Traffic Control for School Zones in the Bonneville Metropolitan Planning Area

Recommended Standard Application of Part 7–Traffic Control for School Areas of the Manual on Uniform Traffic Control Devices

October 2008

Traffic Control for School Zones in the Bonneville Metropolitan Planning Area

Recommended Standard Application of Part 7–Traffic Control for School Areas of the Manual on Uniform Traffic Control Devices

Bonneville Metropolitan Planning Organization
1810 West Broadway Street, Suite 15
Idaho Falls, Idaho 83402
(208) 612-5530

October 2008

TABLE OF CONTENTS

APPENDICES

PURPOSE

The intent of this supplement to the Manual on Uniform Traffic Control Devices (MUTCD) is to standardize, as much as possible, applications of traffic control devices and crossing guards in School Zones on all public streets in the Bonneville Metropolitan Planning Area. Through consistent application of signing and pavement markings in School Zones, consistent behavior from motorists will result, thereby improving safety for students traveling to and from school.

Any deviation from these standards should be supported by an engineering study. All references cited herein are to the 2003 Edition of the MUTCD.

SECTION 1—GENERAL

A. School Crossing Control Criteria (ref. MUTCD 7A.03)

1. A **SCHOOL CROSSWALK** is recommended when it is determined through a count during a period extending from not earlier than 45 minutes before school starts until 15 minutes after school starts, or a period from 15 minutes before the end of school to 45 minutes after school ends:

   - *On roadways with a posted speed of 25 mph or lower*, that the volume of students exceeds **20 students**
   - *On roadways with a posted speed of 30 mph or higher*, that the volume of students exceeds **10 students**

   and either of the following conditions exist:

   - The street average daily traffic (ADT) exceeds 500 vehicles; or
   - The hourly traffic volume during either of the time periods above exceeds 50 vehicles.

   a. The volume of students may be determined by both counts and projections.

   b. If projections are used to determine the volume of students at a proposed School Crosswalk, an engineering study should be performed to verify the projections. Supporting data for the study should include, as a minimum, enrollment information from the school district and a survey of affected parents to define anticipated usage of the proposed School Crosswalk.

   c. The signing for a School Crosswalk should include the School Advance Warning assembly (see Section 2.E) and the School Crosswalk Warning assembly (see Section 2.F). Signing and pavement markings for a School Crosswalk should be as shown in Appendix A, Typical Applications, Figures A1 through A5.

   d. Except as noted below, a school crosswalk should not be installed within 600 feet of another School Crosswalk, or a marked pedestrian crosswalk, on the same

roadway. The 600 foot spacing requirement does not apply to another crosswalk at the same intersection, or to crosswalks on legs of intersecting roadways.

e. The 600 foot spacing may be reduced to a minimum of 300 feet when all of the following are met:

   i. School pedestrian volume and pedestrian flow patterns support crosswalk spacing less than 600 feet, as determined by an engineering study;

   ii. Based upon the posted or 85th percentile speed, the required signing for each school crosswalk is able to be placed according to Appendix A with a minimum 100 foot spacing between the signs of each zone; and,

   iii. Only one of the crosswalks is a school crosswalk in a Reduced Speed School Zone.

f. Two school crosswalks crossing the same roadway at an intersection should be located on the minor roadway. Only one school crosswalk should cross the major roadway.

g. A school crosswalk should not be installed at any location that has inadequate stopping sight distance as indicated in the most recent edition of "A Policy on Geometric Design of Highways and Streets," American Association of State Highway and Transportation Officials (AASHTO).

2. A **REDUCED SPEED SCHOOL ZONE** is defined as the area of the roadway associated with a school crosswalk where the speed limit is reduced to 20 mph, including the approach to the crosswalk and associated signing. A Reduced Speed School Zone is recommended when all of the following requirements are met:

   - The requirements for a School Crosswalk;
   - The posted speed limit is 50 mph or lower; and
   - The "Standard for Installation of a Reduced Speed School Zone" (see Appendix B1)

   a. The signing for a Reduced Speed School Zone should include the School Advance Warning assembly (see Section 2, Part E), the School Speed Limit assembly (see Section 2.I), the School Crosswalk Warning assembly (see Section 2.F), and the END SCHOOL ZONE (S5-2) and speed limit signs (see Section 2.J). Signing and pavement markings for a Reduced Speed School Zone should be as shown in Appendix A, Typical Applications, Figures A6 through A10

   b. Except as noted below, a Reduced Speed School Zone should not be installed or maintained on an approach to an intersection controlled by a roundabout, a traffic signal, or a STOP (R1-1) sign.

   c. A Reduced Speed School Zone may be installed, or may be allowed to remain at a roundabout, signalized, or stop-controlled intersection, as a mitigation measure

for concerns relating to sight distance, grade, or other critical issues, as determined by an engineering study.

d. An Overhead School Speed Limit assembly may be used in a Reduced Speed School Zone if it meets the requirements in this Section and Section 2.I, and in the "Standard for Installation of an Overhead School Speed Limit Assembly in a Reduced Speed School Zone" (see Appendix B2)

3. An **ABUTTING SCHOOL ZONE** is defined as an area of the roadway adjacent to school buildings or grounds, including the approach to such areas, with no associated school crosswalk.

   a. An Abutting School Zone may be used based upon engineering judgment.

   b. If used, signing for an Abutting School Zone should include the School Advance Warning (S1-1) sign, and should not be supplemented with the AHEAD (W16-9P) plaque (see Section 2.N and Appendix A, Typical Applications, Figure A11).

4. A **SCHOOL BUS LOADING ZONE** is defined as an area on-premise or off-premise of school property designated for the loading and unloading of students from school buses, including the associated signing and curb markings.

   a. The design and layout of School Bus Loading Zones (as well as Parent Drop-Off locations) should be reviewed by an Idaho-licensed Professional Engineer.

   b. The signing for a School Bus Loading Zone should include either the School Buses Only (SS1-2) symbol sign or the SCHOOL BUSES ONLY (SS1-3) sign (see Section 2.P). Curb markings should be used as described in Section 3.C.

   c. Except as noted below, School Bus Loading Zones should:
      i. Be used for on-premise school bus loading zones
      ii. Be separate from private vehicle loading and unloading areas
      iii. Be located so that students are not required to cross roadways or parking lot areas to access the school
      iv. Be located such that buses are not required to back up
      v. Be at least 12 ft wide
      vi. Provide minimum 10-wide sidewalks in areas of pedestrian storage.

   d. All newly constructed schools should meet the above Standard for on-premise school Bus Loading Zones.

   e. Existing School Bus Loading Zones may be allowed exceptions to the standards above if those zones are demonstrated to have unusual conditions.

B. Private Schools, Charter Schools, and Places of Higher Learning

1. Private and charter schools should meet the requirements and specifications of this manual, using the same age group classifications that traditional public schools use.

2. Crosswalks associated with places of higher learning should not be signed or marked as School Zones. Any such existing facilities should be removed and treated as pedestrian facilities as described in the MUTCD.

SECTION 2—SIGNS

A. Size of School Signs (ref. MUTCD 7B.01)

1. On roadways in school areas where the posted speed or the 85th percentile speed is 40 mph or less, the sizes of signs and plaques in the *Conventional Road* column of **TABLE 1** should be used. However, the *Oversized* sign size may be used for applications that require increased emphasis, improved recognition, or increased legibility.

2. On roadways in school areas where the posted speed or the 85th percentile speed is 45 mph or greater, the sizes of signs and plaques in the *Oversized* column of **TABLE 1** should be used.

B. Position of Signs (ref. MUTCD 7B.03)

1. Position of signs should be as prescribed in Appendix A, Typical Applications, Figures A1 through A11.

2. MUTCD Sections 2A.18 and 7B.03 contain information regarding the lateral location of signs. The minimum lateral offset (spacing to the edge of sign) should be:

    - In rural areas, a minimum of 6 feet from a paved shoulder or 12 feet from the traveled way; and
    - In urban areas, a minimum of 2 feet from the face of curb, or a minimum of 1 foot from the face of curb where sidewalk width is limited or where existing poles are close to the curb.

C. Height of Signs (ref. MUTCD 7B.04)

1. MUTCD Section 2A.18 contains information regarding the mounting height of signs. The minimum height (to bottom of lowest sign or plaque) should be:

    - In rural areas, 5 feet for a sign or 4 feet for an assembly from the edge of pavement extended;

TABLE 1
Size of School Area Signs and Plaques

Sign	MUTCD Code	Reference Section	Conventional Road	Oversized
Yield Here to Peds	R1-5	2.L	30 x 30 in	36 x 36 in
Speed Limit (School Use)	R2-1	2.J	24 x 30 in	36 x 48 in
Turning Vehicles Yield to Peds	R10-15	2.P	30 x 30 in	-
School Advance Warning	S1-1	2.E,2.F,2.N	36 x 36 in	48 x 48 in
SCHOOL BUS STOP AHEAD	S3-1	2.G	36 x 36 in	48 x 48 in
School Bus Turn Ahead	S3-2	2.H	36 x 36 in	48 x 48 in
Reduced Speed School Zone Ahead	S4-5, S4-5a	-	36 x 36 in	48 x 48 in
SCHOOL SPEED LIMIT 20 WHEN FLASHING	S5-1	2.I	24 x 48 in	36 x 72 in
END SCHOOL ZONE	S5-2	2.J	24 x 30 in	36 x 48 in
School Buses Only (symbol)	SS1-2	2.O	12 x 24 in	-
SCHOOL BUSES ONLY	SS1-3	2.O	12 x 18 in	-

Plaque	MUTCD Code	Reference Section	Conventional Road	Oversized
Specific Periods of Operation	S4-1P	2.O	12 x 6 in	-
SCHOOL	S4-3P	2.I	24 x 8	36 x 12
WHEN FLASHING	S4-4P	2.I	24 x 10	36 x 18
ALL YEAR	SS1-1P	2.N	36 x 12 in	48 x 18 in
Diagonal Arrow	W16-7P	2.F	24 x 12 in	30 x 18 in
AHEAD	W16-9P	2.E,2.N	24 x 12 in	30 x 18 in

- In urban areas not over where pedestrian or parking movements occur, 7 feet for a sign or 6 feet for an assembly from the ground; and
- In rural or urban areas over where pedestrian or parking movements occur, 7 feet from the ground.

2. When the Yield Here to Pedestrians (R1-5, R1-5a) sign is used (see Section 2.L), the height of the bottom of the School Crosswalk Warning assembly (see Section 2.F) should be no less than the top of the Yield Here to Pedestrians sign.

    a. In a school zone containing the Yield Here to Pedestrians sign, the mounting height of the School Crosswalk Warning assembly is higher to preclude it from being obscured by the Yield Here to Pedestrians sign.

D. Sign Color for School Warning Signs (ref. MUTCD 7B.07)

1. The following signs should have a **fluorescent yellow-green** background with black legend and border :
    - School Advance Warning sign (S1-1);
    - SCHOOL BUS STOP AHEAD sign (S3-1);
    - School Bus Turn Ahead (S3-2);
    - SCHOOL plaque (S4-3)
    - Reduced Speed School Zone Ahead sign (S4-5, S4-5a);
    - The SCHOOL portion of the School Speed Limit sign (S5-1);
    - ALL YEAR plaque (SS1-1P);
    - Diagonal Arrow plaque (W16-7P); and,
    - AHEAD plaque (W16-9P).

        a. All new sign installations of the types above, including replacements, should meet the color requirements in this Standard.

E. School Advance Warning Assembly; S1-1 with Supplemental Plaque (ref. MUTCD 7B.08)

1. A School Advance Warning assembly should be installed in advance of the School Crosswalk Warning assembly in a School Crosswalk Zone (see Appendix A, Typical Applications, Figures A1 through A5) and in advance of the School Speed Limit assembly (see Section 2.I) in a Reduced Speed School Zone (see Appendix A, Typical Applications, Figures A6 through A10).

    a. The School Advance Warning assembly should consist of the School Advance Warning sign (S1-1) with a supplementary AHEAD (W16-9P) plaque.

    b. A supplementary ALL YEAR (SS1-1p) plaque (see Section 2.O) should be installed between the School Advance Warning (S1-1) sign and the AHEAD (W16-9P) plaque for year-round schools.

    c. The School Advance Warning assembly should be installed in advance of the school crosswalk at distances shown in Appendix A.

2. If a school crosswalk is installed at a roundabout, the School Advance Warning assembly should be installed on all approaches to the roundabout.

3. The School Advance Warning sign (S1-1) may be installed in advance of locations where school buildings or grounds are adjacent to the highway to warn road uses that they are approaching a school area (see Abutting School Zone; Section 1.A.4).

F. School Crosswalk Warning Assembly; S1-1 with Diagonal Arrow (ref MUTCD 7B.09)

1. The School Crosswalk Warning assembly should be installed at the school crosswalk, or as close to it as possible.

    a. The School Crosswalk Warning assembly should not be installed on approaches controlled by a STOP (R1-1) sign.

    b. The School Crosswalk Warning assembly should consist of a School Advance Warning (S1-1) sign, supplemented directly below by a downward pointing Diagonal Arrow (W16-7P) plaque to show the location of the crossing.

    c. Neither the ALL YEAR (SS1-1p) plaque nor the School Crossing (S2-1) sign (1988 MUTCD) should be used as part of the School Crosswalk Warning assembly.

    d. The mounting height of the School Crosswalk Warning assembly is higher when used in conjunction with the Yield Here to Pedestrians sign (see Section 2.C).

G. School Bus Stop Ahead Sign; S3-1 (ref. MUTCD 7B.10)

1. The School Bus Stop Ahead (S3-1) sign should be installed in advance of locations where a school bus, when stopped to pick up or discharge passengers, is not visible to road users for a distance as determined by the "0" column under Condition B of Table 2C-4 in the MUTCD, and where there is no opportunity to relocate the school bus stop to provide the distance specified in Table 2C-4.

    a. The School Bus Stop Ahead (S3-1) sign may be installed in advance of school bus stops along high speed roadways with limited refuge area for waiting students.

    b. The diagrammatic version of the School Bus Stop Ahead (S3-1) sign is preferred over the text-only version.

