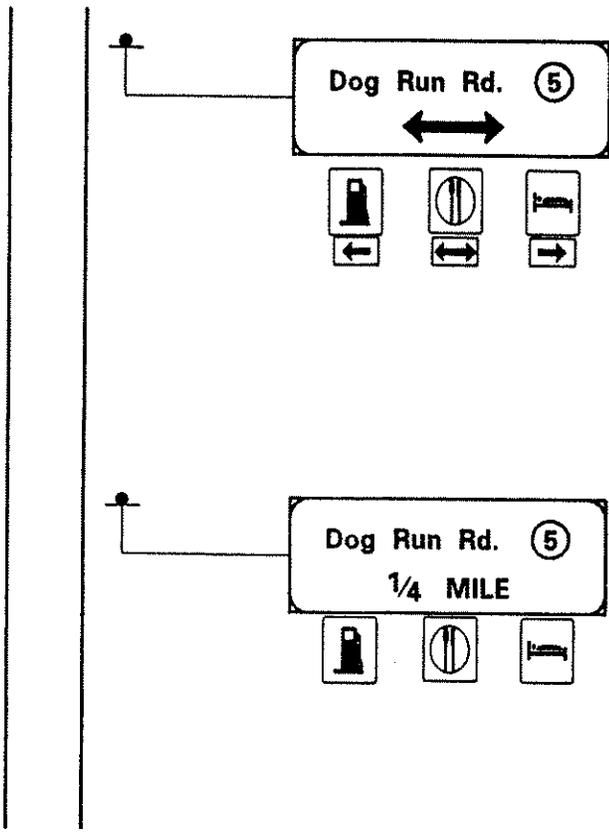
- a. Intersections containing Advance Intersection and Intersection Direction Signs - Symbol Service Signs 24-inches by 24-inches with appropriate Final Turn Arrows 15-inches by 21-inches shall be mounted below the Intersection Direction sign. Symbol Service Signs 30-inches by 30-inches shall be mounted below the Advance Intersection Sign.
- b. Intersections containing Destination Signs with WV or US Numbered Routes - Symbol Service Signs 24-inches by 24-inches with appropriate Final Turn Arrows 15-inches by 21-inches shall be mounted below the green and white Destination Signs. Approximately 1/2-mile from intersection, an Advance Expressway Service Symbol Sign (E10-a) with appropriate symbols shall be erected.
- c. Intersections with WV or US Numbered Routes that do not contain Destination Signs - A separate assembly containing Symbol Service Signs 24-inches by 24-inches with appropriate Final Turn Arrows 15-inches by 21-inches shall be erected approximately 300 feet in advance of the Final Turn Route Assembly. Approximately 1/2-mile from intersection, an Advance Expressway Service Symbol Sign (E10-a) with appropriate symbols shall be erected.

- d. Intersections that contain no Route Numbers Assemblies, Destination Signs nor Road Names - Symbol Service Signs 24-inches by 24-inches with appropriate Final Turn Arrows 15-inches by 21-inches shall be erected 200 to 400 feet in advance of the intersection. Approximately 1/2-mile from intersection, an Advance Expressway Service Symbol Sign (E10-a) with appropriate symbols shall be erected.

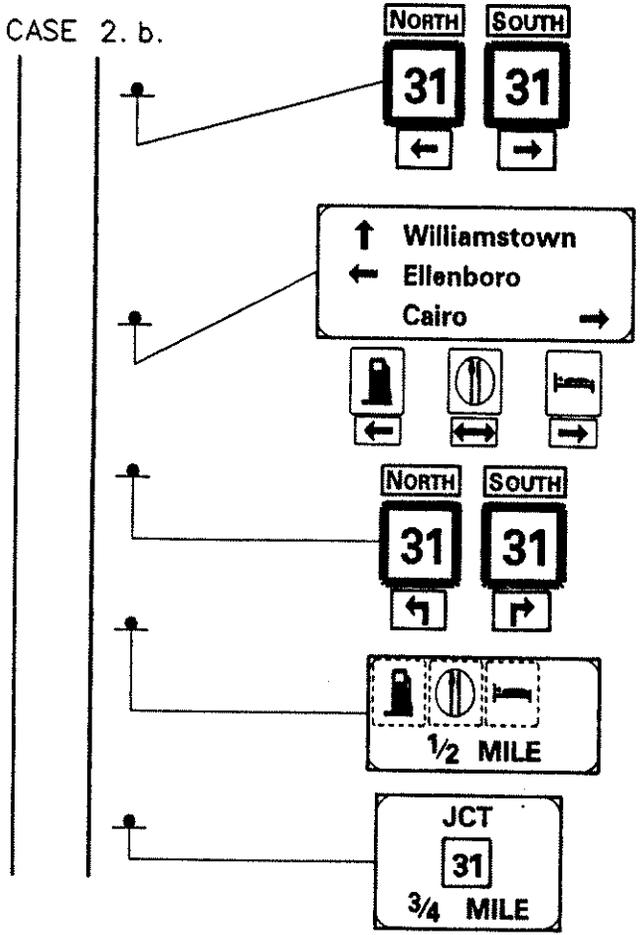
If more than four services exist at any one intersection involving "b," "c" or "d," then an Advance Service Sign (E10) containing a word message shall be used in place of the Advance Service Symbol Sign (E10-a). See Traffic Engineering Directive 218 for more information in determining services to be signed.

# AT GRADE INTERSECTIONS

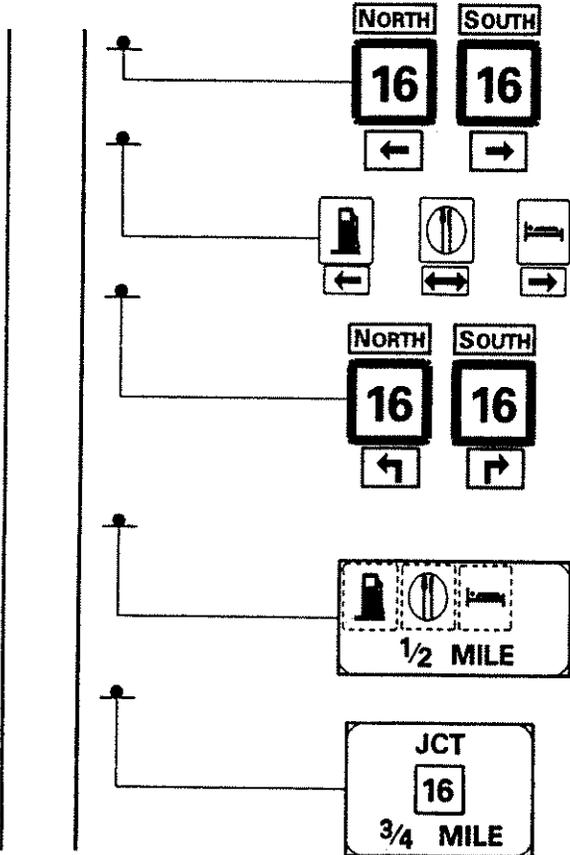
CASE 2. a.



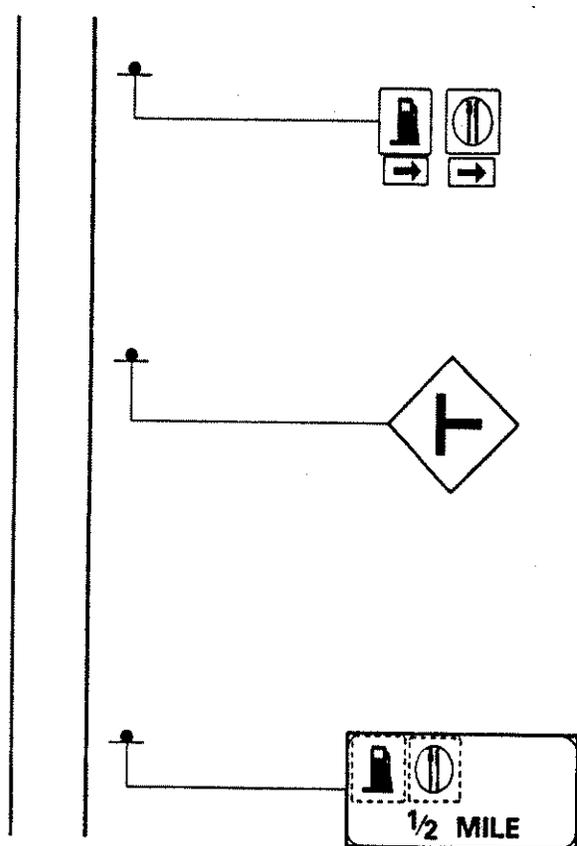
CASE 2. b.



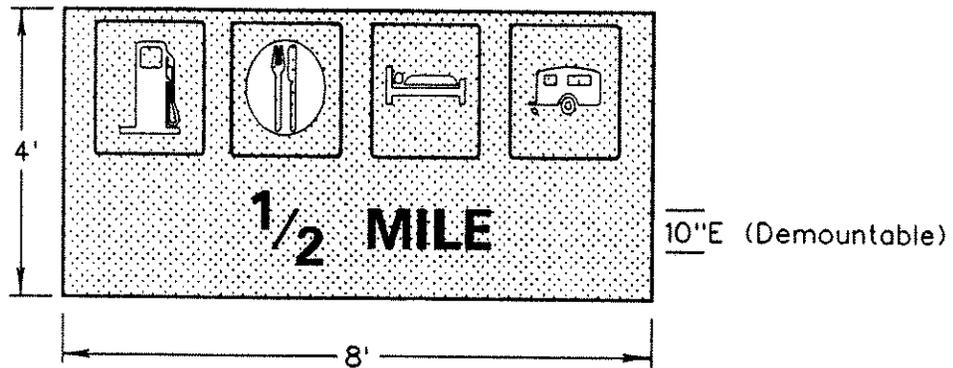
CASE 2. c.



CASE 2. d.



