



SCHOOL BUS

STOP AHEAD

SIGHT DISTANCE
DETERMINATION

BOOK #1

TELEPHONE

425

FORMULAE FOR SOLVING RIGHT TRIANGLES

1.2(3) Reserved.

1.2(4) **Controlled access highway.** A highway or street especially designed for through traffic, and over, from or to which owners or occupants of abutting land or other persons have no right or easement of access, or only a controlled right or easement of access, by reason of the fact that their property abuts upon such controlled access facility or for any other reason. All primary highways are controlled access highways.

1.2(5) Reserved.

1.2(6) Reserved.

1.2(7) **Access.** A means of ingress or egress between a primary highway and abutting property or a public road.

1.2(8) **Frontage.** The length along the highway right-of-way line of a single property tract. Corner property at a public road intersection has a separate frontage along each roadway.

1.2(9) **Frontage road.** A public street or road auxiliary to and usually located alongside and parallel to a primary highway for purposes of maintaining local road continuity and for control of access.

1.2(10) **Entrance.** A physical driveway between a primary road and abutting property, or an access from a public road to a primary highway. Entrances are divided into the following three types according to their normal peak hour potential traffic during an average day:

a. Type "A" **entrance.** An entrance developed to carry one hundred fifty vehicles or more per hour. It may have up to five 12-foot traffic lanes with a median of approved design. Possible examples: Sporadic, heavy concentration of vehicles to or from drive-in theaters, race tracks, or large industrial plants, or continuous heavy traffic to or from shopping centers, subdivisions, or amusement parks.

b. Type "B" **entrance.** An entrance developed to carry at least twenty vehicles but less than one hundred fifty vehicles per hour. The entrance shall be no more than forty-five feet in width. Possible examples: Vehicles entering or exiting service stations, small businesses, drive-in food stands and banks, light industrial plants, small drive-in theaters, cemeteries, airports, golf parks, etc.

c. Type "C" **entrance.** An entrance developed to carry less than twenty vehicles per hour. The entrance shall be no more than thirty-five feet in width. Possible examples: Field, farm or residential entrances that serve not more than three dwellings, or any other entrance which generates less than twenty vehicles per hour.

1.2(11) **Sight distance.** The distance of clear vision along the primary highway in each direction from any given point of access where a vehicle must stop before entering the primary highway. Sight distance is determined by measuring from a point 3.75 feet above the entrance surface to a point 4.5 feet above the primary highway surface.

a. The minimum stopping sight distances and the desirable sight distances for various posted daytime speed limits shall be as listed below.

POSTED DAYTIME SPEED LIMIT (mph)	DESIRABLE SIGHT DISTANCE (feet)	MINIMUM STOPPING SIGHT DISTANCE (feet)
55	650	415
50	550	350
40	450	275
30	350	200

b. On a four-lane divided primary highway when an entrance is proposed at a location not to be served by a median crossover, sight distance shall be required as set out in paragraph 1.2(11) "a" above only in the direction opposing the flow of traffic.

1.2(12) **Built-up area.** The area adjacent to the primary road or primary road extension which meets the following general criteria:

a. The lots or area abutting the primary road or primary road extension are presently developed with insufficient setback for the construction of a frontage road, and the development in depth precludes the establishment of a frontage road to the rear of the lots or area.

$$A, B, C, a \quad \text{Area} \quad \text{area} = \frac{a^2 \sin B \sin C}{2 \sin A}$$

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18-37-13 Joe McKenna 3638 W. Eagle
School Bus stop ahead sign

RPO

DSE

7-17-86

Cedar-Waspie Rd.

E. drive SD = 534' E (Plenty SD West)

existing field entrance 729' W. of 1/4 Cor
" " " 666 West
" " " 1053' East
one foot of soil at 12' from slab