H. SCHOOL BUS TURN AHEAD Sign; S3-2

1. The SCHOOL BUS TURN AHEAD (S3-2) sign may be installed in advance of locations where a school bus turns around on a roadway at a location not visible to approaching road users for a distance as determined by the "0" column under Condition B of Table 2C-4 in the MUTCD, and where there is no opportunity to relocate the school bus turn around to provide the distance specified in Table 2C-4.

I. School Speed Limit Assembly; S5-1 with Speed Limit Sign Beacons (ref. MUTCD 7B.11)

1. A School Speed Limit Assembly (SCHOOL SPEED LIMIT 20 MPH WHEN FLASHING (S5-1) sign with Speed Limit Sign Beacons, is used to indicate the speed limit where a Reduced Speed School Zone has been established. The School Speed Limit assembly establishes the point where the reduced speed zone begins (see Appendix A, Typical Applications, Figures A6 through A10).

    a. The school speed limit displayed is 20 mph.

    b. A combination of the SCHOOL (S4-3P) plaque, SPEED LIMIT 20 (R2-1) sign, and WHEN FLASHING (S4-4P) plaque may be substituted for the S5-1 sign.

    c. The flashing lights of the Speed Limit Sign Beacons, should flash yellow alternately, mounted vertically one above and one below the sign.

2. The in-force period for a school reduced speed limit should be:

    a. a time extending from not earlier than 45 minutes before school starts until demand ceases (normally 15 minutes after school begins); and,

    b. a time extending from the beginning of the demand (normally 15 minutes prior to the end of school), to not later than 45 minutes after school ends; and,

    c. time frames similar to a and b for other school programs throughout the day when the minimum conditions for a Reduced Speed School Zone exist (see Section 1.A).

3. The School Speed Limit Sign Beacons should not flash continuously throughout the school day.

4. Installations should be operated by an automatic timer with a programmable yearly cycle.

5. The Specific Periods of Operations (S4-1) plaque and the WHEN CHILDREN ARE PRESENT (S4-2) plaque should not be used with the School Speed Limit Assembly.

6. An Overhead School Speed Limit Assembly (OSSLA) may be used in a Reduced Speed School Zone if it meets the requirements in Section 1.A, this Section, and in "Standard for Installation of an Overhead School Speed Limit Assembly in a Reduced Speed School Zone" (see Appendix B2).

    a. OSSLAs should not be installed in a Reduced Speed School Zone on an approach to a signalized intersection.

b. An existing OSSLA on an approach to an intersection upgraded to signalized control may be allowed to remain in place based on sight distance, grade, or other critical issues as determined by an engineering study.

c. If an existing OSSLA is allowed to remain at an intersection upgraded to signalized control, it shall be located such that the required stopping and decision sight distances are provided at the signal per the AASHTO publication, "A Policy on Geometric Design of Highways and Streets," current edition. If these sight distances are not provided with the OSSLA in the existing location, and it is still desirable to retain the OSSLA, it shall be relocated to a position that provides the proper sight distance.

J. END SCHOOL ZONE Sign; S5-2 (ref. MUTCD 7B.13)

1. The end of a Reduced Speed School Zone is marked with an END SCHOOL ZONE (S5-2) sign. The END SCHOOL ZONE (S5-2) sign should be located 50 feet on the far side of the school crosswalk, on the far side of the intersection (as practical), or 50 feet beyond the YIELD sign in a roundabout as part of a Reduced Speed School Zone (see Appendix A, Typical Applications, Figures A6 through A10).

2. A standard Speed Limit sign showing the speed limit for the section of highway that is downstream from the authorized and posted school speed zone should be mounted on the same post as and below the END SCHOOL ZONE (S5-2) sign.

K. Parking and Stopping Signs; R7 and R8 Series (ref. MUTCD 7B.14)

1. Parking and stopping should be restricted in the approach to, and beyond, school crosswalks in School Zones during school hours including loading and unloading periods (see Appendix A, Typical Applications, Figures A1 through A11).

2. Parking and stopping may be restricted along approaches to the School Advance Warning assembly, and the School Speed Limit assembly. Parking and stopping may also be restricted upon all streets immediately abutting the school grounds during school hours including loading and unloading periods.

3. Refer to Sections 2B.34, 2B.35, and 2B.36 of the MUTCD for details of Parking and Stopping signing.

L. Yield Here To Peds Sign; R1-5

1. The Yield Here to Peds (R1-5) sign may be used at unsignalized, midblock school crosswalks.

a. If used, the Yield Here To Peds (R1-5, R1-5a) sign should be placed 20 to 50 feet in advance of an unsignalized midblock school crosswalk and should be accompanied by yield lines (see MUTCD Section 7C.04 and Appendix A, Typical Applications, Figures A5 and A7).

b. The mounting height of the School Crosswalk Warning assembly is higher when this sign is used (see Section 2.C).

M. Abutting School Zone; S1-1

1. If used, the signing for an Abutting School Zone should include the School Advance Warning (S1-1) sign, and should not be supplemented with the AHEAD (W16- 9p) plaque. The School Advance Warning (S1-1) sign with supplementary ALL YEAR (SS1-1p) plaque should be used for year-round schools (see Section 2.N and Appendix A Typical Applications, Figure A11).

N. ALL YEAR Plaque; SS1-1P

1. A supplementary ALL YEAR (SS1-1P) plaque should be used in conjunction with a year-round school as part of the School Advanced Warning assembly and the Abutting School Zone assembly.

2. When the ALL YEAR (SS1-1P) plaque is used:

   a. As part of the School Advance Warning assembly, it should be placed between the School Advance Warning sign (S1-1) and the AHEAD (W16-9P) plaque.

   b. As part of the Abutting School Zone assembly, it should be placed below the School Advance Warning sign (S1-1).

3. The sign design for the ALL YEAR (SS1-1P) plaque should conform to Appendix D.

O. School Bus Loading Zone Signs; SS1-2 and SS1-3

1. When used, a School Bus Loading Zone sign [School Buses Only (SS1-2) symbol sign or SCHOOL BUSES ONLY (SS1-3) sign] should mark the beginning and ending of each School Bus Loading Zone. Intermediate signs should be installed at approximate 50 foot spacing within the Zone.

   a. The School Buses Only (SS1-2) symbol sign and the

SCHOOL BUSES ONLY (SS1-3) sign should have a white background with red legend and border. The bus symbol on the SS1-2 sign should be black (see Appendix D for sign design).

b. If a School Bus Loading Zone is used off-premise, and parking is allowed during nonschool bus loading times, a Specific Periods of Operation (S4-1) plaque should be used below the School Buses Only signs to designate bus only times.

c. Either the School Buses Only (SS1-2) symbol sign or the SCHOOL BUSES ONLY (SS1-3) sign may be used in a School Bus Loading Zone.

P. Turning Traffic Must Yield To Pedestrians Sign; R10-15

1. In order to remind drivers who are making turns to yield to pedestrians, especially at intersections where right turn on red is permitted and school and pedestrian crosswalks are marked, a Turning Traffic Must Yield To Pedestrians (R10-15) sign may be used.

SECTION 3—MARKINGS

A. Standardization of Application (ref. MUTCD 7C.02)

1. Each standard marking should be used only to convey the meaning prescribed for it in the MUTCD.

2. Markings associated with a School Zone should not be required on unpaved roads.

B. Crosswalk Markings (ref. MUTCD 7C.03)

1. White longitudinal crosswalk markings (aka "ladder" crosswalks) should be used for crosswalks within School Crosswalk Zones and Reduced Speed School Zones.

    a. The longitudinal lines should be 24 inches wide and spaced 24 to 36 inches apart. The length of the longitudinal lines should be 9 feet minimum.

2. The marked surfaces of ladder crosswalks can be slippery when wet, especially as the crosswalk surface wears smooth. A modification of the longitudinal crosswalk markings, eliminating the markings from the middle third of the crosswalk may be used. The "double ladder" crosswalk maintains the same visual appearance of the single ladder crosswalk from the driver's point of view, but allows pedestrians to walk in the paved surface between the two ladders of the crosswalk.

a. If used, the double ladder crosswalk should be 12 feet wide: 4 feet of white longitudinal markings, 4 feet of unmarked pavement, then 4 feet of additional longitudinal markings.

3. Longitudinal crosswalk markings should be spaced to avoid vehicle wheel paths, where possible.

4. Longitudinal crosswalk markings should be reserved for school crosswalks. Transverse and diagonal-line crosswalk markings should not be used within School Crosswalks or Reduced Speed School Zones.

C. Curb Markings for Parking Regulations (ref. MUTCD 7C.05)

1. Signs should be used with curb markings in those areas where curb markings are frequently covered by snow and ice accumulation, unless the no parking zone is controlled by statute or local ordinance.

2. Curbs within on-premise School Bus Loading Zones should be painted yellow-green.

3. Curbs within off-premise School Bus Loading Zones may be painted either red or yellow-green

D. Pavement Word and Symbol Markings (ref. MUTCD 7C.06)

1. Word and symbol markings are white in color. Word and symbol markings should not be used for mandatory messages except in support of standard signs.

    a. Letters and numerals should be 6 feet or more in height. Letters, numerals and symbols should be in accordance with the Federal Highway Administration's "Standard Highway Signs" book (see Section 1A.11 of the MUTCD).

    b. The longitudinal space between word or symbol message markings, including arrow markings, should be at least four (4) times the height of the characters for low speed roads, but not more than ten (10) times the height of the characters under any conditions.

2. The SCHOOL word marking should be installed in the traffic lane(s) adjacent to the School Advance Warning assembly (S1-1 with supplementary plaques) (see Appendix A, Typical Applications, Figures A1 through A11).

    a. The SCHOOL word marking should be wholly contained within the traffic lane, and should not encroach on lane striping or other pavement markings.

    b. The SCHOOL word marking may extend the width of two travel lanes.

i. The two-lane SCHOOL marking should only be used on highways with an even number of travel lanes. Highways with an odd number of travel lanes should use a SCHOOL marking in each lane.

ii. If the two-lane SCHOOL marking is used, the letters should be 10 feet or more in height.

3. The SCHOOL word marking may be used in an Abutting School Zone adjacent to the School Advance Warning (S1-1) sign.

E. Center, Lane and Edge Lines

1. On paved roads, a School Crosswalk Zone or Reduced Speed School Zone should be marked as follows (see Appendix A, Typical Applications, Figures A1 through A11):

   a. With no two-way left-turn lane (TWLTL), the center line should be a solid double yellow line between any two travel lanes moving in opposing directions for the entire length of a School Crosswalk Zone or a Reduced Speed School Zone (between the School Advance Warning assemblies in both cases);

   b. With a TWLTL, striping should be as per Part 3 of the MUTCD and Appendix A, Typical Applications, Figures A5 and A7; and,

   c. Lane line(s) should be solid white between any two travel lanes moving in the same direction approaching the crosswalk. The length of the solid white lines should be based on either the posted speed limit or the 85th percentile speed (see Appendix A, Typical Applications, Figures A1 through A10).

2. On non-paved roads, the standard signing for a School Crosswalk or a Reduced Speed School Zone should be supplemented with the DO NOT PASS (R4-1) sign and the PASS WITH CARE (R4-2) sign.

SECTION 4—CROSSING SUPERVISION

A. Adult Crossing Guards

1. Adult crossing guards are recommended for elementary schools (see Appendix B3) at:
   - All Reduced Speed School Zones;
   - School Crosswalks at signalized intersections where the posted speed limit is 30 mph or greater; and,
   - School Crosswalks at roundabouts.

2. Adult crossing guards may be used at all other School Crosswalks and Reduced Speed School Zones (see Appendix B3).

APPENDICES

Appendix A – Typical Applications

Appendix B - School Zone Protection Flowcharts

Appendix C – Reduced Speed School Zone Point Calculation

Appendix D – Special School Zone Sign Layouts

APPENDIX A

Typical Applications

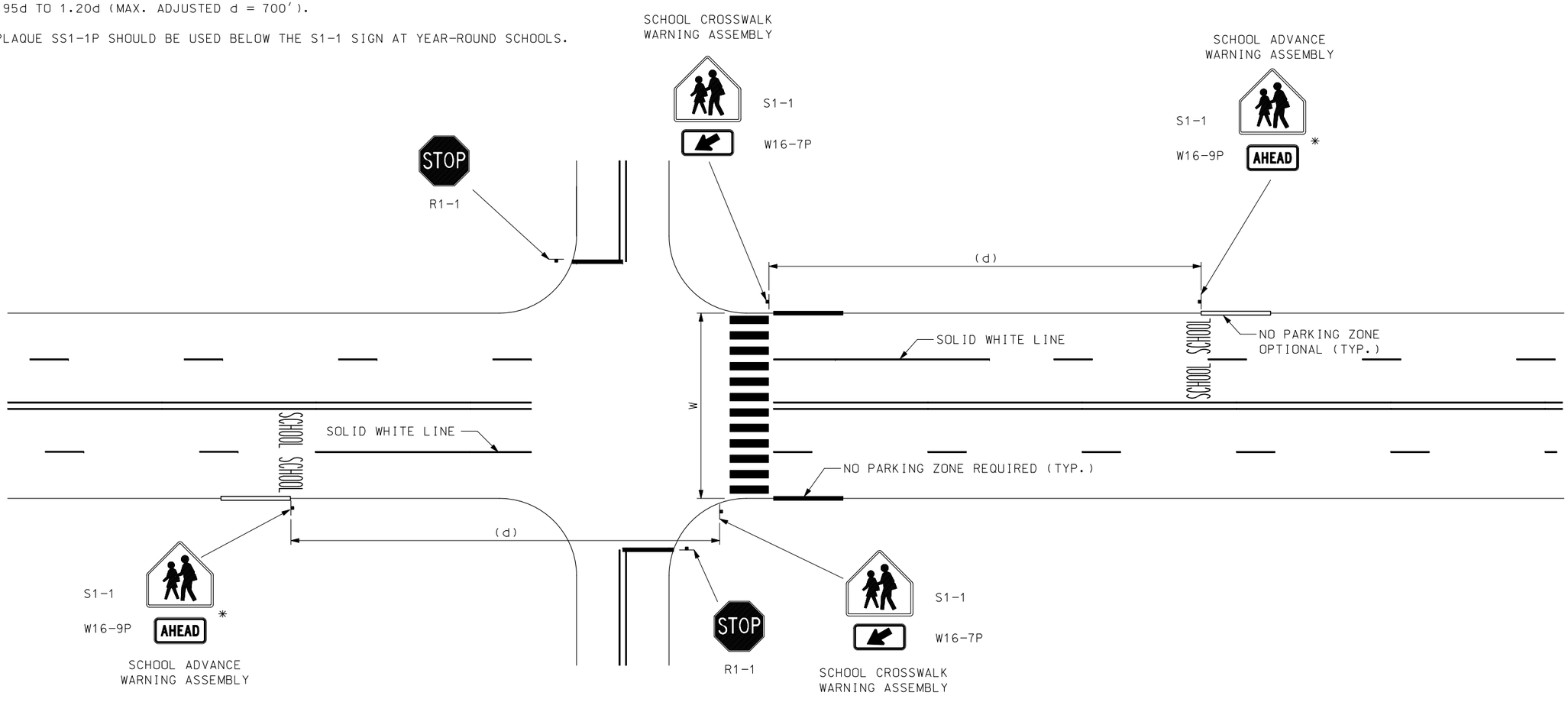
SIGNING AND STRIPING PLACEMENT

POSTED OR 85TH PERCENTILE SPEED (MPH)	SCHOOL ADVANCE (S1-1) (d)	NO PARKING ZONE LENGTH				MINIMUM SOLID WHITE LINE LENGTH
		AT X WALK OR SCHOOL ADVANCE	AFTER X WALK			
			W ≤ 50′	50′ < W < 70′	W ≥ 70′	
25	250′	60′	40′	25′	20′	150′
30	325′	85′	50′	35′	25′	150′
35	400′	115′	70′	50′	35′	200′
40	475′	150′	90′	65′	45′	250′
45	550′	190′	110′	80′	55′	250′
50	625′	230′	140′	100′	70′	250′

NOTES:

(d) DISTANCE IS REFERENCED FROM THE SCHOOL CROSSWALK AND MAY VARY FROM 0.95d TO 1.20d (MAX. ADJUSTED d = 700′).