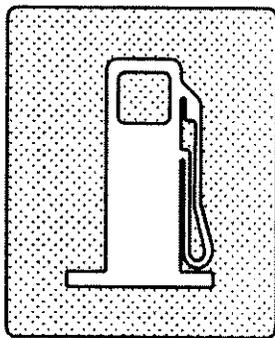
**ADVANCE EXPRESSWAY SERVICE SIGN  
(E10-a)**



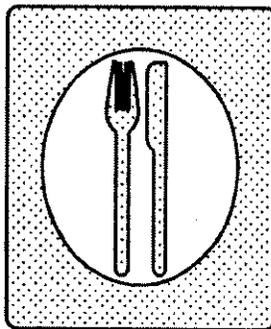
Flat Sheet Sign  
Blue Reflectorized Background

Symbols to be attached to E10-a. Symbols to be 0.04" Gauge Aluminum with no border. See SIGN FABRICATION MANUAL for details.

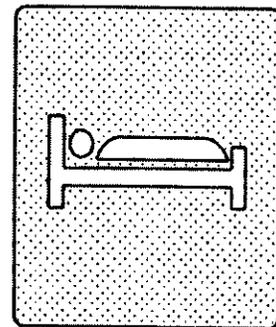
D9-7a



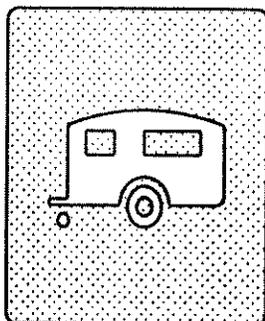
D9-8a



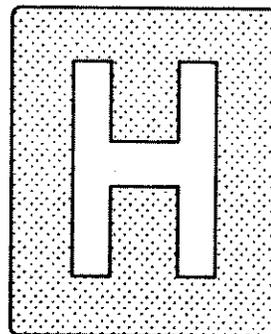
D9-9a



D9-3ab



D9-2a



## Section X - Design of Signs

A preliminary plan showing the general location of all guide and information signs shall be submitted for the Division of Highways approval of message, content and location prior to the preparation of detailed sign drawings.

Messages for all signs, except guide and information signs, shall be as specified in the Fabrication Manual or other detailed sign drawings prepared by the Division of Highways. All designs for guide and information signs shall conform to the guidelines included herein.

The first step in the sign design is to determine the copy size of the legend. This can be done by using Tables I, II, or III on Letter, Numeral and Arrow Sizes for Guide Signs which follow this section. After determining legend size, the length of the message can be calculated by using North Carolina Sign Design program. The determination of sign text layout can be done by use of the Rules for Sign Text Spacing in Appendix B. Margins, borders and border radii shall be determined from Sign Margins, Borders and Corner Radius (see Appendix B).

Sign panels shall be designed in vertical increments of twelve inches and horizontal increments of six inches. Careful consideration shall be given to the message arrangement of multimessage signs to minimize the total sign area. Sign panels shall be fabricated from the materials specified by the Division of Highways. Route markers, regulatory and warning signs shall have a reflective background; all guide and information signs shall have reflective background as specified by the Division of Highways.

All guide signs with legend size of 8"/6" or greater shall have demountable legend and shall be made of panels. When using a smaller legend size, such as 6"/4-1/2", flat sheet shall be used. All regulatory and warning signs shall be on flat sheet material, unless a special design produces a sign greater than 12 feet in width. If any sign is greater than 12 feet in width, it shall be made from panels and demountable legend shall be used.

In general, white demountable legend shall be plain (reflective) or contain crystal reflectors, and black demountable legend shall be plain, i.e., contain no reflectors.

The Estimate and Summary of Quantities shall be prepared after sign design has been completed. The Estimate of Quantities sheet shall have the assembly number of each individual sign assembly. This will be followed by a sign number which will list every sign in the assembly and then the location will be given. Also, the outside dimensions and square footage of each sign will be shown. The square footage will be broken up into panel and flat sheet.

The Estimate and Summary of Quantities sheet shall also include delineators, as necessary.

## Section XI - Sign Support

Sign supports, both overhead and roadside, shall be designed in accordance with Division of Highways Standard Specifications and Standard Drawings and the requirements of the AASHTO Support Specifications. Supports shall be designed using ASTM A572 GR 50(M270GR50) for structural breakaway members with fuse plates regardless of whether behind guardrail or not.

### A. Ground-Mounted Sign Supports

The type of supports used shall be as follows:

1. All ground-mounted guide and information signs greater than 40 square feet shall be erected on wide-flange breakaway supports.
2. All route markers shall be erected on U-channel posts, breakaway pipe or breakaway wide-flange supports.
3. All exit gore signs shall be mounted on breakaway supports.
4. Warning and regulatory signs shall be erected on U-channel posts, breakaway pipe or breakaway wide-flange supports.

The size of ground supports may be determined from the Standard Drawings based on using U-channels, wide flanges, and square footage and shall be entered on the Estimate and Summary of Quantities Sheet.

### B. Overhead Sign Supports

The design of overhead sign supports shall be in accordance with Division of Highways Standard Drawings and be based on the use of tubular structural members of galvanized steel or aluminum conforming to Division of Highways Standard Specifications and should be a type available from experienced fabricators of overhead structures. A special design shall not be used without prior approval from the Division of Highways.

All overhead sign structures shall be protected by guardrail, or other suitable barrier. Whenever possible, sign locations should be adjusted to take advantage of existing guardrail or, if this is not possible, short lengths of guardrail should be installed to protect the overhead structure. The length of guardrail shall be in conformance with Division of Highways Standard Details Volume 1 and Division of Highways Design Directive DD-16-5 in order to develop maximum strength of the rail.

A schematic drawing of the overhead sign structure and guardrail details shall be included with the contract plans.

Where overhead sign structures are to be mounted on bridges, use pilasters.

C. Footings

All breakaway wide-flange supports shall be embedded as shown on the Standard Drawings. All other single posts shall normally be embedded directly in earth.

Design of footings for all roadside mounted signs shall be as indicated on the Standard Drawings prepared by the Division of Highways. For overhead structures, footings shall be designed in accordance with the Standard Drawings to accommodate the type of structure used. Estimate of foundation size and the amount of concrete shall be included in the Estimate and Summary of Quantities Sheets.

D. Sign Lighting

All guide signs which are erected over the roadway shall be illuminated whenever possible by means of external illumination. All overhead signs shall be illuminated according to WV Division of Highways Standard Specifications by 250 watt mercury vapor lamp in both urban and rural areas.

All electrical equipment, wiring, materials, and their manner of installation is to conform to the latest requirements of the National Electrical Code, Division of Highways Standard Specifications and all applicable local ordinances. All details concerning power supply shall be coordinated with the local power company by persons preparing sign plans. All wiring within the controlled-access right-of-way shall be underground or inside of the sign supports. Adequate safety fusing for sign lighting shall be provided.

Operation of the luminaires for each structure shall be controlled by an individual overhead sign photoelectric light controller or by the one controlling adjacent roadway luminaires, whichever is the more economical and feasible.

The Summary of Quantities Sheet shall show a bid item for each sign lighting installation. The number and spacing of luminaires shall be shown on the overhead sign schematic. This information may be obtained from the Standard Specifications.

**TABLE I**  
**LETTER AND NUMERAL SIZES FOR GUIDE SIGNS**  
**USED AT INTERCHANGES**

**A. ADVANCE GUIDE, EXIT DIRECTION AND OVERHEAD SIGNS\***

	<u>FREEWAY</u> <u>JUNCTION</u>	<u>MAJOR</u>	<u>INTERMEDIATE</u>	<u>ALL</u> <u>OVERHEADS</u>
<b>1. EXIT PANEL</b>				
WORD . . . . .	10"E . . . . .	10"E . . . . .	10"E . . . . .	10"E . . . . .
NUMERAL . . . . .	15"E . . . . .	15"E . . . . .	15"E . . . . .	15"E . . . . .
LETTER . . . . .	15"E . . . . .	15"E . . . . .	15"E . . . . .	15"E . . . . .
<b>2. ROUTE MARKER-SHIELD</b>				
1 or 2 DIGIT . . . . .	48" x 48" . . . . .	36" x 36" . . . . .	36" x 36" . . . . .	36" x 36" . . . . .
3 DIGIT . . . . .	60" x 48" . . . . .	45" x 36" . . . . .	45" x 36" . . . . .	45" x 36" . . . . .
<b>3. CARDINAL</b>				
WORD . . . . .	18"E/15"E . . . . .	18"E/15"E . . . . .	15"E/12"E . . . . .	15"E/12"E . . . . .
<b>4. NAME OF PLACE, ST. or HIGHWAY</b>				
WORD . . . . .	20"/15" . . . . .	20"/15" . . . . .	16"/12" . . . . .	16"/12" . . . . .
<b>5. DISTANCE</b>				
NUMERAL . . . . .	18"E . . . . .	18"E . . . . .	15"E . . . . .	15"E . . . . .
FRACTION . . . . .	12"E . . . . .	12"E . . . . .	10"E . . . . .	10"E . . . . .
WORD . . . . .	12"E . . . . .	12"E . . . . .	10"E . . . . .	10"E . . . . .
<b>6. ARROW</b>				
60 ° ANGLE . . . . .	22.3" x 35.6"	SAME	SAME	22.3" x 35.6"
45 ° ANGLE . . . . .	21.9" x 25"	←→	←→	21.9" x 25"
DOWN . . . . .	22" x 32"	←→	←→	22" x 32"

\* WHEN SIGN WIDTHS EXCEED 25 FEET, CONSIDERATION SHALL BE GIVEN TO REDUCING LEGEND SIZE FROM RECOMMENDED SIZE TO THE NEXT SMALLER SIZE. REDUCTION OF LEGEND SIZE SHALL ALSO BE CONSIDERED WHERE THERE IS RESTRICTED ROADSIDE OR RIGHT-OF-WAY AND AN OVERHEAD SIGN WHERE EXCESSIVE SIGN WIDTHS CREATE STRUCTURAL OR LANE CONTROL PROBLEMS.