More drive East

West

$$A = 1053 - (80 + 3) = 970 \quad A = 666 + 50 + 47 = 763$$

$$B = 1053 - (100 + 12) = 941 \quad B = 666 + 100 + 51 = 817$$

$$C = 1053 - (150 + 18) = 885 \quad C = 666 + 150 + 71 = 887$$

$$D = 1053 - (200 + 19) = 834 \quad D = 666 + 200 + 80 = 946$$

$$E = 1053 - (250 + 10) = 793 \quad E = 666 + 250 + 103 = 1019$$

$$F = 1053 - (300 + 3) = 750 \quad F = 666 + 300 + 135 = 1101$$

$$G = 1053 - (350 + 11) = 692 \quad G = 666 + 350 + 173 = 1189$$

$$H = 1053 - (400 + 27) = 626 \quad H = 666 + 400 + 206 = 1272$$

$$I = 1053 - (450 + 35) = 568 \quad I = 666 + 450 + 256 = 1372$$

$$J = 1053 - (500 + 61) = 492 \quad J = 666 + 500 + 291 = 1457$$

$$K = 1053 - (550 + 88) = 415$$

$$L = 1053 - (600 + 119) = 334$$

$$M = 1053 - (650 + 150) = 253$$

N 1/4 Cor Sec. 18-90-13

ditch X Sec. for Drive

$$@ "I": \begin{array}{r} 0.0 \\ \text{edge slab} \end{array} \quad \begin{array}{r} 0.4 \\ 6' \end{array} \quad \begin{array}{r} 3.7 \\ 17' \end{array} \quad \begin{array}{r} 5.1 \\ 29' \end{array} \quad \begin{array}{r} 4.9 \\ 37' \end{array}$$

$$@ "e": \begin{array}{r} 0.5 \\ 7' \end{array} \quad \begin{array}{r} 4.4 \\ 20' \end{array} \quad \begin{array}{r} 4.8 \\ 31' \end{array} \quad \begin{array}{r} 3.9 \\ 39' \end{array}$$

W. L. Harding 11315 Brandon Rd.

3.5' above drive

3.5' on Brandon Road surface To East

West Drive 0+00 4+57 437

East Drive 0+94 5+86 430

3.5' above drive

4.75' above Brandon Rd. surface To East

West Drive 0+00 4+77 477'

East Drive 0+98 6+29 = 531'

Ronald W. Royanna & Teuter

Elm-Mt. Hwy Sec. 17-89-11

8436 Barclay Road.

Field entrance at west end of building lot

sight distance To West Not restricted

sight distance To East 603 feet

ditch Near 3 feet deep min drainage
18' by 30 feet

7:30 AM. Jan. 30, 1986

Monte Moe 13638 Brandon Rd.

N. side N.E 1/4 Sec 24-89-11

3.5 feet above shoulder at Prop.

Drive, 4.75 feet above Brandon

Rd. East Sight Distance 791 feet

Ditch 2 1/2 feet min. Pipe

Sight distance

East on Tama Rd from inter. with
Lincoln Rd

South side of Tama 457'

North side of Tama 556'

Sight distance

Hammond & Reinbeck

Stop sign on Reinbeck South
on Tama 848'

Traffic counter No. 3562

Intersection Burton & Gresham 3

Sight Distance

3.5' on Burton N. side intersection

4.75' West of intersection

Sight Distance 425 feet

3.5' on Gresham East ^{side} of intersection
4.75' South of intersection on Burton

Sight Distance 420 feet

April 6, 1987

Roger Schmitz 9703 Rickard Rd
N.E. 1/4 sec. 29-28-11

Drive Located 620' $\pm$ West of Garling Rd
Sight Distance 701' $\pm$ To The West

Drive 1334' $\pm$ West of Garling should be
removed

April 21, 1987 12:20 PM

[Signature]

Beacons at Elk Run & Independence
North $9\frac{1}{2}$ '; South 9' above stop sign

Bottom of North sign 5.9' above edge
of slab South sign 4.9' " "
" " " "

Sight distance at Dennis Rattinhaus Drive

9702 Canfield Rd. W. side Sec. 8-87-11

0+00 Drive

7+20 end of sight distance

11+30 end of blind spot

17+19 end of sight

Drive To Water Hawks

North of Water Hawks Dr. (573) ft.

South of Thoms. F. Meiser 908 ft

Traffic Count on Burton
 d Gresham 9:00
 Sept. 10, 1987 - 10:00 AM

Gresham Rd 57073
 9-10-87 - 7:00 AM = 57108
 9-14-87 7:00 AM 57189

$$\frac{116}{4} = 29 \text{ V.P.D.}$$

Wagner 2000' N. of Cedar Wapsie
 9-29-87 11:00 AM 57195 Pro Ref. ADT Sur
 9-30-87 7:20 AM 57952 757 = 970
 9-1-87 7:25 AM 58605 653

Traffic Counter
 Streeter-Amet Company

5
 Nick Myers field entr. on Eagle
 existing drive 469' East sight disto
 req. relocation 389' East "

Land owner and farmer said
 They would not relocate drive

School Bus stop sight distance

Requested from Dan McDougall
6608 E. Dunkerton Road
Phone 822-4660

observation was made from
drive at 6547 E. Dunkerton Road
observed sight distance 940 feet
slope +2.33%

Req. sight distance

$$220.5 + 3600 / (30 \times 0.3 + 0.0233) = 591.5$$

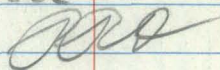
approach front of Bus $592 + 35' = 627'$ ^{Req.}