* "ALL YEAR" PLAQUE SS1-1P SHOULD BE USED BELOW THE S1-1 SIGN AT YEAR-ROUND SCHOOLS.



ORIGINAL DRAWING COURTESY OF UTAH DEPARTMENT OF TRANSPORTATION.
MODIFIED FOR USE IN TRAFFIC CONTROL FOR SCHOOL ZONES IN THE BONNEVILLE METROPOLITAN PLANNING AREA

TRAFFIC CONTROL FOR SCHOOL ZONES IN THE BONNEVILLE METROPOLITAN PLANNING AREA	TYPICAL INTERSECTION SCHOOL CROSSWALK ZONE: TWO-WAY STOP CONTROLLED	FIGURE A1

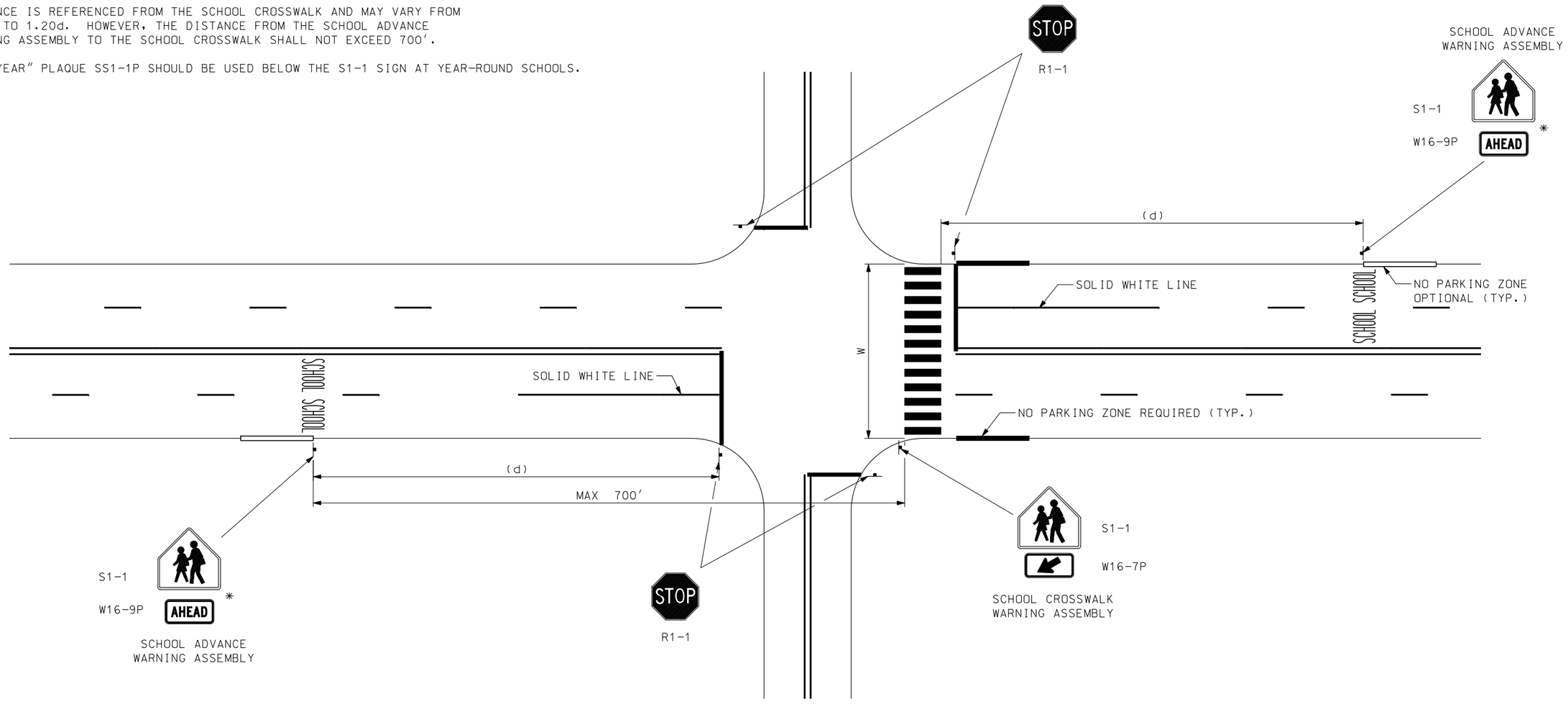
SIGNING AND STRIPING PLACEMENT

POSTED OR 85TH PERCENTILE SPEED (MPH)	SCHOOL ADVANCE (S1-1) (d)	NO PARKING ZONE LENGTH				MINIMUM SOLID WHITE LINE LENGTH
		AT X WALK OR SCHOOL ADVANCE	AFTER X WALK			
			W ≤ 50′	50′ < W < 70′	W ≥ 70′	
25	250′	60′	40′	25′	20′	150′
30	325′	85′	50′	35′	25′	150′
35	400′	115′	70′	50′	35′	200′
40	475′	150′	90′	65′	45′	250′
45	550′	190′	110′	80′	55′	250′
50	625′	230′	140′	100′	70′	250′

NOTES:

(d) DISTANCE IS REFERENCED FROM THE SCHOOL CROSSWALK AND MAY VARY FROM 0.95d TO 1.20d. HOWEVER, THE DISTANCE FROM THE SCHOOL ADVANCE WARNING ASSEMBLY TO THE SCHOOL CROSSWALK SHALL NOT EXCEED 700′.

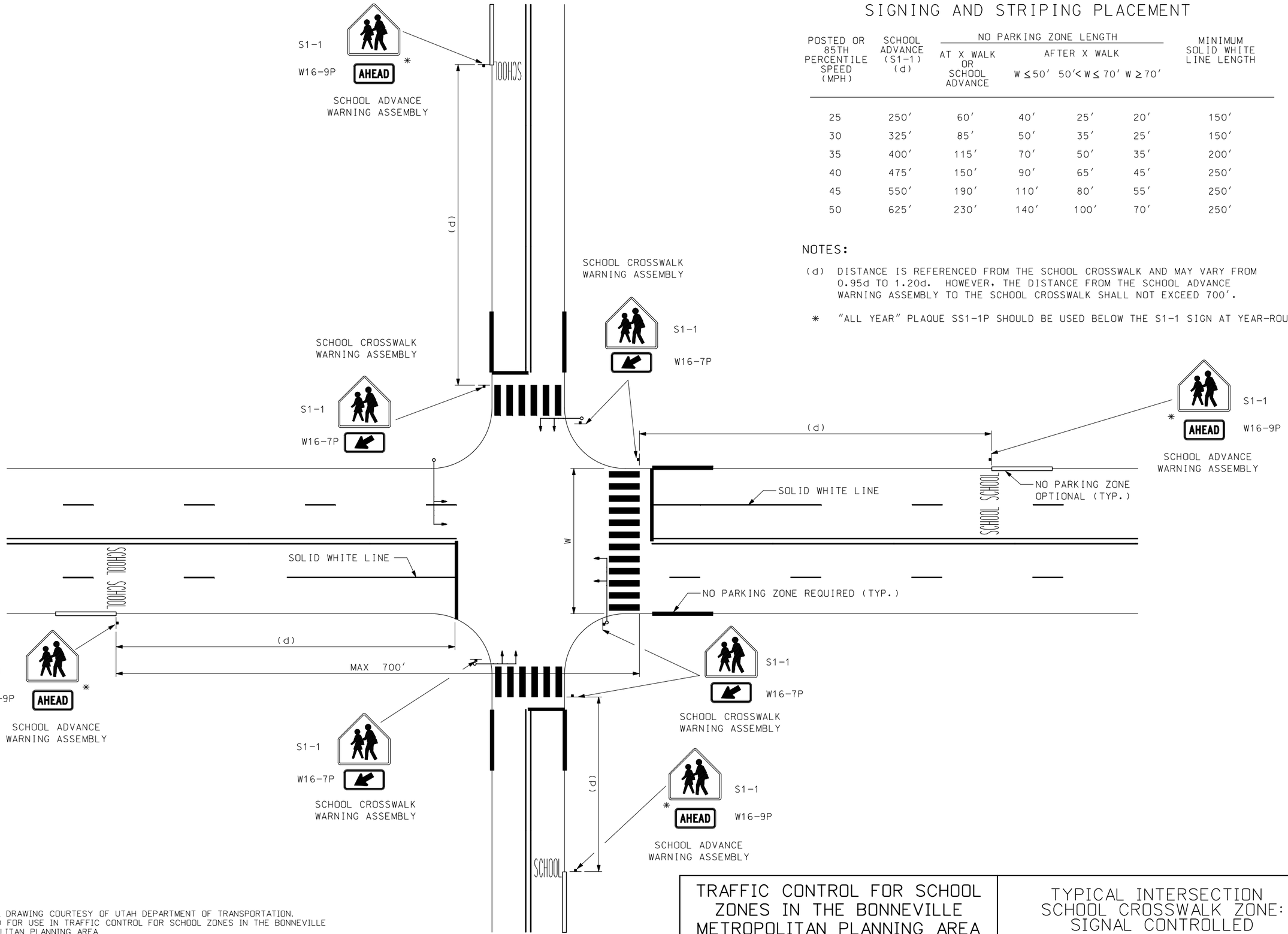
* "ALL YEAR" PLAQUE SS1-1P SHOULD BE USED BELOW THE S1-1 SIGN AT YEAR-ROUND SCHOOLS.



ORIGINAL DRAWING COURTESY OF UTAH DEPARTMENT OF TRANSPORTATION.
MODIFIED FOR USE IN TRAFFIC CONTROL FOR SCHOOL ZONES IN THE BONNEVILLE METROPOLITAN PLANNING AREA

TRAFFIC CONTROL FOR SCHOOL ZONES IN THE BONNEVILLE METROPOLITAN PLANNING AREA	TYPICAL INTERSECTION SCHOOL CROSSWALK ZONE: FOUR-WAY STOP CONTROLLED	FIGURE A2

udot-sysprinter_PDF.plt 7:14:00 AM 9/11/2008 ken-utah N:\8001_bmpo_schools\Sheet_Files\Appendix A02.dgn



SIGNING AND STRIPING PLACEMENT

POSTED OR 85TH PERCENTILE SPEED (MPH)	SCHOOL ADVANCE (S1-1) (d)	NO PARKING ZONE LENGTH				MINIMUM SOLID WHITE LINE LENGTH
		AT X WALK OR SCHOOL ADVANCE	AFTER X WALK			
			W ≤ 50′	50′ < W ≤ 70′	W ≥ 70′	
25	250′	60′	40′	25′	20′	150′
30	325′	85′	50′	35′	25′	150′
35	400′	115′	70′	50′	35′	200′
40	475′	150′	90′	65′	45′	250′
45	550′	190′	110′	80′	55′	250′
50	625′	230′	140′	100′	70′	250′

NOTES:

(d) DISTANCE IS REFERENCED FROM THE SCHOOL CROSSWALK AND MAY VARY FROM 0.95d TO 1.20d. HOWEVER, THE DISTANCE FROM THE SCHOOL ADVANCE WARNING ASSEMBLY TO THE SCHOOL CROSSWALK SHALL NOT EXCEED 700′.

* "ALL YEAR" PLAQUE SS1-1P SHOULD BE USED BELOW THE S1-1 SIGN AT YEAR-ROUND SCHOOLS.