TABLE I (CONTINUED)

**B. EXIT GORE SIGNS**

WORD .....	12"E
NUMERAL .....	15"E

**C. SUPPLEMENTAL GUIDE SIGNS**

PLACE NAME .....	13.3"/10"
EXIT PANEL	
WORD .....	10"E
NUMERAL .....	15"E

**D. INTERCHANGE SEQUENCE SIGNS**

WORD .....	13.3"/10"
DISTANCE NUMERAL .....	13.3"
FRACTION .....	10.6"

**E. MILEAGE SIGNS**

WORD .....	8"/6"
NUMERAL .....	8"

**F. REST AREA AND WEIGH STATION SIGNS**

WORD .....	12"E
DISTANCE	
NUMERAL .....	12"E
FRACTION .....	8"E
WORD .....	10"E
ACTION MESSAGE	
WORD .....	10"E
NO FACILITIES AND OPEN - CLOSED .....	8"E
NO TRUCKS COMMERCIAL VEHICLES .....	10"E

**G. BOUNDARY AND ORIENTATION SIGNS**

WORD .....	8"/6"
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**H. EXIT ONLY**

WORD .....	12"E
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TABLE II

LETTER AND NUMERAL SIZES FOR GUIDE SIGNS

USED AT INTERSECTION

(ALSO SIGNS ON RAMPS AND CROSSROADS AT INTERCHANGES)\*

A. DESTINATION SIGN

NAME ..... 8"6"  
 ARROW ..... 12.8" x 11.3"

B. MILEAGE SIGN

NAME ..... 8"6"  
 NUMERAL ..... 8"

C. RAMP DIRECTION SIGN

NAME ..... 8"6"  
 ARROW ..... 12.8" x 11.3"

D. RAMP ENTRANCE SIGN

ROUTE MARKER  
 (2 DIGIT) ..... 24" x 24"  
 (3 DIGIT) ..... 30" x 24"  
 CARDINAL ..... 10"E8"E  
 NAME ..... 8"6"  
 ARROW ..... 24.3" x 15.1"

E. JUNCTION MARKER SIGN

WORD ..... 8"E  
 ROUTE MARKER  
 (2 DIGIT) ..... 36" x 36"  
 (3 DIGIT) ..... 45" x 36"  
 FRACTION NUMERAL ..... 8"E

F. ADVANCE INTERSECTION SIGN

NAME ..... 10.6"8"  
 ACTION MESSAGE  
 WORD ..... 8"  
 FRACTION NUMERAL ..... 8"  
 LOCAL SERVICE ROUTE SHIELD ..... DIAMETER 12"

TABLE II (CONTINUED)

G. INTERSECTION DIRECTION SIGN

NAME .....	8"6"
ARROW	
SINGLE HEAD .....	12.8" x 11.3"
DOUBLE HEAD .....	32" X 10"
LOCAL SERVICE ROUTE SHIELD .....	DIAMETER 12"

H. SUPPLEMENTAL SIGN

NAME .....	10.6"8"
ACTION MESSAGE .....	8"E

I. BOUNDARY AND ORIENTATION SIGNS

WORD .....	6"4.5"
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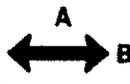
J. REST AREA AND WEIGH STATION SIGNS

WORD .....	10"E
DISTANCE	
NUMERAL .....	12"E
FRACTION .....	8"E
WORD .....	10"E
ACTION MESSAGE .....	10"E
NO FACILITIES AND OPEN - CLOSED .....	8"E

K. OVERHEAD SIGNS - SEE TABLE I.

\* THE FOREGOING LEGEND SIZES ARE THE RECOMMENDED SIZES. REDUCTION OF LEGEND SIZE FOR ALL SIGNS SHALL BE CONSIDERED WHERE THERE IS RESTRICTED ROADSIDE OR RIGHT-OF-WAY WIDTH AND ON OVERHEAD SIGNS WHERE EXCESSIVE WIDTHS CREATE STRUCTURAL OR LANE CONTROL PROBLEMS.

**TABLE III  
ARROW SIZE BASED ON SIGN LEGEND SIZE**

LEGEND SIZE	0°		DOUBLE HEADED		45°		60°		90°		DOWN	
					 BOX	 ACTUAL	 BOX	 ACTUAL				
	A	B	A	B	A B	A B	A B	A B	A	B	A	B
3" C	4.5"	4.0"	12.0"	4.0"	3.2"	4.5"			4.0"	4.5"		
					3.2"	4"						
4" U.C. & 4" E	6.4"	5.6"	18.0"	6.0"	4.5"	6.4"			5.6"	6.4"		
					4.5"	5.6"						
6" U.C.	9.6"	8.4"	24.0"	8.0"	6.8"	9.6"			8.4"	9.6"		
					6.8"	8.4"						
6" E	12.8"	11.3"	24.0"	8.0"	9.0"	12.8"			11.3"	12.8"		
					9.0"	11.3"						
8" U.C.	12.8"	11.3"	32.0"	10.0"	9.0"	12.8"			11.3"	12.8"	24.0"	16.5"
					9.0"	11.3"						
8" E	24.3"	15.1"	32.0"	10.0"	14.0"	17.3"	15.5"	24.3"	15.1"	24.3"	24.0"	16.5"
					14.0"	14.5"	22.4"	15.1"				
10.67" U.C.	24.3"	15.1"	36.0"	12.0"	14.0"	17.3"	15.5"	24.3"	15.1"	24.3"	24.0"	16.5"
					14.0"	14.5"	22.4"	15.1"				
10" E	29.3"	18.3"			16.6"	20.3"	18.5"	29.3"	18.3"	29.3"	24.0"	16.5"
					16.6"	17.5"	26.8"	18.3"				
12" E	29.3"	18.3"			16.6"	20.3"	18.5"	29.3"	18.3"	29.3"	24.0"	16.5"
					16.6"	17.5"	26.8"	18.3"				
13.33" U.C.	29.3"	18.3"			16.6"	20.3"	18.5"	29.3"	18.3"	29.3"	24.0"	16.5"
					16.6"	17.5"	26.8"	18.3"				
16" U.C.	35.6"	22.3"			20.3"	25.0"	22.6"	35.6"	22.3"	35.6"	32.0"	22.0"
					20.3"	21.9"	32.6"	22.3"				
20" U.C.	35.6"	22.3"			20.3"	25.0"	22.6"	35.6"	22.3"	35.6"	32.0"	22.0"
					20.3"	21.9"	32.6"	22.3"				

## APPENDIX A

OCTOBER 1, 1993  
 TRAFFIC ENGINEERING DIRECTIVE  
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SUBJECT: CONTROL AND INTERMEDIATE DESTINATIONS FOR GUIDE  
 SIGNING ON INTERSTATE, US, AND WV NUMBERED HIGHWAYS

The following cities, towns or locations shall be used as Control and Intermediate Destinations for guide signs on conventional roads, expressways and freeways as indicated. Control destinations are listed in all upper case letters and the associated Intermediate destinations listed between the control cities in lower case letters:

I-64	ASHLAND, KY HUNTINGTON CHARLESTON BECKLEY LEWISBURG LEXINGTON, VA	US 11	WINCHESTER, VA BUNKER HILL INWOOD MARTINSBURG FALLING WATERS WILLIAMSPORT, MD
I-68	I-79 MORGANTOWN CUMBERLAND, MD	US 19	TAZEWELL, VA BLUEFIELD PRINCETON Ghent Shady Springs Beaver
I-70	COLUMBUS, OH WHEELING WASHINGTON, PA		BECKLEY Mt. Hope Oak Hill Fayetteville SUMMERSVILLE Birch River
I-77	WYTHEVILLE, VA BLUEFIELD BECKLEY CHARLESTON PARKERSBURG MARIETTA, OH		SUTTON Flatwoods WESTON Jane Lew West Milford
I-79	CHARLESTON CLARKSBURG FAIRMONT MORGANTOWN WASHINGTON, PA		CLARKSBURG SHINNSTON Worthington Monongah
I-81	WINCHESTER, VA MARTINSBURG HAGERSTOWN, MD		FAIRMONT RIVESVILLE Westover MORGANTOWN
I-470	COLUMBUS, OH WASHINGTON, PA		Mt. Morris, Pa WAYNESBURG, PA

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US 22	PITTSBURGH, PA WEIRTON STEUBENVILLE, OH	US 50 (Continued)	West Union Salem CLARKSBURG BRIDGEPORT (eastbound only) GRAFTON Red House, Md Gormanian Mt. Storm KEYSER (eastbound only) Junction ROMNEY Augusta Capon Bridge WINCHESTER, VA
US 30	PITTSBURGH, PA CHESTER EAST LIVERPOOL, OH		
US 33	HARRISONBURG, VA FRANKLIN Judy Gap SENECA ROCKS Harman ELKINS Norton BUCKHANNON WESTON Linn GLENVILLE Arnoldsburg SPENCER RIPLEY Cottageville New Haven Hartford Mason POMEROY, OH	US 52	BLAND, VA BLUEFIELD Bramwell Northfork Keystone Kimball WELCH Jaeger Gilbert Delbarton WILLIAMSON Kermit Fort Gay HUNTINGTON CHESAPEAKE, OH
US 35	CHILLICOTHE, OH POINT PLEASANT Winfield St. Albans CHARLESTON		
US 40	WASHINGTON, PA Valley Grove Triadelphia WHEELING BRIDGEPORT, OH	US 60	COVINGTON, VA WHITE SULPHUR SPRINGS Caldwell LEWISBURG Alta Sam Black Church Rupert RAINELLE US 19 Ansted GAULEY BRIDGE Smithers MONTGOMERY Cedar Grove Belle (continued next page)
US 50	BELPRE, OH PARKERSBURG Ellenboro Pennsboro		