" Back of Bus $592 + 60' = 652'$

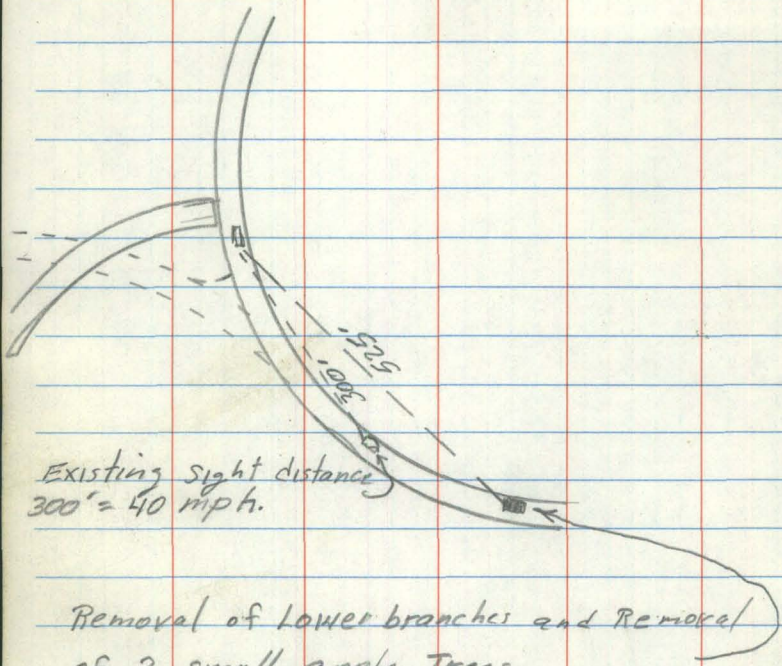
available sight Distance 940'

signs Not Recommended

from West



Paint
42" Pipe



Existing sight distance
300' = 40 mph.

Removal of Lower branches and Removal
of 2 small apple Trees
525' = 55 mph

School Bus Sight Distance
Dennis Clarke

sight distance of 290' east of drive

Recommended rear of Bus 674ft
" front of Bus 639ft

stop ahead sign justified East
of Drive

Set marked & painted
late Aug. 31, 1988
490' east of drive

Mrs Raymond Greiner
School Bus sight distance

for 6912 & 6932 S. Union Rd
E. of Section 33-89-14

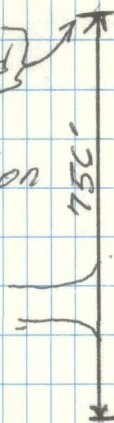
Sight dist No 6932 = 323'
" " " 6912 = 256' Recom, $\frac{655'}{620'}$

Place sign 756' N. of
Drive at 6912 S. Union
Lath set 9-7-86

~~Place sign~~

Place
school bus
stop ahead
Sign
Lath set

6903 Union



6912



6932



school bus ahead survey

for Sherry Faulk

2411 Schrock Road

S. of Sec 25-88-13

drive is 3078 ft W. of Dysart

sight distance west 1293'

sight distance recommended 655'
for rear of bus

Sign Not Recommended

Left end start Right end

01 Lafayette Rd Dubuque East

0+00 & Westbound Dubuque Rd.

0+48 STOP SIGN
82⁵³³ 6+15⁵³³ 82¹²⁷³ 13+55

2+26 & RAIL ROAD

3+61 EAST R.O.W RAIL ROAD
16+35⁷⁰⁶ 23+41²⁰⁵⁰ 56+18²⁰⁵⁰ 76+68

67+52¹²⁵⁵ 80+07⁹¹⁶

80+99⁷⁵ 81+74⁷⁵ 80+99⁷⁵ 81+74

82+45¹⁵⁸⁰ 98+25¹⁵⁸⁰ 82+45¹⁵⁸⁰ 98+25

82+26 & RAYMOND Rd. NORTH

98+80 & RAIL ROAD
99+06²¹² 101+18²¹² 99+06²¹² 101+18

101+18 STOP SIGN

101+82 & DUBUQUE ROAD

Left end start Right end

RAYMOND ROAD
FROM DUBUQUE Rd. NORTH

& WESTBOUND LANE DUBUQUE EAST

0+53 STOP SIGN

0+53⁶⁴⁰ 6+93⁶⁴⁰ 0+53⁶⁴⁰ 6+93

5+42 & RAIL ROAD

7+57⁵⁵⁰ 13+07⁵⁵⁰ 7+57⁵⁵⁰ 13+07

13+78²⁴² 16+30²⁴² 13+78²⁴² 16+30

16+20 YIELD SIGN

16+76 & LAFAYETTE

RAYMOND ROAD

0+00 & LAFAYETTE NORTH

0+44 STOP SIGN

0+44³⁵⁶ 4+00³⁵⁶ 0+44³⁵⁶ 4+00

4+44⁸⁰³ 23+23⁸⁰³ 4+44⁸⁰³ 12+47

19+90³³⁰ 26+55⁶⁶⁵ (+)