ORIGINAL DRAWING COURTESY OF UTAH DEPARTMENT OF TRANSPORTATION.
MODIFIED FOR USE IN TRAFFIC CONTROL FOR SCHOOL ZONES IN THE BONNEVILLE METROPOLITAN PLANNING AREA

TRAFFIC CONTROL FOR SCHOOL ZONES IN THE BONNEVILLE METROPOLITAN PLANNING AREA	TYPICAL INTERSECTION SCHOOL CROSSWALK ZONE: SIGNAL CONTROLLED	FIGURE A3

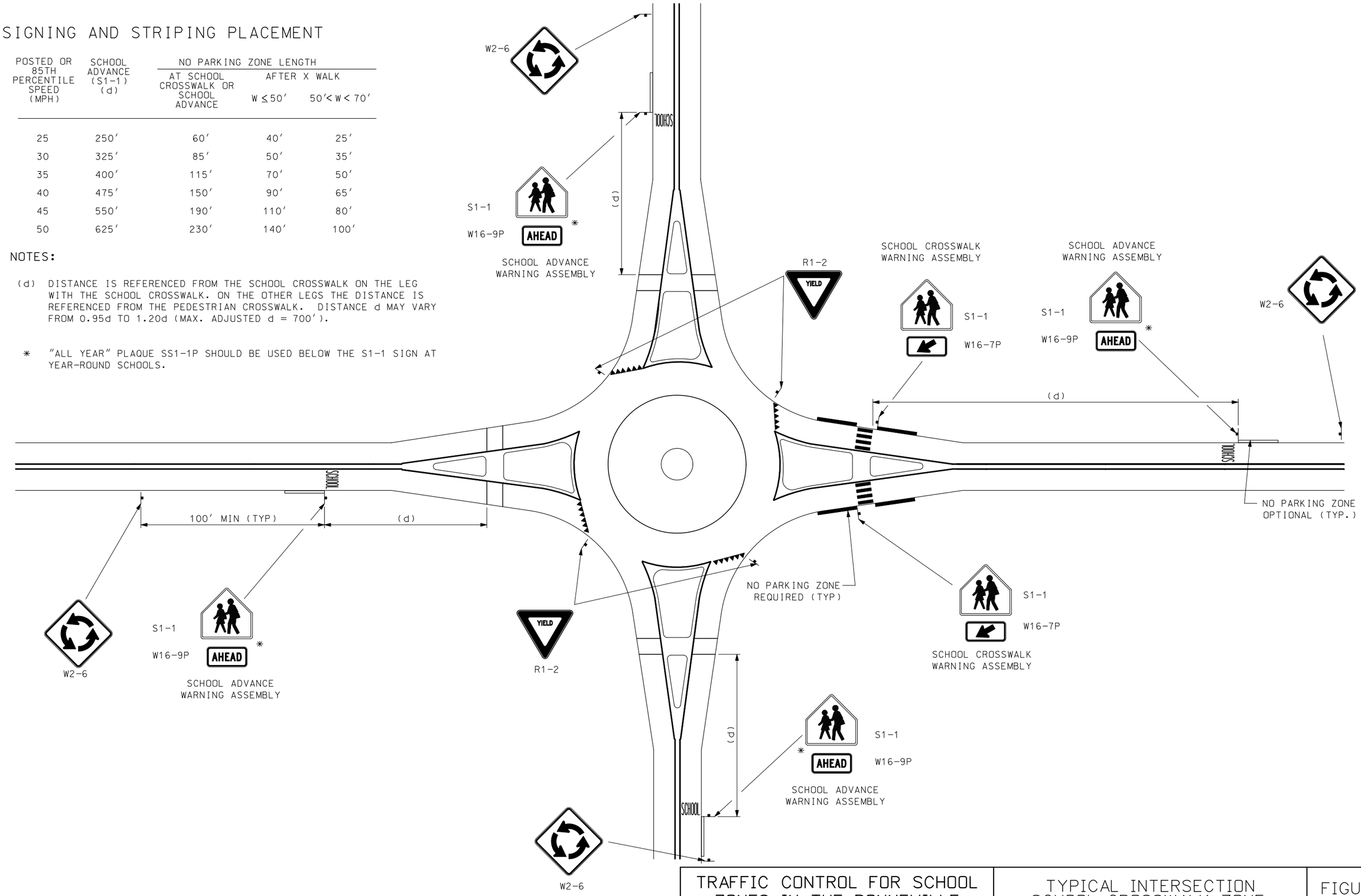
SIGNING AND STRIPING PLACEMENT

POSTED OR 85TH PERCENTILE SPEED (MPH)	SCHOOL ADVANCE (S1-1) (d)	NO PARKING ZONE LENGTH		
		AT SCHOOL CROSSWALK OR SCHOOL ADVANCE	AFTER X WALK	
			W ≤ 50′	50′ < W < 70′
25	250′	60′	40′	25′
30	325′	85′	50′	35′
35	400′	115′	70′	50′
40	475′	150′	90′	65′
45	550′	190′	110′	80′
50	625′	230′	140′	100′

NOTES:

(d) DISTANCE IS REFERENCED FROM THE SCHOOL CROSSWALK ON THE LEG WITH THE SCHOOL CROSSWALK. ON THE OTHER LEGS THE DISTANCE IS REFERENCED FROM THE PEDESTRIAN CROSSWALK. DISTANCE d MAY VARY FROM 0.95d TO 1.20d (MAX. ADJUSTED d = 700′).

* "ALL YEAR" PLAQUE SS1-1P SHOULD BE USED BELOW THE S1-1 SIGN AT YEAR-ROUND SCHOOLS.



ORIGINAL DRAWING COURTESY OF UTAH DEPARTMENT OF TRANSPORTATION.
MODIFIED FOR USE IN TRAFFIC CONTROL FOR SCHOOL ZONES IN THE BONNEVILLE METROPOLITAN PLANNING AREA

TRAFFIC CONTROL FOR SCHOOL ZONES IN THE BONNEVILLE METROPOLITAN PLANNING AREA	TYPICAL INTERSECTION SCHOOL CROSSWALK ZONE: ROUNDABOUT CONTROLLED	FIGURE A4

SIGNING AND STRIPING PLACEMENT

POSTED OR 85TH PERCENTILE SPEED (MPH)	SCHOOL ADVANCE (S1-1) (d)	NO PARKING ZONE LENGTH				MINIMUM SOLID WHITE LINE LENGTH
		AT X WALK OR SCHOOL ADVANCE	AFTER X WALK			
			W ≤ 50′	50′ < W < 70′	W ≥ 70′	
25	250′	60′	40′	25′	20′	150′
30	325′	85′	50′	35′	25′	150′
35	400′	115′	70′	50′	35′	200′
40	475′	150′	90′	65′	45′	250′
45	550′	190′	110′	80′	55′	250′
50	625′	230′	140′	100′	70′	250′

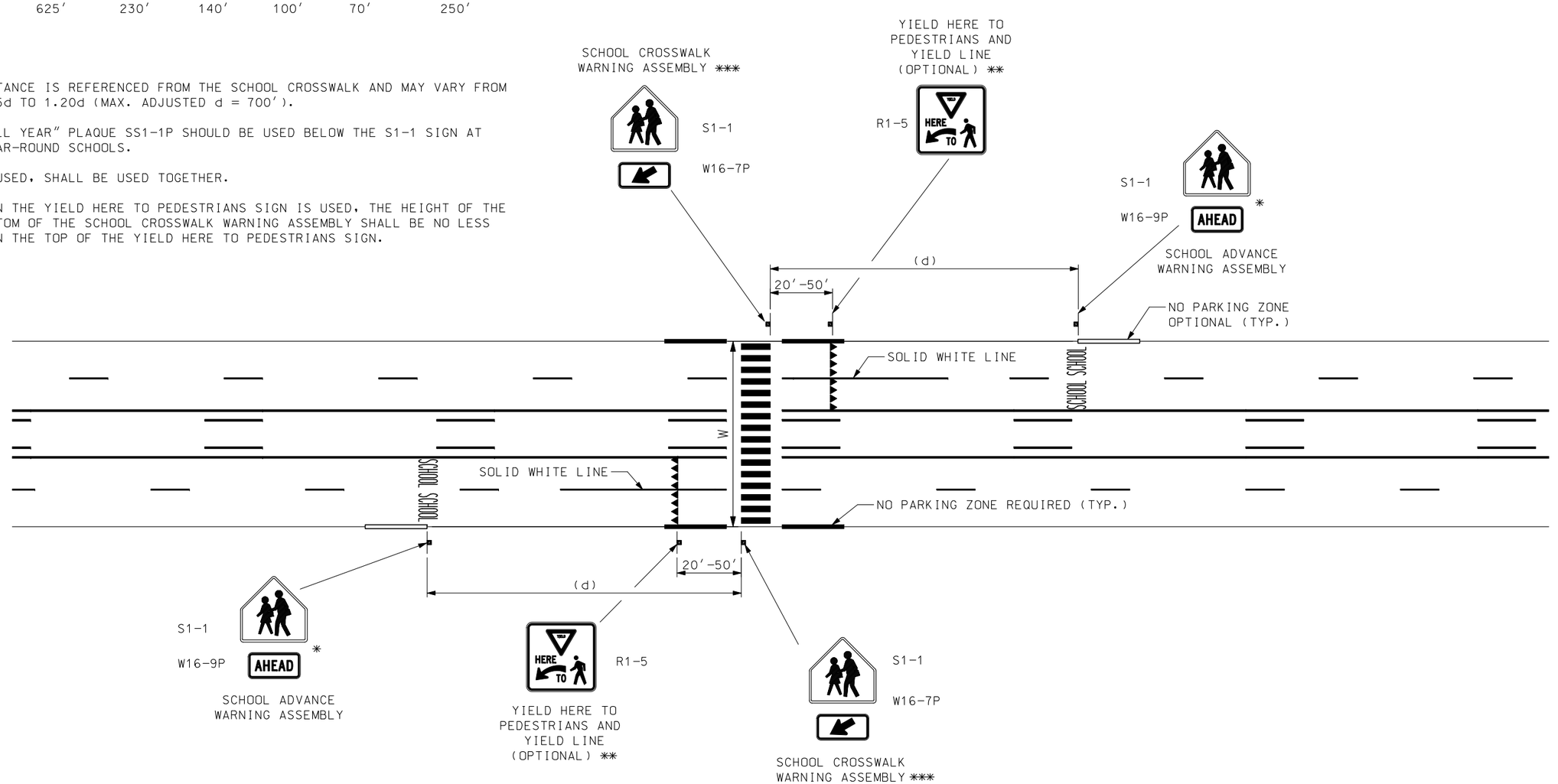
NOTES:

(d) DISTANCE IS REFERENCED FROM THE SCHOOL CROSSWALK AND MAY VARY FROM 0.95d TO 1.20d (MAX. ADJUSTED d = 700′).

* "ALL YEAR" PLAQUE SS1-1P SHOULD BE USED BELOW THE S1-1 SIGN AT YEAR-ROUND SCHOOLS.

** IF USED, SHALL BE USED TOGETHER.

*** WHEN THE YIELD HERE TO PEDESTRIANS SIGN IS USED, THE HEIGHT OF THE BOTTOM OF THE SCHOOL CROSSWALK WARNING ASSEMBLY SHALL BE NO LESS THAN THE TOP OF THE YIELD HERE TO PEDESTRIANS SIGN.



ORIGINAL DRAWING COURTESY OF UTAH DEPARTMENT OF TRANSPORTATION.
MODIFIED FOR USE IN TRAFFIC CONTROL FOR SCHOOL ZONES IN THE BONNEVILLE METROPOLITAN PLANNING AREA

TRAFFIC CONTROL FOR SCHOOL ZONES IN THE BONNEVILLE METROPOLITAN PLANNING AREA	TYPICAL MIDBLOCK SCHOOL CROSSWALK ZONE	FIGURE A5

SIGNING AND STRIPING PLACEMENT

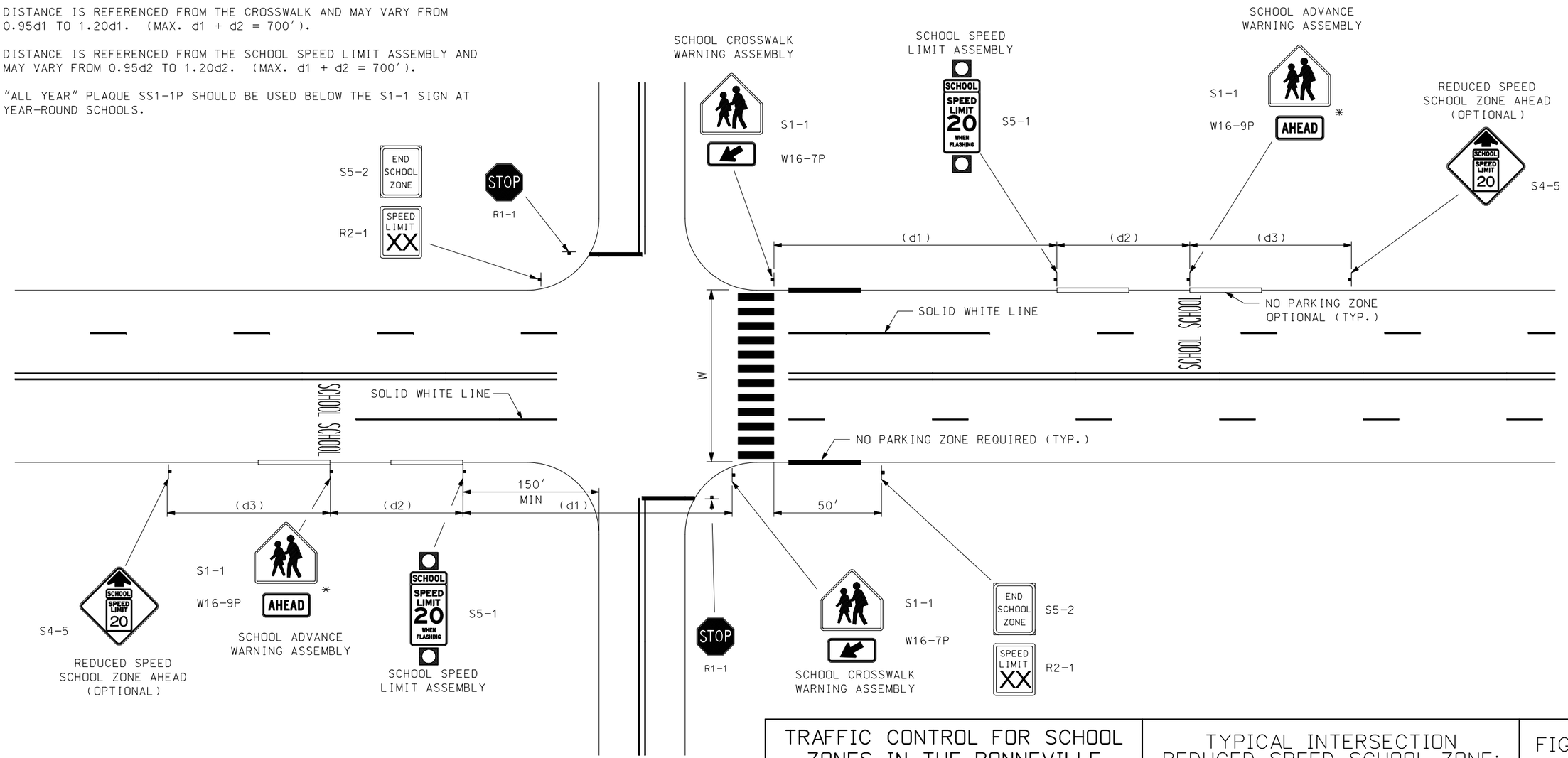
POSTED OR 85 TH PERCENTILE SPEED (MPH)	SCHOOL SPEED LIMIT (S5-1) (d1)	SCHOOL ADVANCE (S1-1) (d2)	SCHOOL REDUCED SPEED AHEAD (S4-5) (d3)	NO PARKING ZONE LENGTH				MINIMUM SOLID WHITE LINE LENGTH
				AT X WALK, SCHOOL ADVANCE, OR S5-1	AFTER X WALK			
					W ≤ 50′	50′ < W < 70′	W ≥ 70′	
25	150′	100′	100′	60′	40′	25′	20′	150′
30	150′	100′	130′	85′	50′	35′	25′	150′
35	200′	175′	215′	115′	70′	50′	35′	200′
40	250′	250′	340′	150′	90′	65′	45′	250′
45	250′	300′	500′	190′	110′	80′	55′	250′
50	250′	400′	640′	230′	140′	100′	70′	250′

NOTES:

(d1) DISTANCE IS REFERENCED FROM THE CROSSWALK AND MAY VARY FROM 0.95d1 TO 1.20d1. (MAX. d1 + d2 = 700′).