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US 60 (Continued)	CHARLESTON	US 219 (Continued)	PARSONS
	SOUTH CHARLESTON		THOMAS
	ST. ALBANS		Silver Lake, Md
	HURRICANE		OAKLAND, MD
	MILTON		
	BARBOURSVILLE	US 220	MONTEREY, VA
	HUNTINGTON		FRANKLIN
	CEREDO		PETERSBURG
	KENOVA		MOOREFIELD
	ASHLAND, KY		Junction
US 119	PIKEVILLE, KY		KEYSER
	WILLIAMSON		CUMBERLAND, MD
	LOGAN	US 250	MONTEREY, VA
	Chapmanville		Thornwood
	Madison		Barton
	South Charleston		Durbin
	CHARLESTON		Huttonsville
	Elkview		Mill Creek
	CLENDENIN		Beverly
	SPENCER		ELKINS
	Arnoldsburg		Norton
	GLENVILLE		Junior
	WESTON		Belington
	BUCKHANNON		PHILLIPPI
	PHILIPPI		Pruntytown
	GRAFTON		FAIRMONT
	MORGANTOWN		Farmington
	UNIONTOWN, PA		MANNINGTON
US 219	RICH CREEK, VA		Hundred
	Peterstown		Littleton
	Union		CAMERON
	RONCEVERTE		MOUNDSVILLE
	(southbound only)		WHEELING
	LEWISBURG		BRIDGEPORT, OH
	Renick	US 340	WINCHESTER, VA
	Hillsboro		Berryville, Va
	Mill Point		CHARLES TOWN
	MARLINTON		Bolivar
	Slatyfork		HARPERS FERRY
	Valley Head		FREDERICK, MD
	Huttonsville	US 460	PEARISBURG, VA
	Mill Creek		Oakvale
	Beverly		PRINCETON
	ELKINS		BLUEFIELD
	Montrose		TAZEWELL, VA

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US 522	HANCOCK, MD BERKELEY SPRINGS WINCHESTER, VA	WV 5	ELIZABETH GRANTSVILLE GLENVILLE BURNSVILLE
WV 2	HUNTINGTON POINT PLEASANT Mt. Alto RAVENSWOOD PARKERSBURG Belmont St. Marys Friendly Sistersville Paden City New Martinsville MOUNDSVILLE (southbound only) Moundsville (northbound only) McMechen Benwood WHEELING Wellsburg Follansbee WEIRTON New Cumberland Newell CHESTER	WV 6	US 60 MONTGOMERY
		WV 7	NEW MARTINSVILLE Hundred Wadestown Blacksville MORGANTOWN Masontown Reedsville KINGWOOD Terra Alta OAKLAND, MD
		WV 8	WEIRTON NEW MANCHESTER
WV 3	WEST HAMLIN HAMLIN Yawkey DANVILLE RACINE Seth WHITESVILLE Glen Daniel BECKLEY Shady Springs HINTON ALDERSON UNION SWEET SPRINGS	WV 9	LEESBURG, VA CHARLES TOWN Ranson Kearneysville MARTINSBURG Hedgesville BERKELEY SPRINGS PAW PAW
		WV 10	PRINCETON Matoaka MULLENS PINEVILLE Oceana Man LOGAN West Logan Mitchell Heights Chapmanville West Hamlin HUNTINGTON
WV 4	CLENDENIN Clay Ivydale Gassaway	WV 12	PETERSTOWN Forest Hills HINTON ALDERSON ALTA

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WV 14	SPENCER Reedy ELIZABETH Mineral Wells PARKERSBURG VIENNA WILLIAMSTOWN	WV 20 (continued) RAINELLE Charmco Quinwood Nettie Fenwick RICHWOOD Craigsville Camden-on-Gauley Cowen WEBSTER SPRINGS Dianna Rock Cave BUCKHANNON Hodgesville Stonewood Nutter Fort CLARKSBURG Lumberport Smithfield Pine Grove NEW MARTINSVILLE
WV 15	SUTTON WEBSTER SPRINGS VALLEY HEAD	WV 21 (available number not assigned to a specific route)
WV 16	TAZEWELL, VA WAR WELCH PINEVILLE MULLENS Rhodell Sophia BECKLEY MT. HOPE OAK HILL FAYETTEVILLE GAULEY BRIDGE Belva CLAY Ivydale Arnoldsbury GRANTSVILLE Smithville HARRISVILLE ELLENBORO ST. MARYS	WV 23 ALMA SALEM
WV 17	LOGAN Ramage MADISON	WV 24 AURORA THOMAS
WV 18	SISTERSVILLE MIDDLEBOURNE WEST UNION LINN	WV 25 CHARLESTON DUNBAR INSTITUTE NITRO
WV 20	BLUEWELL PRINCETON ATHENS HINTON Meadow Bridge	WV 26 FELLOWSVILLE Tunnelton KINGSWOOD Albright BRUCETON MILLS US 40
		WV 27 WV 88 WELLSBURG

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WV 27	FOLLANSBEE ALT. BURGETTSTOWN, PA	WV 37	LOUISA, KY FT. GAY WAYNE EAST LYNN RANGER
WV 28	MARLINTON Huntersville Dunmore GREEN BANK Bartow Thornwood Circleville Judy Gap SENECA ROCKS PETERSBURG MOOREFIELD Junction ROMNEY Springfield Fort Ashby Ridgeley CUMBERLAND, MD.	WV 38	PHILIPPI Nestorville PARSONS
WV 29	PAW PAW Slanesville AUGUSTA Rio BAKER	WV 39	GAULEY BRIDGE Belva Drennen SUMMERSVILLE Nettie Fenwick RICHWOOD Mill Point MARLINTON Huntersville MINNEHAHA SPRINGS WARM SPRINGS, VA
WV 31	WILLIAMSTOWN WV 2 DEERWALK US 50 CAIRO HARRISVILLE	WV 41	BECKLEY Piney View PRINCE CLIFFTOP LOOKOUT Nallen MT. NEBO SUMMERSVILLE WV 150 CRAIGSVILLE
WV 32	HARMAN DAVIS THOMAS	WV 42	PETERSBURG Scherr MT. STORM ELK GARDEN KITZMILLER, MD
WV 34	HAMLIN HURRICANE WINFIELD Red House KENNA	WV 43	(available number not assigned to a specific route)
WV 36	SPENCER Wallback CLAY	WV 44	HOLDEN LOGAN Switzer GILBERT

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WV 45	MARTINSBURG SHEPHERDSTOWN	WV 58	STONEWOOD Anmoore BRIDGEPORT
WV 46	PIEDMONT KEYSER FT. ASHBY	WV 59	LOST CITY WOODSTOCK, VA
WV 47	PARKERSBURG SMITHVILLE Burnt House Linn WESTON	WV 61	CHARLESTON MARMET Chesapeake East Bank Pratt MONTGOMERY Deep Water OAK HILL MT. HOPE PRINCE
WV 48	(available number not assigned to a specific route)	WV 62	MASON PT. PLEASANT Leon BUFFALO ELEANOR Red House POCA CROSS LANES DUNBAR
WV 49	WILLIAMSON MATEWAN EDGARTON	WV 63	CALDWELL ORGAN CAVE RONCEVERTE ALDERSON
WV 51	INWOOD Middleway CHARLES TOWN	WV 65	DELBARTON NAUGATUCK
WV 53	ELIZABETH WV 47	WV 66	CASS SNOWSHOE
WV 54	MULLENS Maben Lester Sophia BECKLEY	WV 67	WELLSBURG BETHANY
WV 55	MOOREFIELD BAKER WARDENSVILLE STRASBURG, VA	WV 68	RAVENSWOOD Washington PARKERSBURG
WV 56	RAVENSWOOD Silverton SANDYVILLE REEDY	WV 69	HUNDRED WAYNESBURG, PA
WV 57	PHILIPPI CLARKSBURG		

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WV 71	MATOAKA Montcalm BLUEWELL	WV 84	FROST VANDERPOOL, VA
WV 72	KINGSWOOD ROWLESBURG Macomber Etam PARSONS HENDRICKS HARMAN	WV 85	MADISON VAN (southbound only) Wharton WV 99 Kopperston OCEANA
WV 73	(This route is known as the Logan Connector which is located between Corridor "G" and WV 44). Intermediate or control destinations have not been established.	WV 86	GLEN DALE BETHLEHEM
WV 74	COXS MILL Auburn Pullman PENNSBORO JOSEPHS MILLS	WV 87	EVANS
WV 75	KENOVA LAVALETTE	WV 88	US 250 GLEN DALE (southbound only) BETHLEHEM WHEELING WEST LIBERTY BETHANY WV 27
WV 76	PHILIPPI FLEMINGTON BRIDGEPORT	WV 89	PROCTOR US 250
WV 78	(available number not assigned to a specific route)	WV 90	THOMAS Bayard GORMANIA
WV 80	BRADSHAW IAEGER GILBERT MAN	WV 91	(available number not assigned to a specific route)
WV 82	BIRCH RIVER COWEN	WV 92	WHITE SULPHUR SPRINGS Minnehaha Springs Frost GREEN BANK Barton Durbin Huttonsville Mill Creek Beverly ELKINS Norton Junior (continued next page)
WV 83	GRUNDY, VA BRADSHAW WAR		

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WV 92 (continued)  
BELINGTON  
Nestorville  
Newburg  
REEDSVILLE

WV 93 DAVIS  
MT. STORM  
(northbound only)  
SCHERR  
(southbound only)  
KEYSER

WV 94 RACINE  
MARMET

WV 95 (This route is known  
as Camden Ave. and  
the connector to  
WV 68).  
Intermediate or  
control destinations  
have not been  
established.

WV 96 (available number not  
assigned to a specific  
route)

WV 97 BECKLEY  
Maben  
PINEVILLE  
Baileysville  
GILBERT

WV 98 NUTTER FORT  
US 19  
US 50

WV 99 BECKLEY  
Glen Daniel  
WV 85

WV 100 WESTOVER  
GRANVILLE  
MAIDSVILLE  
US 19

WV 101 (This route is located  
on the 29th St. Bridge  
in Huntington).  
Intermediate or  
control destinations  
have not been  
established.

WV 102 VIRGINIA ROUTE 102

WV 103 WELCH  
GARY  
ANAWALT

WV 104 (This route is known  
as Hospital Road in  
Princeton).  
Intermediate or  
control destinations  
have not been  
established.

WV 105 (This route is known as  
Pennsylvania Ave.,  
Colliers Way in  
Weirton).  
Intermediate or  
control destinations  
have not been  
established.

WV 106 HUNTINGTON  
CHESAPEAKE, OH

WV 107 (This route is known  
as the Hinton  
Connector).  
Intermediate or  
control destinations  
have not been  
established.

WV 109 (This route will be  
the Mon. Valley  
Expressway from  
Uniontown, Pa. to  
Cheat Lake).  
Intermediate or

WV 112 BLUEFIELD  
INGLESIDE  
OAKVALE

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WV 114	CHARLESTON YEAGER AIRPORT BIG CHIMNEY I-79	WV 150	SLATYFORK RICHWOOD US 19 NORTH
WV 115	(This route is located on Old Rt. 9 through Charles Town). Intermediate or control destinations have not been established.	LSR 151	(This route is Old US 33 between Buckhannon and Norton). Intermediate or control destinations have not been established.
LSR 120	BRAMWELL POCAHONTAS, VA	WV 152	HUNTINGTON WAYNE ECHO CRUM
WV 122	FOREST HILL Greenville ROCK CAMP	WV 161	BISHOP ANAWALT US 52
WV 123	MERCER COUNTY AIRPORT FALLS MILLS, VA	WV 180	NEW MARTINSVILLE MIDDLEBOURNE
WV 125	(This route will be the New River Parkway). Intermediate or control destinations have not been established.	WV 201	BARBOURSVILLE WV 2
WV 127	US 522 PAW PAW	WV 203	WASHINGTON
WV 129	DRENNEN SUMMERSVILLE DAM MT. NEBO	WV 204	DANESE MEADOW BRIDGE
WV 131	(This route is known as Saltwell Rd.). SHINNSTON BRIDGEPORT	LSR 208	WV ROUTE 2 WV ROUTE 8
WV 140	(This route is known as the Parkersburg Toll Br.) Intermediate or control destinations have not been established.	WV 210	(This route is located in Beckley). Intermediate or control destinations have not been established.
		WV 211	(This route is located in Mt. Hope). Intermediate or control destinations have not been established.

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WV 214	ALUM CREEK YAWKEY	WV 305	SURVEYOR LESTER
WV 218	SHINNSTON WORTHINGTON FARMINGTON FAIRVIEW BLACKSVILLE WAYNESBURG, PA.	WV 307	BEAVER SHADY SPRINGS I-64
WV 230	SHEPHERDSTOWN HARPERS FERRY	WV 310	GRAFTON FAIRMONT THIRD ST. BRIDGE
WV 251	(This route is known as the Suspension Br. in Wheeling). Intermediate or control destinations have not been established.	WV 311	WHITE SULPHUR SPRINGS CROW, VA
WV 252	(This route is known as the Aetnaville Br., Wheeling). Intermediate or control destinations have not been established.	WV 331	COTTAGEVILLE MT. ALTO
WV 259	GORE, VA WARDENSVILLE BAKER MATHIAS BROADWAY, VA	WV 338	(This route is known as the Ravenswood Bridge). Intermediate or control destinations have not been established.
WV 270	WEST MILFORD LOST CREEK	WV 372	EAST LYNN BRANCLAND (northbound only) WEST HAMLIN (southbound only)
WV 290	BLUEFIELD I-77	WV 401	WEST LIBERTY US 40 VALLEY GROVE I-70 DALLAS PIKE
WV 301	SALT ROCK WV 303 MILTON	WV 471	CAIRO CISCO
WV 303	HAMLIN WV 301	WV 473	GLENVILLE Tanner BURNT HOUSE
		WV 480	SHARPSBURG, MD SHEPHERDSTOWN KEARNEYSVILLE

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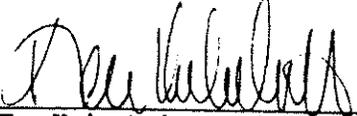
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WV 501	CHARLESTON WV 622	WV 705	(This route is known as the West Morgantown Bypass). Intermediate or control destinations have not been established.
LSR 507	(This route is known as Cove Road in Weirton). Intermediate or control destinations have not been established.	LSR 707	(This route is known as FBI Center Rd.). Intermediate or control destinations have not been established.
WV 527	(This route is known as the 6th St. Br., Huntington). Intermediate or control destinations have not been established.	WV 807	(This route is known as the St. Marys Bridge). Intermediate or control destinations have not been established.
WV 598	(This route is known as Old Rt. 21 across East River Mtn. in Mercer Co.). Intermediate or control destinations have not been established.	LSR 857	(This route is known as the East Morgantown Bypass). Intermediate or control destinations have not been established.
WV 601	JEFFERSON ROAD MACCORKLE AVE. US 119	WV 891	CAMERON WAYNESBURG, PA
WV 612	OAK HILL MOSSY	WV 892	(This route is located near Washington in Wood Co.). Intermediate or control destinations have not been established.
WV 622	INSTITUTE CROSS LANES SISSONVILLE	WV 901	HEDGESVILLE SPRING MILLS
WV 635	JOLO RICHLAND, VA	WV 922	US 119 REEDSVILLE
WV 701	PINE GROVE WILEYVILLE		
WV 703	WADESTOWN FAIRVIEW Grant Town RIVESVILLE		

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- WV 956 ROCKET CENTER
- WV 971 BAILEYSVILLE  
Clear Fork  
OCEANA
- WV 972 (This route is known  
as Old US 220 at  
New Creek in  
Mineral Co.).  
GRAFTON  
(southbound only)  
KEYSER  
(northbound only)

  
\_\_\_\_\_  
Ken F. Kobetsky, Director  
Traffic Engineering Division

APPENDIX B

October 1, 1993

TRAFFIC ENGINEERING DIRECTIVE

222

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SUBJECT: SIGN MARGINS, BORDERS AND CORNER RADII

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The following dimensions shall be used for all signs manufactured for the Division:

CORNER RADIUS ON SIGN BLANK MATERIAL

<u>Material</u>	<u>Corner Radius</u>
Extruded Panel	None
Wood Panel	None
Flat Sheet	1.50"
All Other	1.50"

MARGINS, BORDERS AND CORNER RADIUS ON SIGN COPY

A. Flat Sheet Signs, Direct Applied Copy, Margin and Border:

The signs included in this classification shall contain one of the following background colors:

White, Yellow or Orange.

<u>LEAST DIMENSION</u>	<u>MARGIN WIDTH</u>	<u>BORDER WIDTH</u>	<u>BORDER CORNER RADIUS</u>
6" to 12"	0.38"	0.38"	1.12"
15" to 24"	0.38"	0.62"	1.12"
27" to 30"	0.50"	0.75"	1.38"
36" to 42"	0.62"	0.88"	1.62"
48" to 54"	0.75"	1.25"	2.25"
60" or more	1.00"	1.50"	2.75"

APPENDIX B

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B. Flat Sheet Signs, Direct Applied Copy, Border Only:

Category 1--Includes the following signs:

- (a) all green, blue and brown background signs
- (b) sign fabrication numbers R1-3, R1-3A, R1-4, R5-1A, R6-1.

<u>LEAST DIMENSION</u>	<u>BORDER WIDTH</u>	<u>BORDER CORNER RADIUS</u>
Up to 24"	0.50"	1.50"
30" to 36"	0.62"	1.88"
42" to 48"	0.75"	2.25"
54" to 60"	1.00"	3.00"

Category 2--Includes the following signs:

- (a) Sign fabrication number R1-1.

<u>LEAST DIMENSION</u>	<u>BORDER WIDTH</u>	<u>BORDER CORNER RADIUS</u>
24"	0.62"	None
30"	0.75"	None
36"	0.88"	None
48"	1.25"	None

Category 3--Includes the following signs:

- (a) Sign fabrication number R1-2

<u>LEAST DIMENSION</u>	<u>BORDER WIDTH</u>	<u>BORDER CORNER RADIUS</u>
36"	0.75"	1.25"
48"	1.00"	2.00"
60"	1.50"	2.50"

APPENDIX B

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Category 4--Includes the following signs:

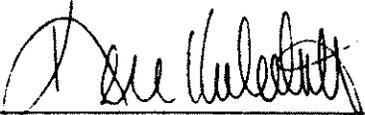
(a) interstate route marker shields

<u>LEAST DIMENSION</u>	<u>BORDER WIDTH</u>	<u>BORDER CORNER RADIUS</u>
24"	0.50"	None
36"	0.75"	None
48"	1.00"	None

C. Signs With Demountable Copy:

<u>LEAST DIMENSION</u>	<u>BORDER WIDTH</u>	<u>BORDER CORNER RADIUS</u>
Up to 36"	1.00"	3"
42" to 60"	2.00"	6"
66" to 84"	2"	9"
90" or more	3"	12"

All exit panels shall have a 2" border and a 3" border corner radius.

  
\_\_\_\_\_  
Ken F. Kobetsky, Director  
Traffic Engineering Division

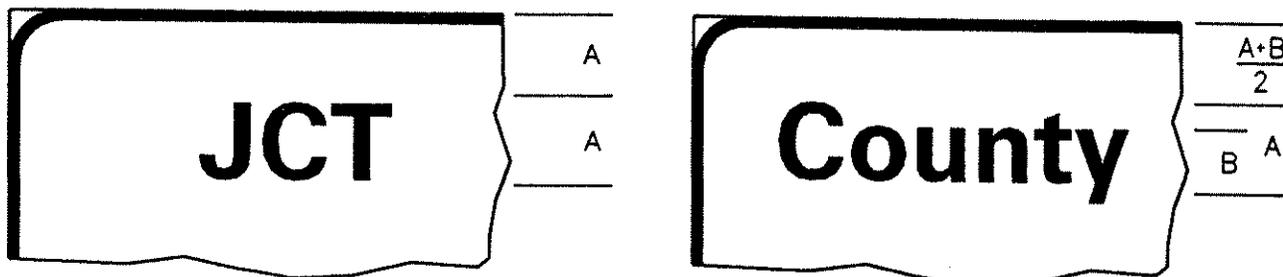
APPENDIX B

RULES FOR SIGN TEXT SPACING

TOP AND BOTTOM SPACING

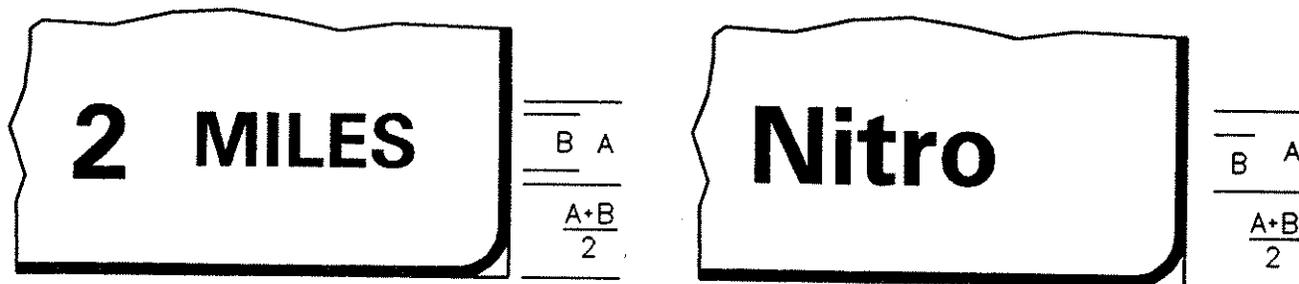
TOP SPACE

THE SPACING FROM THE TOP EDGE OF SIGN TO THE NEAREST COPY SHALL BE APPROXIMATELY EQUAL TO, BUT IN NO CASE LESS THAN ONE-HALF THE AVERAGE OF THE LETTER HEIGHT OR NUMERAL IN THE FIRST LINE OF THE COPY.