(d2) DISTANCE IS REFERENCED FROM THE SCHOOL SPEED LIMIT ASSEMBLY AND MAY VARY FROM 0.95d2 TO 1.20d2. (MAX. d1 + d2 = 700′).

* "ALL YEAR" PLAQUE SS1-1P SHOULD BE USED BELOW THE S1-1 SIGN AT YEAR-ROUND SCHOOLS.



ORIGINAL DRAWING COURTESY OF UTAH DEPARTMENT OF TRANSPORTATION.
MODIFIED FOR USE IN TRAFFIC CONTROL FOR SCHOOL ZONES IN THE BONNEVILLE METROPOLITAN PLANNING AREA

TRAFFIC CONTROL FOR SCHOOL ZONES IN THE BONNEVILLE METROPOLITAN PLANNING AREA	TYPICAL INTERSECTION REDUCED SPEED SCHOOL ZONE: TWO-WAY STOP CONTROLLED	FIGURE A6

SIGNING AND STRIPING PLACEMENT

POSTED OR 85 TH PERCENTILE SPEED (MPH)	SCHOOL SPEED LIMIT (S5-1) (d1)	SCHOOL ADVANCE (S1-1) (d2)	SCHOOL REDUCED SPEED AHEAD (S4-5) (d3)	NO PARKING ZONE LENGTH				MINIMUM SOLID WHITE LINE LENGTH
				AT X WALK, SCHOOL ADVANCE, OR S5-1	AFTER X WALK			
					W ≤ 50′	50′ < W < 70′	W ≥ 70′	
25	150′	100′	100′	60′	40′	25′	20′	150′
30	150′	100′	130′	85′	50′	35′	25′	150′
35	200′	175′	215′	115′	70′	50′	35′	200′
40	250′	250′	340′	150′	90′	65′	45′	250′
45	250′	300′	500′	190′	110′	80′	55′	250′
50	250′	400′	640′	230′	140′	100′	70′	250′

NOTES:

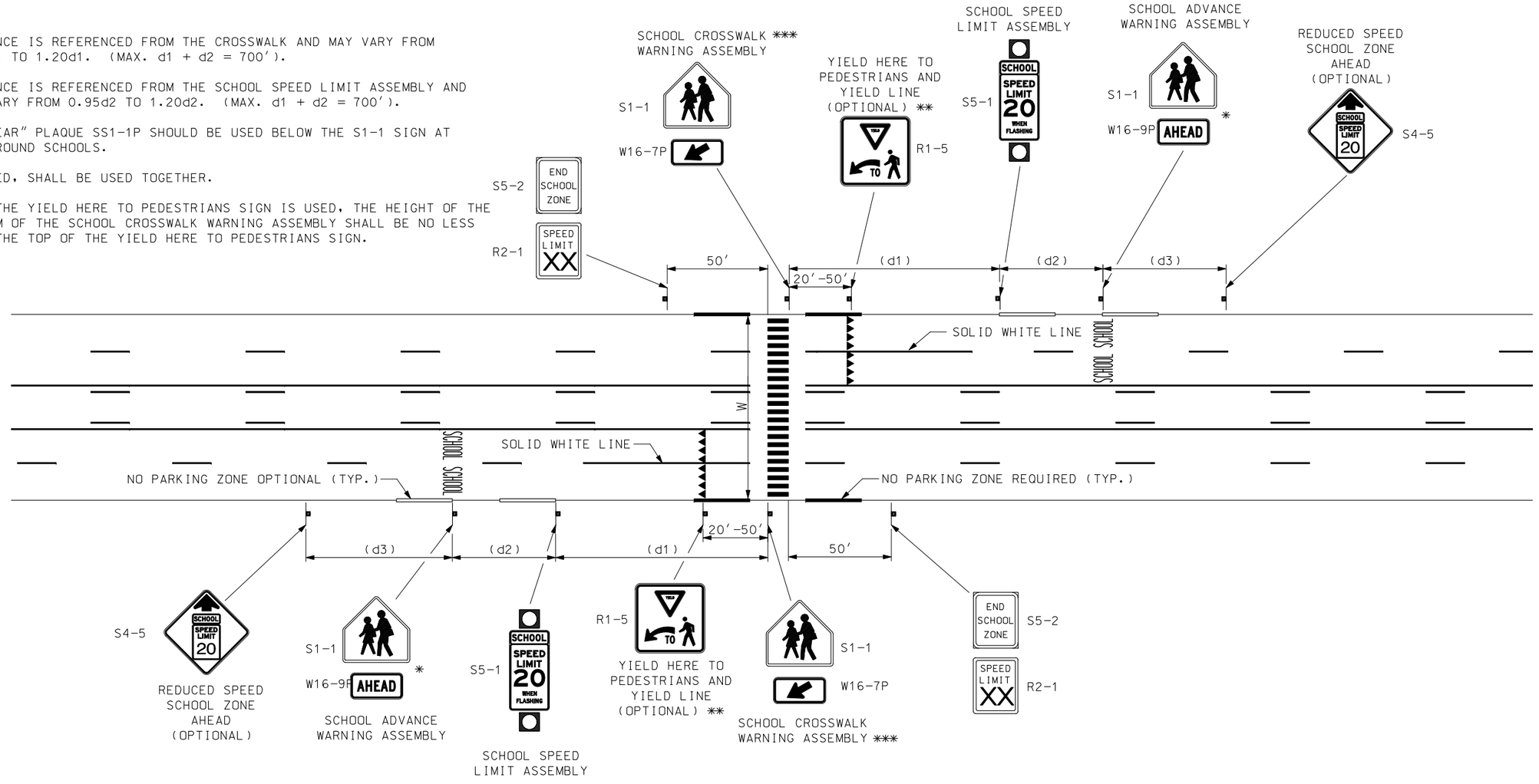
(d1) DISTANCE IS REFERENCED FROM THE CROSSWALK AND MAY VARY FROM 0.95d1 TO 1.20d1. (MAX. d1 + d2 = 700′).

(d2) DISTANCE IS REFERENCED FROM THE SCHOOL SPEED LIMIT ASSEMBLY AND MAY VARY FROM 0.95d2 TO 1.20d2. (MAX. d1 + d2 = 700′).

* "ALL YEAR" PLAQUE SS1-1P SHOULD BE USED BELOW THE S1-1 SIGN AT YEAR-ROUND SCHOOLS.

** IF USED, SHALL BE USED TOGETHER.

*** WHEN THE YIELD HERE TO PEDESTRIANS SIGN IS USED, THE HEIGHT OF THE BOTTOM OF THE SCHOOL CROSSWALK WARNING ASSEMBLY SHALL BE NO LESS THAN THE TOP OF THE YIELD HERE TO PEDESTRIANS SIGN.



ORIGINAL DRAWING COURTESY OF UTAH DEPARTMENT OF TRANSPORTATION.
MODIFIED FOR USE IN TRAFFIC CONTROL FOR SCHOOL ZONES IN THE BONNEVILLE METROPOLITAN PLANNING AREA

TRAFFIC CONTROL FOR SCHOOL ZONES IN THE BONNEVILLE METROPOLITAN PLANNING AREA	TYPICAL MIDBLOCK REDUCED SPEED SCHOOL ZONE	FIGURE A7

udot-sysprinter_PDF.plt 7:16:09 AM 9/11/2008 ken-utah N:\8001_bmpo_schools\Sheet_Files\Appendix A07.dgn

SPECIAL USE CONDITIONS ONLY (SEE SECTON 1.A.2.c)

SIGNING AND STRIPING PLACEMENT

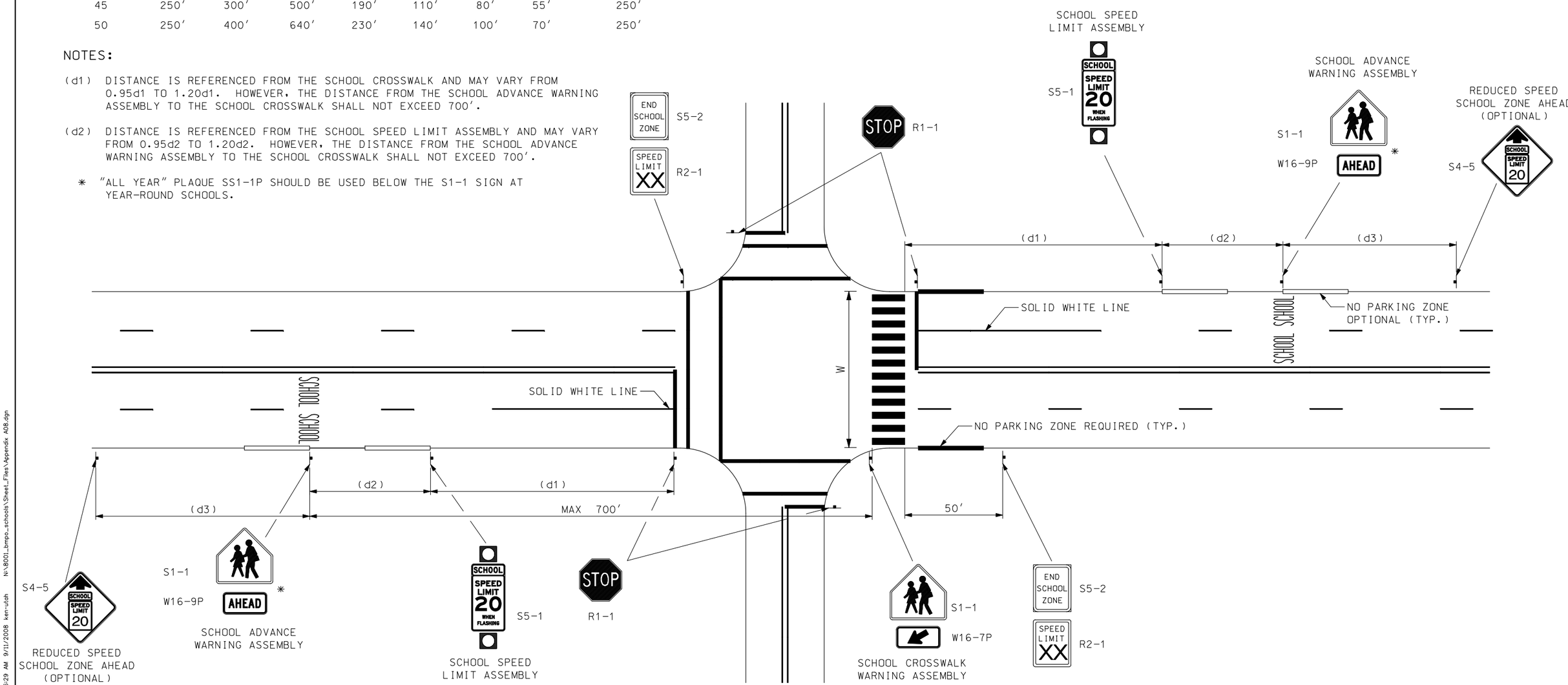
POSTED OR 85 TH PERCENTILE SPEED (MPH)	SCHOOL SPEED LIMIT (S5-1) (d1)	SCHOOL ADVANCE (S1-1) (d2)	SCHOOL REDUCED SPEED AHEAD (S4-5) (d3)	NO PARKING ZONE LENGTH				MINIMUM SOLID WHITE LINE LENGTH
				AT X WALK, SCHOOL ADVANCE, OR S5-1	AFTER X WALK			
					W ≤ 50′	50′ < W < 70′	W ≥ 70′	
25	150′	100′	100′	60′	40′	25′	20′	150′
30	150′	100′	130′	85′	50′	35′	25′	150′
35	200′	175′	215′	115′	70′	50′	35′	200′
40	250′	250′	340′	150′	90′	65′	45′	250′
45	250′	300′	500′	190′	110′	80′	55′	250′
50	250′	400′	640′	230′	140′	100′	70′	250′

NOTES:

(d1) DISTANCE IS REFERENCED FROM THE SCHOOL CROSSWALK AND MAY VARY FROM 0.95d1 TO 1.20d1. HOWEVER, THE DISTANCE FROM THE SCHOOL ADVANCE WARNING ASSEMBLY TO THE SCHOOL CROSSWALK SHALL NOT EXCEED 700′.

(d2) DISTANCE IS REFERENCED FROM THE SCHOOL SPEED LIMIT ASSEMBLY AND MAY VARY FROM 0.95d2 TO 1.20d2. HOWEVER, THE DISTANCE FROM THE SCHOOL ADVANCE WARNING ASSEMBLY TO THE SCHOOL CROSSWALK SHALL NOT EXCEED 700′.