BOTTOM SPACE

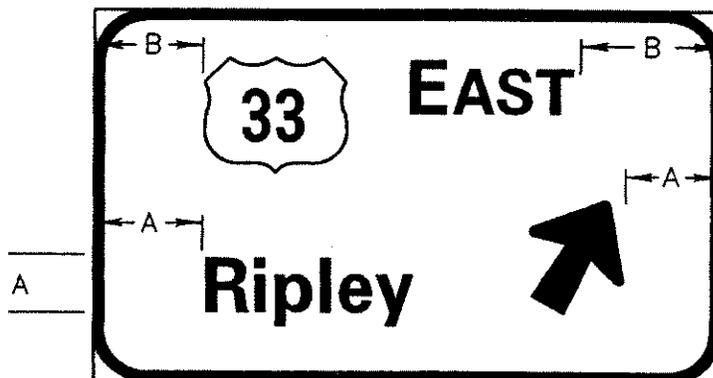
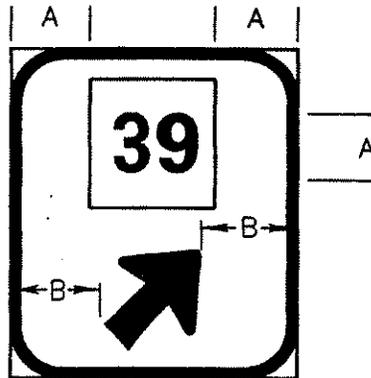
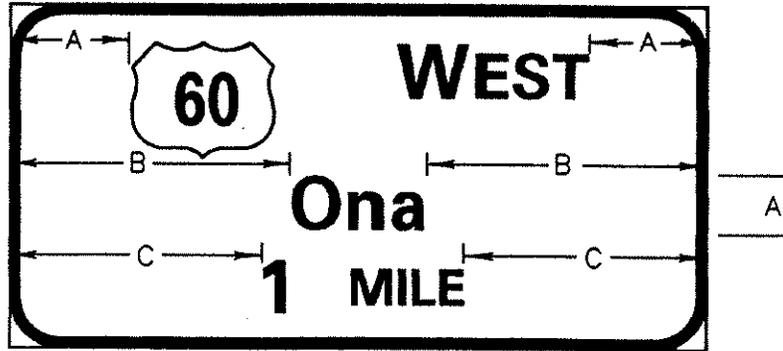
THE SPACING FROM THE BOTTOM EDGE OF THE SIGN TO THE NEAREST COPY SHALL BE APPROXIMATELY EQUAL TO, BUT IN NO CASE LESS THAN ONE-HALF THE AVERAGE OF THE LETTER AND NUMERAL HEIGHT IN THE LAST LINE OF COPY.



APPENDIX B

RIGHT AND LEFT VERTICAL EDGE SPACING

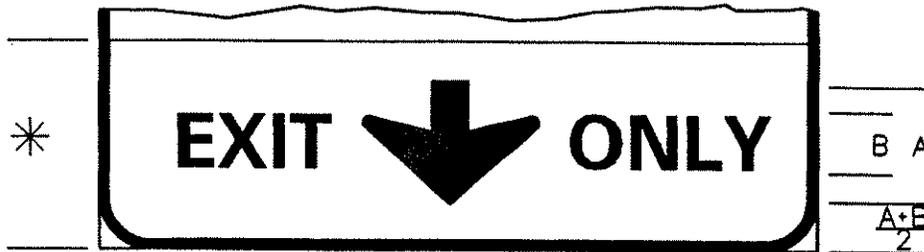
THE LATERAL SPACING BETWEEN THE LEFT AND RIGHT VERTICAL EDGES AND THE NEAREST COPY OF THE LONGEST LINE OF COPY SHALL BE EQUAL TO THE HEIGHT OF THE LARGEST UPPERCASE LETTER AND NUMERAL ON THE SIGN. EACH OF THE REMAINING LINES OF COPY SHALL BE CENTERED WITHIN THE SIGN BORDERS.



APPENDIX B

BOTTOM SPACE WHEN DOWN ARROW IS PART OF BOTTOM LINE

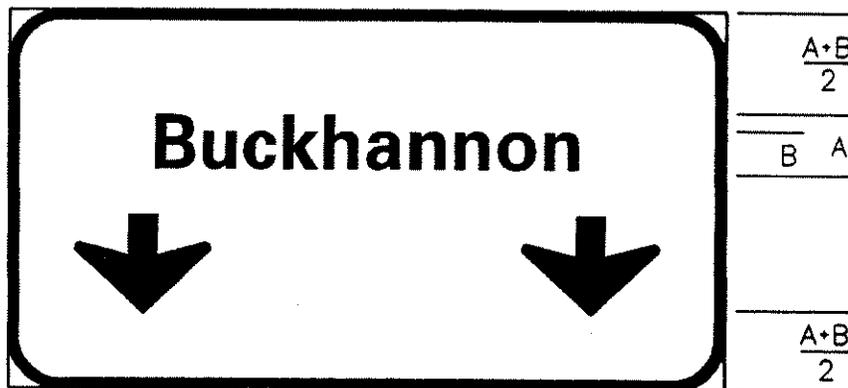
WHEN A DOWN ARROW IS PART OF THE LAST LINE OF TEXT, SPACING FROM THE BOTTOM EDGE OF THE SIGN TO THE BOTTOM EDGE OF THE COMMON LINE OF TEXT ABOVE SHALL BE APPROXIMATELY EQUAL TO, BUT IN NO CASE LESS THAN ONE-HALF THE AVERAGE OF THE ARROW AND LETTER HEIGHT IN THE LAST LINE OF COPY.



\* MUST BE IN INCREMENTS OF 12" FOR EXTRUDED PANEL SIGNS

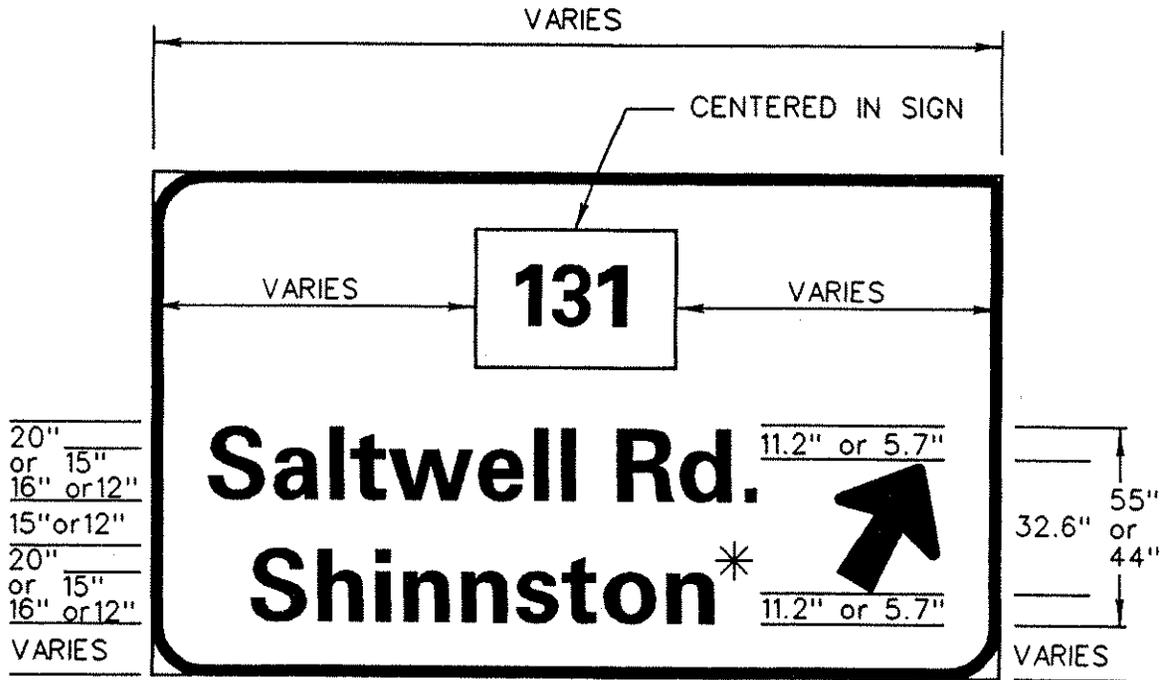
BOTTOM SPACE WHEN AN ARROW ALONE IS BOTTOM LINE

IF EITHER AN UP ARROW OR A DOWN ARROW IS THE ONLY TEXT IN THE LAST LINE, SPACING BETWEEN THE LOWEST POINT OF THE ARROW AND THE BOTTOM EDGE OF THE SIGN SHALL BE THE SAME AS THE SPACING AT THE TOP OF THE SIGN.