* "ALL YEAR" PLAQUE SS1-1P SHOULD BE USED BELOW THE S1-1 SIGN AT YEAR-ROUND SCHOOLS.



ORIGINAL DRAWING COURTESY OF UTAH DEPARTMENT OF TRANSPORTATION.
MODIFIED FOR USE IN TRAFFIC CONTROL FOR SCHOOL ZONES IN THE BONNEVILLE METROPOLITAN PLANNING AREA

TRAFFIC CONTROL FOR SCHOOL ZONES IN THE BONNEVILLE METROPOLITAN PLANNING AREA	TYPICAL INTERSECTION REDUCED SPEED SCHOOL ZONE: FOUR-WAY STOP CONTROLLED (SPECIAL USE CONDITIONS ONLY)	FIGURE A8

udot-sysprinter_PDF.plt 7:16:29 AM 9/11/2008 ken-utah N:\8001_bmpo_schools\Sheet_Files\Appendix A08.dgn

SPECIAL USE CONDITIONS ONLY (SEE SECTON 1.A.2.c)

SIGNING AND STRIPING PLACEMENT

POSTED OR SPEED 85TH PERCENTILE (MPH)	SCHOOL SPEED LIMIT (S5-1) (d1) **	SCHOOL ADVANCE (S1-1) (d2)	SCHOOL REDUCED SPEED AHEAD (S4-5) (d3)	NO PARKING ZONE LENGTH				MINIMUM SOLID WHITE LINE LENGTH
				AT X WALK, SCHOOL ADVANCED, OR S5-1	AFTER X WALK			
					W ≤ 50′	50′ < W < 70′	W ≥ 70′	
25	150′	100′	100′	60′	40′	25′	20′	150′
30	150′	100′	130′	85′	50′	35′	25′	150′
35	200′	175′	215′	115′	70′	50′	35′	200′
40	250′	250′	340′	150′	90′	65′	45′	250′
45	250′	300′	500′	190′	110′	80′	55′	250′
50	250′	400′	640′	230′	140′	100′	70′	250′

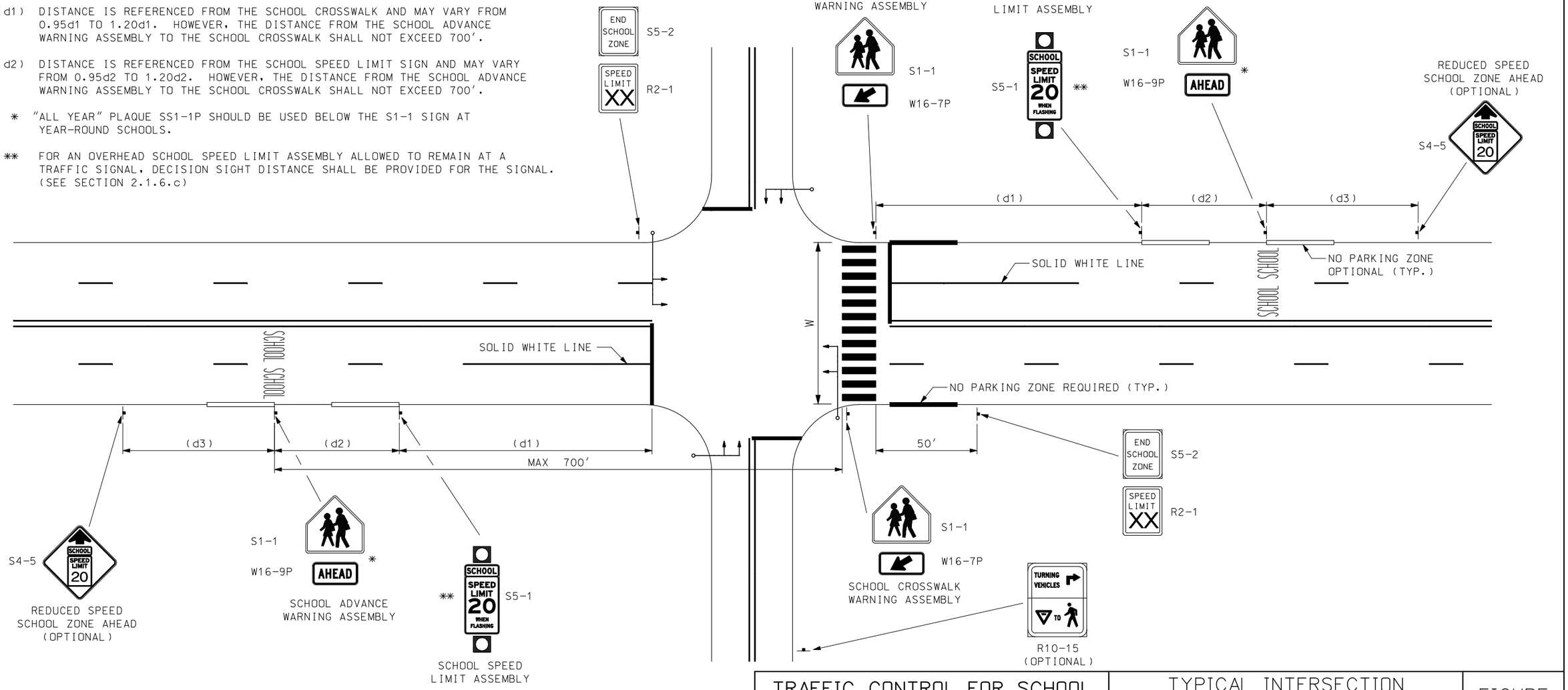
NOTES:

(d1) DISTANCE IS REFERENCED FROM THE SCHOOL CROSSWALK AND MAY VARY FROM 0.95d1 TO 1.20d1. HOWEVER, THE DISTANCE FROM THE SCHOOL ADVANCE WARNING ASSEMBLY TO THE SCHOOL CROSSWALK SHALL NOT EXCEED 700′.

(d2) DISTANCE IS REFERENCED FROM THE SCHOOL SPEED LIMIT SIGN AND MAY VARY FROM 0.95d2 TO 1.20d2. HOWEVER, THE DISTANCE FROM THE SCHOOL ADVANCE WARNING ASSEMBLY TO THE SCHOOL CROSSWALK SHALL NOT EXCEED 700′.

* "ALL YEAR" PLAQUE SS1-1P SHOULD BE USED BELOW THE S1-1 SIGN AT YEAR-ROUND SCHOOLS.

** FOR AN OVERHEAD SCHOOL SPEED LIMIT ASSEMBLY ALLOWED TO REMAIN AT A TRAFFIC SIGNAL, DECISION SIGHT DISTANCE SHALL BE PROVIDED FOR THE SIGNAL. (SEE SECTION 2.1.6.c)



ORIGINAL DRAWING COURTESY OF UTAH DEPARTMENT OF TRANSPORTATION.
MODIFIED FOR USE IN TRAFFIC CONTROL FOR SCHOOL ZONES IN THE BONNEVILLE METROPOLITAN PLANNING AREA

TRAFFIC CONTROL FOR SCHOOL ZONES IN THE BONNEVILLE METROPOLITAN PLANNING AREA	TYPICAL INTERSECTION REDUCED SPEED SCHOOL ZONE: SIGNAL CONTROLLED (SPECIAL USE CONDITIONS ONLY)	FIGURE A9

SPECIAL USE CONDITIONS ONLY (SEE SECTON 1.A.2.c)

SIGNING AND STRIPING PLACEMENT

POSTED OR 85 TH PERCENTILE SPEED (MPH)	SCHOOL ADVANCE (S1-1) (d)	SCHOOL SPEED LIMIT (S5-1) (d1)	SCHOOL ADVANCE (S1-1) (d2)	NO PARKING ZONE LENGTH		
				AT X WALK, SCHOOL ADVANCE, OR S5-1	AFTER X WALK	
					W ≤ 50′	50′ < W < 70′
25	250′	150′	100′	60′	40′	25′
30	325′	150′	100′	85′	50′	35′
35	400′	200′	175′	115′	70′	50′
40	475′	250′	250′	150′	90′	65′
45	550′	250′	300′	190′	110′	80′
50	625′	250′	400′	230′	140′	100′

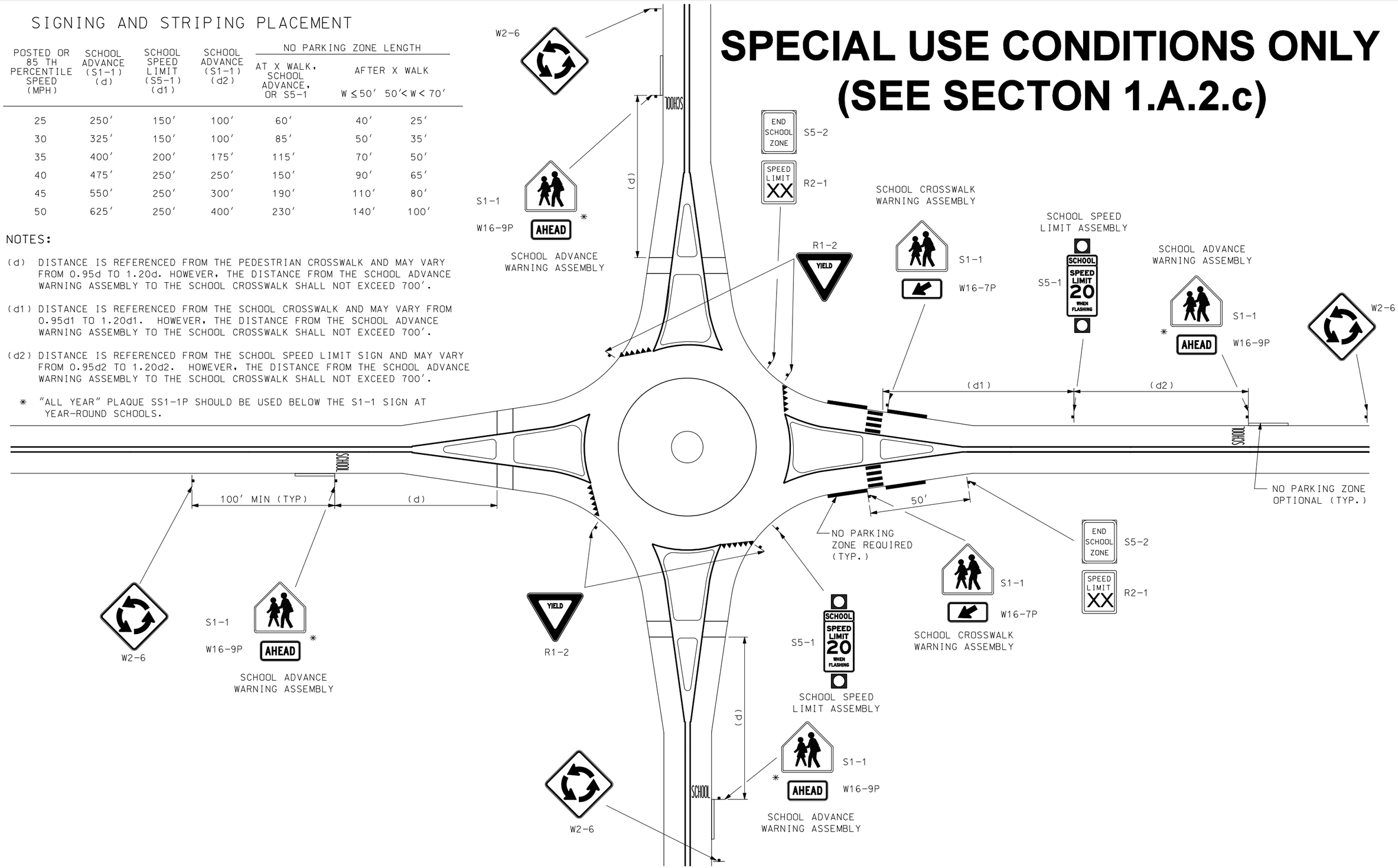
NOTES:

(d) DISTANCE IS REFERENCED FROM THE PEDESTRIAN CROSSWALK AND MAY VARY FROM 0.95d TO 1.20d. HOWEVER, THE DISTANCE FROM THE SCHOOL ADVANCE WARNING ASSEMBLY TO THE SCHOOL CROSSWALK SHALL NOT EXCEED 700′.

(d1) DISTANCE IS REFERENCED FROM THE SCHOOL CROSSWALK AND MAY VARY FROM 0.95d1 TO 1.20d1. HOWEVER, THE DISTANCE FROM THE SCHOOL ADVANCE WARNING ASSEMBLY TO THE SCHOOL CROSSWALK SHALL NOT EXCEED 700′.

(d2) DISTANCE IS REFERENCED FROM THE SCHOOL SPEED LIMIT SIGN AND MAY VARY FROM 0.95d2 TO 1.20d2. HOWEVER, THE DISTANCE FROM THE SCHOOL ADVANCE WARNING ASSEMBLY TO THE SCHOOL CROSSWALK SHALL NOT EXCEED 700′.

* "ALL YEAR" PLAQUE SS1-1P SHOULD BE USED BELOW THE S1-1 SIGN AT YEAR-ROUND SCHOOLS.