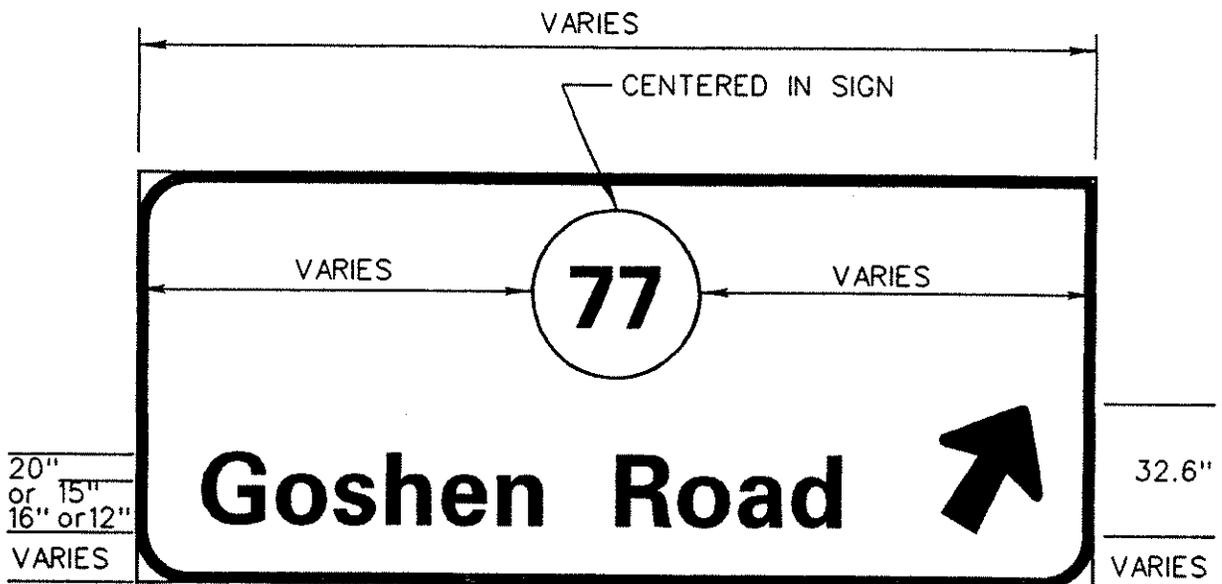


APPENDIX B

EXIT DIRECTION SIGN LAYOUT FOR  
TWO DESTINATIONS AND SINGLE DESTINATION



\* SMALLER MESSAGE CENTERED IN LARGER MESSAGE (NOT SIGN).

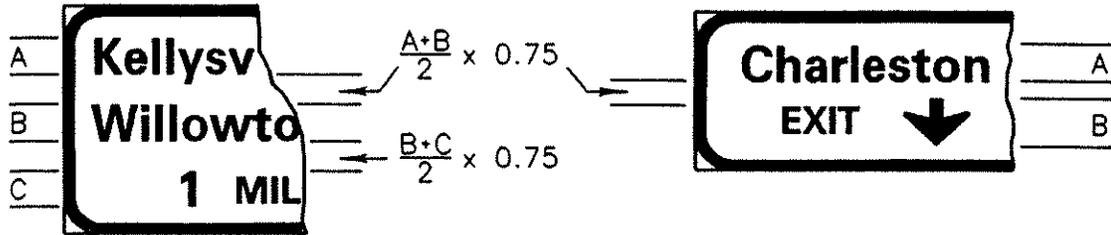


APPENDIX B

INTERLINE SPACING

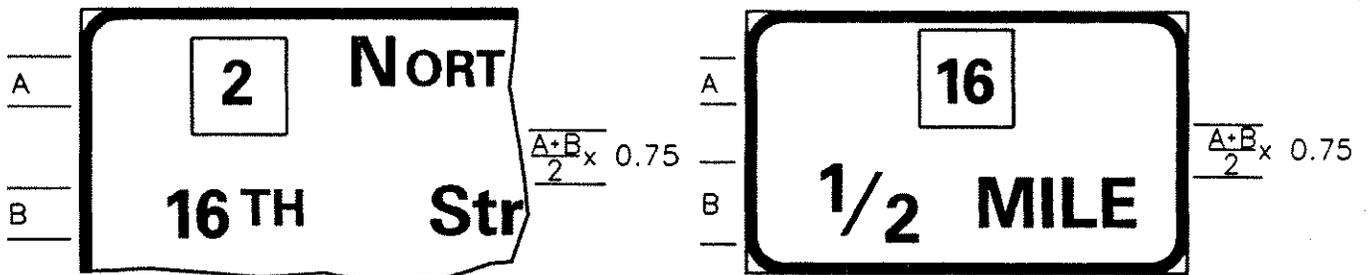
BETWEEN TOP AND BOTTOM OF CAPITAL AND UPPERCASE LETTERS

THE INTERLINE SPACING BETWEEN TOP AND BOTTOM OF CAPITAL AND UPPERCASE LETTERS SHALL BE APPROXIMATELY THREE-FOURTHS OF THE AVERAGE OF THE HEIGHTS OF THE CAPITAL OR UPPERCASE LETTERS IN ADJACENT LINES OF LETTERS, BUT IN NO CASE SHALL THE INTERLINE SPACING BE LESS THAN ONE-HALF THE AVERAGE.



BETWEEN A ROUTE MARKER AND THE LINE OF TEXT BELOW

THE INTERLINE SPACING BETWEEN A ROUTE MARKER AND THE LINE OF TEXT BELOW SHALL BE EQUAL TO THREE-FOURTHS THE AVERAGE HEIGHT OF THE NUMERAL IN THE ROUTE MARKER AND THE LARGEST LETTER, NUMERAL OR ARROW IN THE LINE OF TEXT MEASURED BETWEEN THE LOWEST POINT ON THE ROUTE MARKER AND THE TOP OF THE UPPERCASE LETTER OR CAPITAL LETTER IN THE LINE OF TEXT.



APPENDIX B

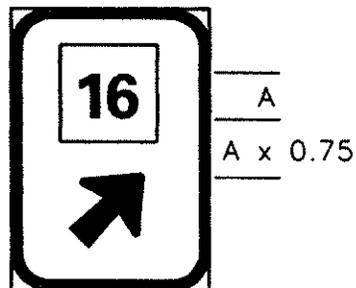
BETWEEN A LINE OF TEXT AND A DOWN OR UP ARROW

THE INTERLINE SPACING BETWEEN A LINE OF TEXT AND A DOWN OR UP ARROW SHALL BE EQUAL TO THE HEIGHT OF THE UPPERCASE LETTERS IN THE LINE ABOVE THE ARROW TIMES 0.75.



BETWEEN A ROUTE MARKER AND AN UPWARD SLOPING ARROW

THE INTERLINE SPACING BETWEEN A ROUTE MARKER AND AN UPWARD SLOPING ARROW SHALL BE EQUAL TO THE HEIGHT OF THE NUMERAL INSIDE THE ROUTE MARKER TIMES 0.75.



APPENDIX B

LINE OF TEXT SPACING

THE LATERAL SPACING BETWEEN THE FOLLOWING SHALL BE EQUAL TO  $1/2$  TIMES THE LOWERCASE LETTER OR CAPITAL LETTER IN THE GIVEN LINE OF TEXT:

TWO WORDS

A WORD AND A NUMERAL



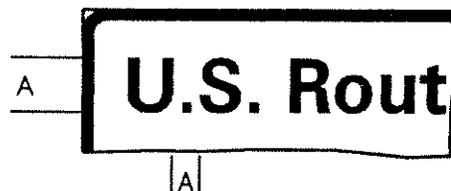
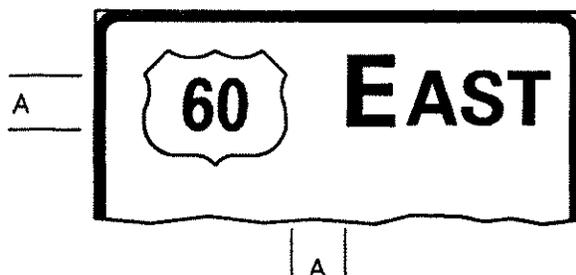
THE LATERAL SPACING BETWEEN THE FOLLOWING SHALL BE EQUAL TO THE UPPERCASE LETTER OR CAPITAL LETTER IN THE GIVEN LINE OF TEXT:

A WORD AND A ARROW

A WORD AND A SHIELD

EDGE OF BLANK TO NUMERAL OR ARROW

TWO LETTERS USED AS INITIALS



## APPENDIX B

IF TWO OR MORE ROUTE MARKERS ARE IN THE SAME LINE OF TEXT, THEY SHALL BE OPTICALLY CENTERED ON THE SIGN WITH SPACING BETWEEN INDIVIDUAL MARKERS NOT LESS THAN THE HEIGHT OF THE NUMERAL WITHIN THE ROUTE MARKERS.

### FINAL LENGTH AND HEIGHT ADJUSTMENT

#### LENGTH ADJUSTMENT

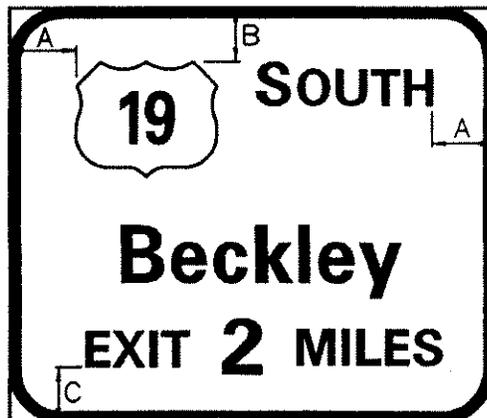
FINAL OVERALL SIGN LENGTH SHOULD BE ADJUSTED FROM CALCULATED MEASUREMENT TO THE NEAREST MULTIPLE OF SIX INCHES. ADJUSTMENT OF OVERALL LENGTH TO BE EQUALLY DIVIDED BETWEEN LEFT AND RIGHT LATERAL SPACING FROM VERTICAL EDGE OF SIGN TO NEAREST COPY.