ORIGINAL DRAWING COURTESY OF UTAH DEPARTMENT OF TRANSPORTATION.
MODIFIED FOR USE IN TRAFFIC CONTROL FOR SCHOOL ZONES IN THE BONNEVILLE METROPOLITAN PLANNING AREA

TRAFFIC CONTROL FOR SCHOOL ZONES IN THE BONNEVILLE METROPOLITAN PLANNING AREA	TYPICAL INTERSECTION REDUCED SPEED SCHOOL ZONE: ROUNDABOUT CONTROLLED (SPECIAL USE CONDITIONS ONLY)	FIGURE A10

udot-sysprinter_PDF.plt 7:17:11 AM 9/11/2008 kerr-utah N:\8001_bmpo_schools\Sheet_Files\Appendix A10.dgn

SPECIAL USE CONDITIONS ONLY (SEE SECTON 1.A.2.c)

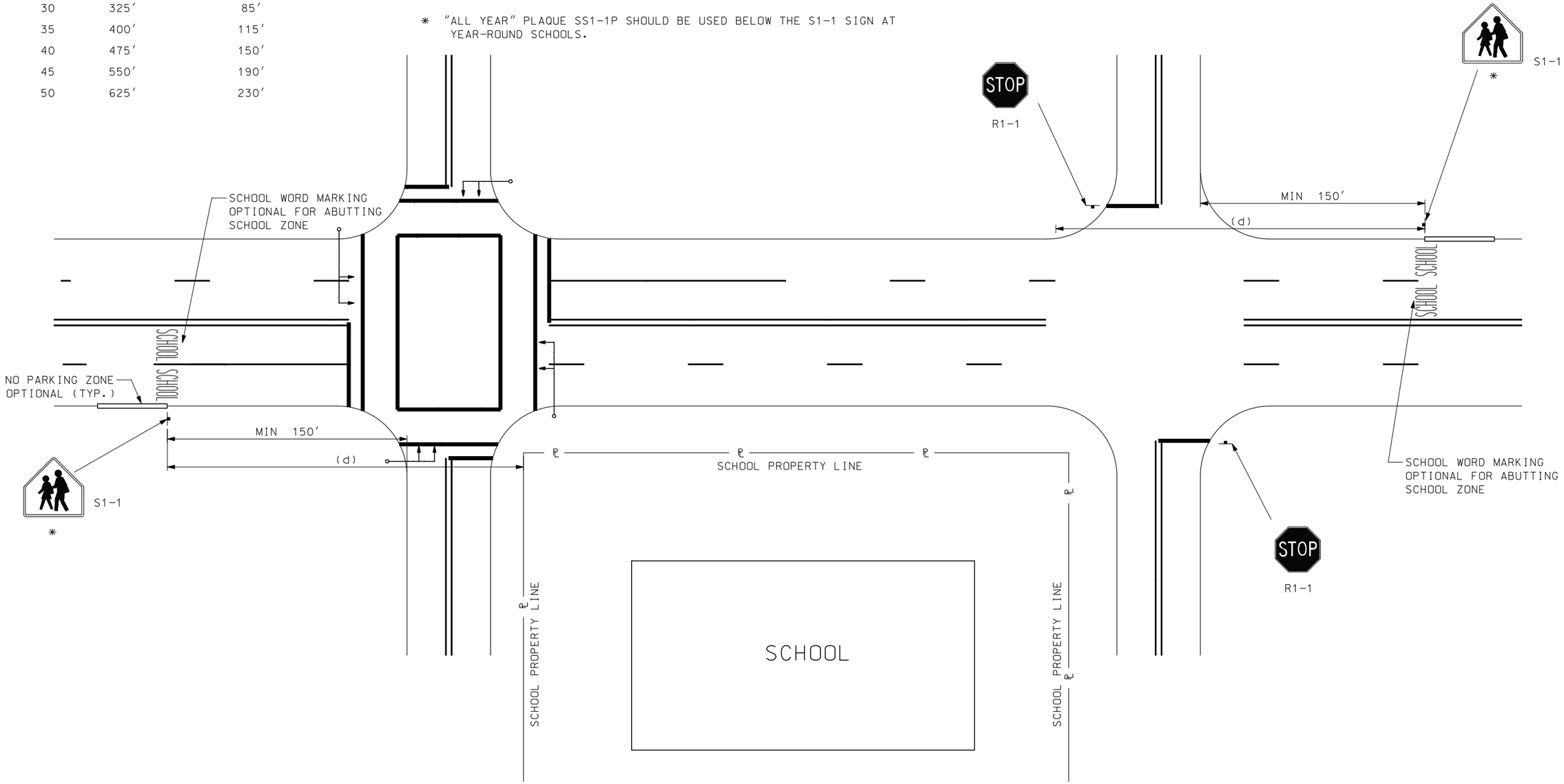
SIGNING AND STRIPING PLACEMENT

POSTED OR 85TH PERCENTILE SPEED (MPH)	SCHOOL ADVANCE (S1-1) (d)	NO PARKING ZONE LENGTH AT SCHOOL ADVANCE
25	250′	60′
30	325′	85′
35	400′	115′
40	475′	150′
45	550′	190′
50	625′	230′

NOTES:

(d) DISTANCE IS REFERENCED FROM THE SCHOOL PROPERTY LINE AND MAY VARY FROM 0.95d TO 1.20d (MAX. ADJUSTED d = 700′).

* "ALL YEAR" PLAQUE SS1-1P SHOULD BE USED BELOW THE S1-1 SIGN AT YEAR-ROUND SCHOOLS.



ORIGINAL DRAWING COURTESY OF UTAH DEPARTMENT OF TRANSPORTATION.
MODIFIED FOR USE IN TRAFFIC CONTROL FOR SCHOOL ZONES IN THE BONNEVILLE METROPOLITAN PLANNING AREA

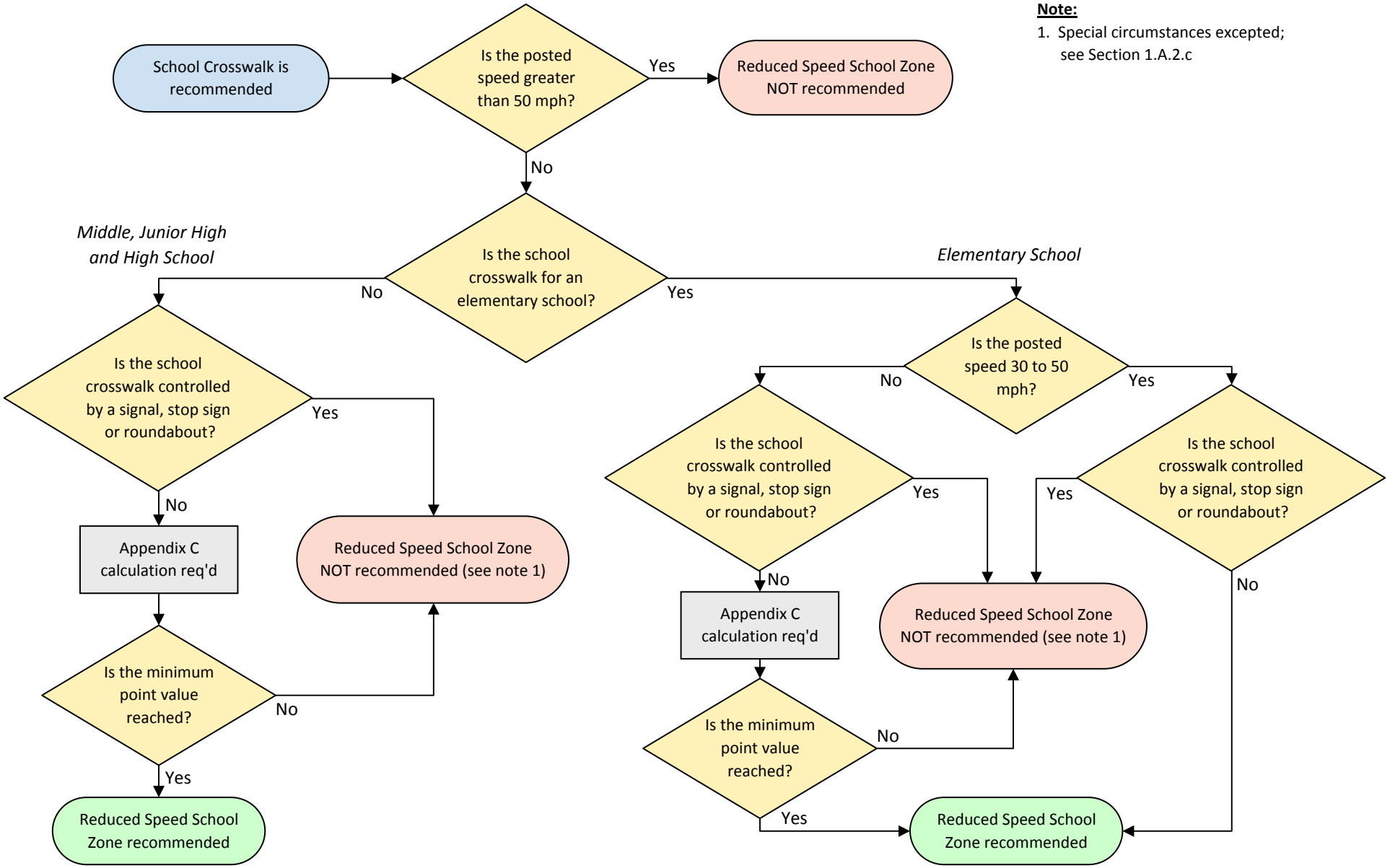
TRAFFIC CONTROL FOR SCHOOL ZONES IN THE BONNEVILLE METROPOLITAN PLANNING AREA	TYPICAL ABUTTING SCHOOL ZONE	FIGURE A11

APPENDIX B

School Zone Protection Flowcharts

Appendix B1

Standard for Installation of a Reduced Speed School Zone



Note:

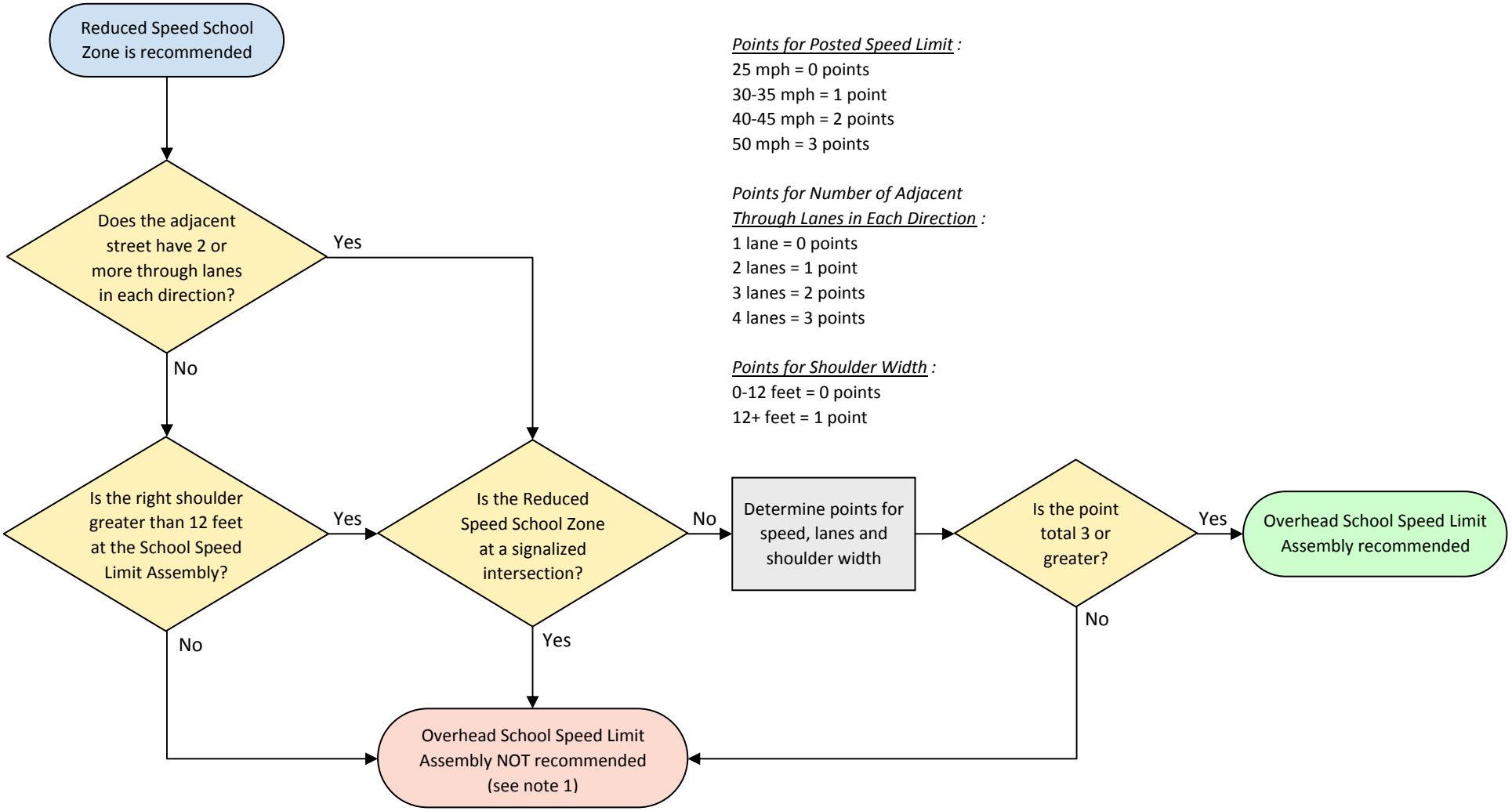
1. Special circumstances excepted; see Section 1.A.2.c

Appendix B2

Standard for Installation of an Overhead Speed Limit Assembly in a Reduced Speed School Zone

Note:

1. Special circumstances excepted; see Section 2.I.6.c



Points for Posted Speed Limit :
25 mph = 0 points
30-35 mph = 1 point
40-45 mph = 2 points
50 mph = 3 points

Points for Number of Adjacent Through Lanes in Each Direction :
1 lane = 0 points
2 lanes = 1 point
3 lanes = 2 points
4 lanes = 3 points

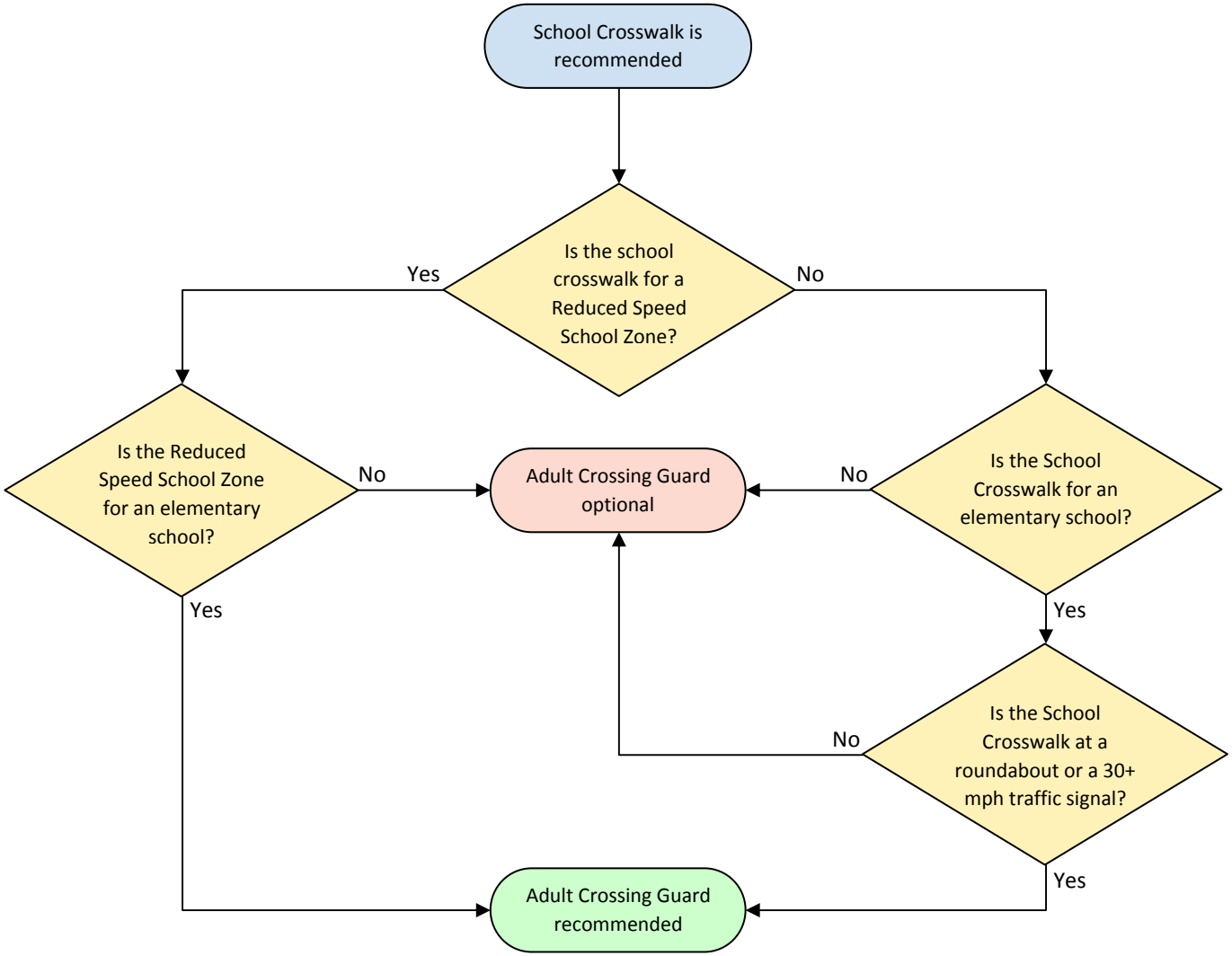
Points for Shoulder Width :
0-12 feet = 0 points
12+ feet = 1 point

Appendix B3

Standard for Use of Adult Crossing Guards in School Zones

Note:

1. See Section 4 for further information



APPENDIX C

Reduced Speed School Zone Point Calculation

REDUCED SPEED SCHOOL ZONE POINT CALCULATION

When required by the "Standard for Installation of a Reduced Speed School Zone" (see Appendix B1), the minimum points required for a Reduced Speed School Zone is 18 in an urban area, or 14 for an isolated, rural area.

CATEGORIES

Average Time between Useable Gaps	Maximum 10 Points
School Pedestrian Volume	Maximum 15 Points
85th Percentile Approach Speed	Maximum 10 Points

DEFINITIONS:

1. **School Pedestrian Volume** - Includes all children between ages 5 and 18 that use the school crossing.
2. **Evaluation Period (EP)** - From forty-five (45) minutes before school starts in the morning until fifteen (15) minutes after school starts or from fifteen (15) minutes before school ends until forty-five (45) minutes after school ends.
3. **Minimum Usable Gap Time (MUGT)** - The minimum gap in traffic required for a single or group of school pedestrians to safely cross a given street width, determined as follows:

$$MUGT = \frac{W}{3.0} + 5.0$$

where:
W = pavement width in feet
3.0 = juvenile pedestrian walking speed in feet/second
5.0 = perception, reaction, and clearance time in seconds

4. **Total Usable Gap (G)** - The summation of Usable Gaps during the Evaluation Period, measured in seconds. A Usable Gap is any gap in traffic equal to or greater than the Minimum Usable Gap Time (MUGT).
5. **Maximum Number of Usable Gaps (MNUG)** - Ratio of Total Usable Gap Time to Minimum Usable Gap Time during the Evaluation Period.

$$MNUG = \frac{G}{MUGT} = \frac{Total\ Usable\ Gap\ Time\ during\ EP\ (Seconds)}{Minimum\ Usable\ Gap\ Time\ (Seconds)}$$

CALCULATION

1. **Average Time Between Usable Gaps (M)**
   Maximum Points = 10

Determine Average Time between Usable Gaps (M) by dividing Evaluation Period (EP, minutes) by the Maximum Number of Usable Gaps (MNUG).

$$M = \frac{EP}{MNUG} = \frac{Evaluation\ \ Period\ \ (Minutes)}{Maximum\ \ Number\ \ of\ \ Usable\ \ Gaps}$$

POINT ASSIGNMENT	
Average Time Between Usable Gaps (minutes)	**Points**
Less than 1	0
1.00 - 1.25	2
1.26 - 1.67	4
1.68 - 2.50	6
2.51 - 5.00	8
Over 5	10

2. **School Pedestrian Volume**
Maximum Points = 15

Determine total number of school pedestrians (age 5 to 18) crossing at the study location during the EVALUATION PERIOD.

POINT ASSIGNMENT		
Number of School Pedestrians		**Points**
Urban	**Rural**	
10 or less	10 or less	0
11 - 30	11 - 20	3
31 - 50	21 - 35	6
51 - 70	36 - 50	9
71 - 90	51 - 65	12
Over 90	Over 65	15

3. **85th Percentile Approach Speed**
   Maximum Points = 10

POINT ASSIGNMENT	
85th Percentile Approach Speed (mph)	**Points**
20 and under	0
21 - 25	1
26 - 30	2
31 - 35	4
36 - 40	6
41 - 45	8
46 +	10

After point values are determined for steps 1 through 3, the sum of steps 1 through 3 are compared to the following standard to determine if a reduced speed school zone is recommended:

- Minimum 18 points in an urban area; or,
- Minimum 14 points in an isolated, rural area.

HAND SURVEY METHODS

Evaluate the individual categories, assign points, and tabulate points to determine if a reduced school speed zone is justified.

1. Personnel requirements: one person
2. Equipment: stopwatch and field data form
3. Type of survey:
   a. Count school-age pedestrians within the Crosswalk area during the Evaluation Period (EP) to determine the School Pedestrian Volume. The Evaluation Period may be either in the morning or in the afternoon.
   b. Obtain the 85th percentile approach speed. If the 85th percentile approach speed is unknown, the posted speed limit may be used.
   c. Record (in seconds), on the field data form, each gap greater than or equal to the Minimum Usable Gap Time (MUGT) during the Evaluation Period.
   d. Record, on the field data form, the Average Time between Usable Gaps (M), the school age pedestrian volume, and the approach speed.

Traffic Control for School Zones in the Bonneville Metropolitan Planning Area

REDUCED SPEED SCHOOL ZONE EVALUATION WORK SHEET

ROUTE:_____ MP:_____ INTERSECTION:_____ COMMUNITY:_____

DATE:_____ BEGIN TIME:_____ WEATHER:_____

DISTRICT:_____ END TIME:_____ INVESTIGATOR:_____

1. MINIMUM USABLE GAP TIME

$$\frac{\text{WIDTH OF STREET (W)}}{\text{3.0 FT / SEC}} + 5.0 = \frac{\quad}{3.0} + 5.0$$

2. MAXIMUM NO. OF USABLE GAPS (MNUG)

$$\frac{\textit{TOTAL}\text{ USABLE GAP TIME DURING EP (SEC)}}{\textit{MINIMUM}\text{ USABLE GAP TIME (SEC)}} = \_\_\_\_$$

3. 85th PERCENTILE APPROACH SPEED

85TH PERCENTILE SPEED (MPH) =

or

POSTED SPEED LIMIT (MPH) =

4. AVERAGE TIME BETWEEN USABLE GAPS (M)

$$\frac{\text{EVALUATION PERIOD (MIN)}}{\text{MAXIMUM NO. OF USABLE GAPS (MNUG)}} = \_\_\_\_$$

CATEGORIES	ACTUAL VALUE	ASSIGNED POINTS	MAXIMUM POINTS
AVERAGE TIME BETWEEN GAPS (M)			10
SCHOOL PEDESTRIAN VOLUME (NUMBER)			15
85TH PERCENTILE APPROACH SPEED (MPH)			10
TOTAL			35

STANDARD (URBAN) = 18

STANDARD (RURAL) = 14

RECOMMENDED ? **(Yes/No)**

SKETCH

USABLE GAP TIMES FOR SCHOOL PEDESTRIAN VOLUME

TIME	USABLE GAP TIME (Sec)	TIME	USABLE GAP TIME (Sec)	TIME	USABLE GAP TIME (Sec)	TIME	USABLE GAP TIME (Sec)	TIME	USABLE GAP TIME (Sec)
Subtotal		**Subtotal**		**Subtotal**		**Subtotal**		**Subtotal**	

Total Usable Gap Time during EP = _____ Seconds (summation of the subtotals)

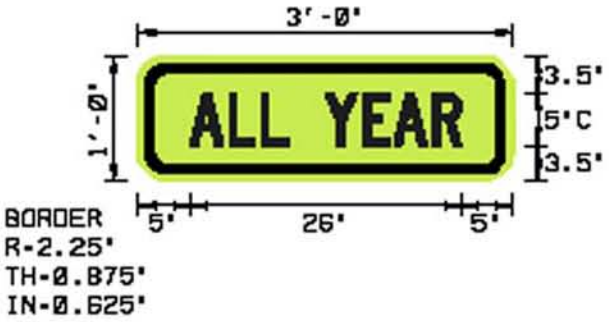
SCHOOL PEDESTRIAN VOLUME AND DEMAND TALLY (Five Minute Intervals for 60 Minutes)

	Interval 1	Interval 2	Interval 3	Interval 4	Interval 5	Interval 6	Interval 7	Interval 8	Interval 9
PEDS									

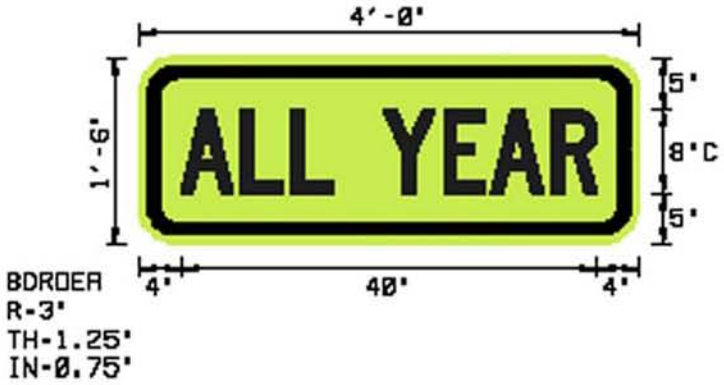
	Interval 10	Interval 11	Interval 12	**Remarks:**
PEDS				

APPENDIX D

Special School Zone Sign Layouts

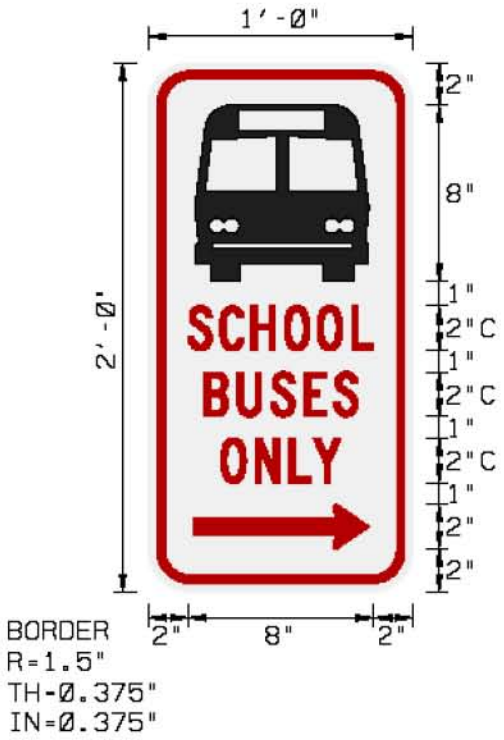


SS1-1p
ALL YEAR PLAQUE
Conventional Roads

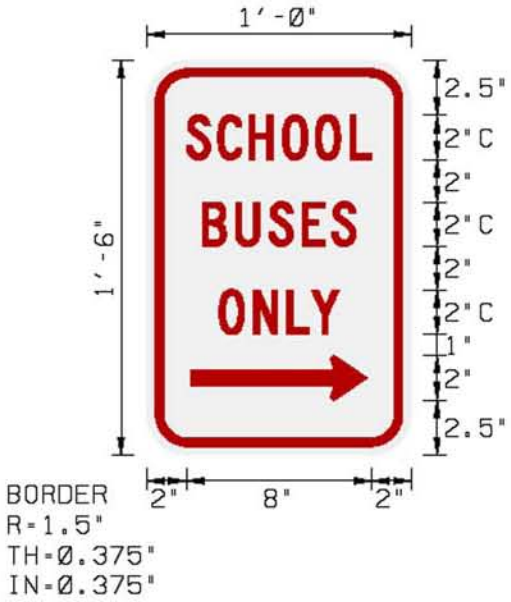


SS1-1p
ALL YEAR PLAQUE
Oversized

COLORS: LEGEND - BLACK
BACKGROUND - FLUORESCENT YELLOW-GREEN (RETROREFLECTIVE)



SS1-2
SCHOOL BUSES ONLY
(symbol) SIGN



SS1-3
SCHOOL BUSES ONLY SIGN

COLORS: LEGEND, ARROW - RED (RETROREFLECTIVE)
SYMBOL - BLACK
BACKGROUND - WHITE (RETROREFLECTIVE)