#### HEIGHT ADJUSTMENT

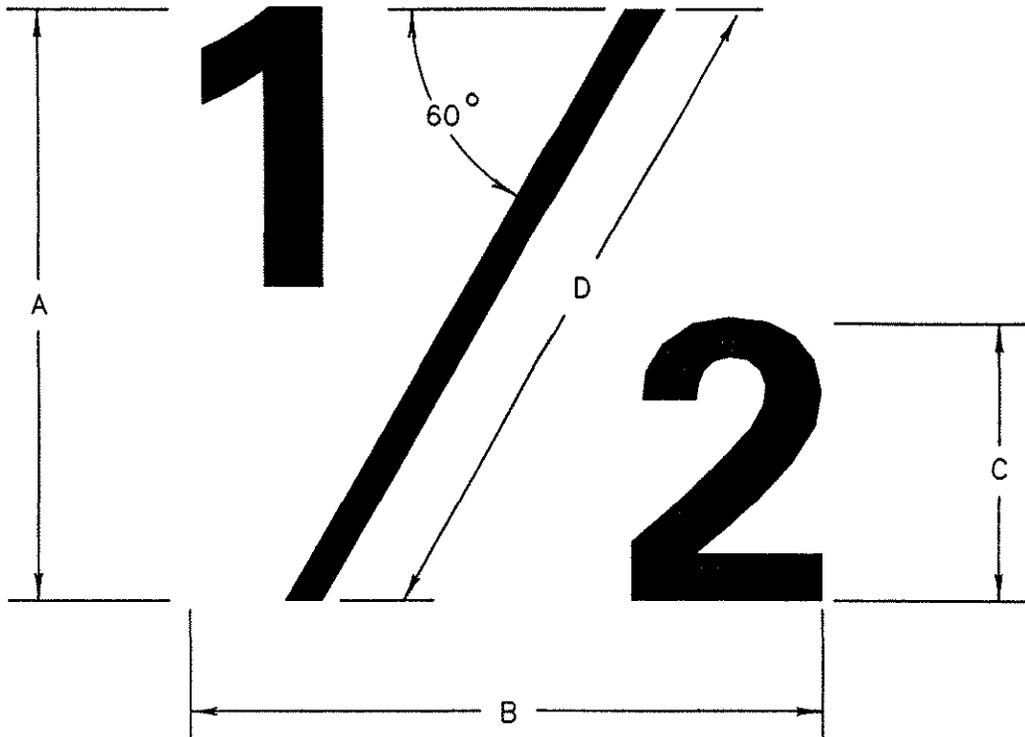
FINAL OVERALL SIGN HEIGHT SHOULD BE ADJUSTED FROM CALCULATED MEASUREMENT TO THE NEAREST MULTIPLE OF TWELVE INCHES. ADJUSTMENT OF OVERALL HEIGHT TO BE EQUALLY DIVIDED BETWEEN TOP AND BOTTOM SPACING FROM EDGE OF SIGN TO NEAREST COPY. DIMENSIONS IN EVEN INCHES WHERE POSSIBLE MAKE READING THE DESIGN MUCH EASIER.

#### FINAL ADJUSTMENT

THE DIMENSIONS A, B AND C SHALL BE ADJUSTED IN ORDER THAT THE FINAL OVERALL LENGTH AND HEIGHT OF THE SIGN WILL BE IN MULTIPLE OF SIX INCHES FOR LENGTH AND TWELVE INCHES FOR HEIGHT.



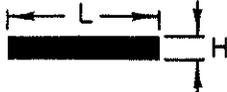
APPENDIX B



SYMBOL	TITLE	RATIO TO HEIGHT OF CAPITAL
A	HEIGHT OF RECTANGLE	1.5
B	WIDTH OF RECTANGLE	2.0*
C	HEIGHT OF NUMERAL	1.0
D	LENGTH OF DIAGONAL	1.7
* - WHEN THE UPPER CHARACTER IS ANY DIGIT OTHER THAN 1, THE RATIO IS 2.5 INSTEAD OF 2.0		

NOTE: THE SPACE BETWEEN A DIGIT AND A FRACTION RECTANGLE AS IN 1½" SHALL BE ¾" THE HEIGHT OF THE CAPITAL.

## HYPHENS



"E" SERIES	UPPER CASE	LOWER CASE	LENGTH (L)	HEIGHT (H)
4"	6"	4.5"	2.5"	0.88"
6"	8"	6"	3.25"	1.19"
8"	10.67"	8"	4.38"	1.75"
10"	13.33"	10"	5.38"	2.13"
12"	16"	12"	6"	2.5"
15" 16" 18"	20"	15"	8.88"	3.63"
24" 30"			12.5"	4.75"

## PERIODS AND COMMAS



LETTER SIZE	DIAMETER (D)
4" E	1.13"
6" UPPER CASE	
6"E	1.34"
8" UPPER CASE	
8"E	1.88"
10.67" UPPER CASE	
10"E & 12"E	2.38"
13.33" & 16" U.C.	
15"E, 16"E & 18"E	3.00"
20" UPPER CASE	
24"E & 30"E	4.75"

APPENDIX C



WEST VIRGINIA DEPARTMENT OF TRANSPORTATION  
Division Of Highways

GASTON CAPERTON  
GOVERNOR

1900 Kanawha Boulevard E. • Building Five  
Charleston, West Virginia 25305-0430 • 304-558-3505

FRED VANKIRK  
ACTING COMMISSIONER

GEORGE T. SIDIROPOLIS  
ASSISTANT COMMISSIONER

February 26, 1993

DD-16-5  
Supersedes DD-16-4

TO: ALL PERSONS ENGAGED IN DESIGN  
SUBJECT: GUARDRAIL

The following guidelines are to be used for guardrail design unless otherwise directed.

TYPE AND CLASS OF GUARDRAIL

Type I Guardrail (Galvanized Steel Deep Beam) shall be specified on all new projects except Type V (Double-Faced Type I) will be specified when double-faced guardrail is required.

The "Classes" of guardrail are as follows:

- Class I: 6'-3" post spacing with blocks
- Class II: 12'-6" post spacing with blocks
- Class III: 12'-6" post spacing without blocks

On National Highway System (NHS) projects, all guardrail specified shall be Class I.

For projects not on the NHS, the class shall be in accordance with the following table, unless otherwise directed. As a general rule, Class I Guardrail will be specified for arterials, Class II for collectors, and Class III for local service.

DESIGN YEAR ADT	399 or less	400 or Greater or Multi-Lane
DESIGN SPEED	N/A	Less than 50      50 or Greater
CLASS	III	II      I

APPROACH END TERMINALS

NHS Projects

The standard approach end terminal is the Cut Slope Terminal (CST) as detailed on Standard Sheet GR4 or the Modified Eccentric Loader Terminal

APPENDIX C  
DIVISION OF HIGHWAYS

DD-16-5 - GUARDRAIL  
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February 26, 1993

(MELT) as detailed on Standard Sheet GR5. A notable exception is the Bullnose Attenuator which is to be used for approach end treatment at twin bridges in narrow medians. The Bullnose Attenuator is detailed on Standard Sheet GR8.

Both the CST and the MELT require flared installation as well as modifications to the normal shoulder slope in the area of the flare. The MELT also requires grading behind the guardrail. In order to accommodate these installations, consideration must be given to drainage. When the treatments, especially the CST, are placed on the downstream end of a cut, an inlet and carrier pipe will probably be necessary to drain the cut ditch.

Proprietary end treatments not requiring a flare are currently available. Their use should be limited to cases where the above treatments are impractical or not feasible. A Special Provision will be required when proprietary end treatments are specified.

Non-NHS Projects

The NHS criteria will be used when Class I Guardrail is specified. When Class II or Class III Guardrail is specified, the approach end terminal need not be anchored but shall be flared as shown on Standard Sheet GR5.

TRAILING END TERMINALS

The Standard Trailing End Terminal (STET) shall be specified when Class I Guardrail is specified and the guardrail is outside the clear zone of the opposing traffic. Generally, this will be on divided highways.

When the guardrail is not located outside the clear zone of the opposing traffic, it shall be designed as an approach end. The guidelines as mentioned in the Approach End Terminals Section are to be followed.

BRIDGE TRANSITIONS - CONNECTIONS

The Bridge Transition-Connection Detail as shown on Standard Sheet GR7 is to be used on all new projects when transitioning approach end guardrail to a concrete shape. New bridges will have a vertical concrete face as detailed in the plans.

Existing bridges may or may not have the concrete vertical shape as required for full usage of GR7. In addition, there may be existing curbing which interferes in the full installation of GR7. When these occasions occur, Special Details may be required. The Roadway Design Division should be contacted for proper details.

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DIVISION OF HIGHWAYS

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February 26, 1993

THEORETICAL POINT OF NEED, PLACEMENT LOCATIONS AND LENGTH OF NEED

The best available guide for guardrail theoretical point of need determination and placement locations is the AASHTO "Roadside Design Guide, 1989" (RDG). It shall be used on all projects.

An assumed encroachment angle for a vehicle leaving the highway will be used for length of need determination in lieu of the runout lengths as shown in the RDG. This angle will be 8° for NHS projects and 15° for Non-NHS projects. The use of these angles should be limited to tangent or near tangent sections of roadway. Scaling as demonstrated in Section 5.6.4 of the RDG should be used in other cases.

GUARDRAIL LOCATION IN RELATION TO INTERSECTION OF THE SHOULDER SLOPE (P.I.)

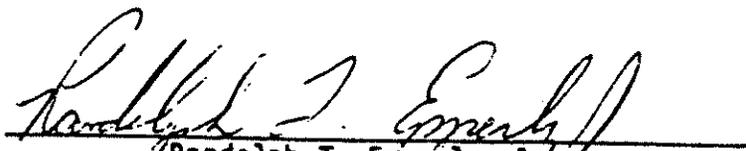
On new designs where Class I or Class II Guardrail is specified, the P.I. shall be offset one-foot from the back of the guardrail post. The post will be between the P.I. and the edge of pavement.

On new designs where the typical has not been set and Class III Guardrail is specified, the P.I. shall be offset two feet from the face of the guardrail. The guardrail will be between the P.I. and the edge of pavement.

3R PROJECT CRITERIA

On Interstate and APD 3R projects, the guardrail offset from edge of pavement shall be as originally constructed.

On all other 3R projects, the back of the guardrail post shall preferably be set at one-foot from the P.I. If this results in restricting the usable shoulder width, eight-foot long posts shall be specified and the guardrail shall be placed at its prior location.

  
\_\_\_\_\_  
Randolph T. Epperly, Jr.  
Director  
Roadway Design Division

RTE:AJ