26+55 & City Limits

(Cont. PAGE 13)

Left & Right

end start start end

DUBUQUE ROAD EAST BOUND

0+00 WEST City Limit OF RAYMOND

19+91 ⁴⁵⁴ 24+45

24+69 WEST END OF INLAND

31+08 EAST END OF INLAND

31+49 & RAYMOND ROAD

32+16 WEST END OF INLAND

42+73 EAST END OF INLAND

42+90 ⁵⁷⁷ 48+67

51+53 EAST City Limits

4+40 DOUBLE CENTERLINE

Left & Right

12

end start start end

Left $\frac{1}{2}$ Right

EDGE LINE

RAYMOND ROAD SOUTH BOUND

23+85

RAYMOND ROAD NORTH BOUND

25+81

DUBUQUE WEST BOUND

49+94

DUBUQUE ROAD EAST BOUND

49+33

Left $\frac{1}{2}$ Right
end start start end

1740

9526 Kimball ~~th~~ Elsie merle Peck
accident from Drive

With car from North

sight distance 401 feet

Ron Henry School Bus Sight Dist.
for 6435 Wagner Rd.

Observation was made from drive
@ 6435 Wagner Rd. Observed sight
distance @ 721 ft. Drive is
253 South of E 1/4 Cor 21-90-13

$$d = 60(1.47)2.5 + \frac{60^2}{30(0.3 - 0.0072)}$$

$$d = 630.3$$

$$SD = 630.3 + 35 + 25 = 690.5$$

Since required sight distance is
690.5 ft and observed sight dist.
is 721 ft; a School Bus Stop
Ahead Sign is not justified

9-13-90

WL

WAGNER

Observed sight
distance

217+68

SECT. 21-90-13

721' Observed
690.5' Required

Drive

210+47

6435
WAGNER

SIGHT DIST. CHECK; Eldora Rd
6120, 6239, 6243, & 6249 Eldora
Requested by Paul Loveless, Chief of
Police in letter dated Dec 13, 1990

6002 SD NORTH = 550

$$d = 45(1.47)2.5 + \frac{45^2}{30(0.3 + 0.0165)}$$

$$d = 165.4 + 213.3$$

$$d = 379'$$

$$d + 35 + 25 = 439'$$

SD = 550' (SIGN NOT RECOMMENDED)

6243 SD SOUTH = 475

$$d = 45(1.47)2.5 + \frac{45^2}{30(0.3 - 0.024)}$$

$$d = 165.4 + 244.6$$

$$d = 410'$$

$$d + 10 + 25 = 445'$$

SD = 475' (SIGN NOT RECOMMENDED)

6249 SD NORTH = 475

$$d = 45(1.47)2.5 + \frac{45^2}{30(0.3 + 0.0055)}$$

$$d = 165.4 + 220.9$$

$$d = 386'$$

$$d + 35 + 25 = 446'$$

SD = 375' (SIGN RECOMMENDED)

SIGN LOCATION Marked @

875' NORTH OF DRIVE @

6249 Eldora Rd.

WL

ELDORA Rd

Dec 18, 1990 RD, WL, B&B's

$$g = +1.65\%$$

6002
Greiman

SD = 550' N.

Sign @ 875' N.

$$g = +0.55\%$$

SD = 375' N

6249 Volz

6243
Kimpson

SD = 475' S.

$$g = -2.4\%$$

School Bus SIGHT DISTANCE
 3128 E. EAGLE RD
 REQUESTED BY Larry
 LaPorte City Bus Trans.

WL, BB, JS

Aug. 5, 1992

Target Ht. = 4.0'

Observer = 3.5

SD @ 3128 E. Eagle

Observed West = 349'

Observed East = 1825'

$$d = 60(1.47)2.5 + \frac{60^2}{30(.30 - 0.03)}$$

$$d = 221 + 444$$

$$d = 665'$$

From rear
of Bus

$$665 + 35 + 25 = 725' \text{ required}$$

$$SD = 349$$

SIGN IS RECOMMENDED

@ 849' West of Drive

@ 3128 E. Eagle

Note: Since Dysart Rd. is STOP
 condition, I check d with 45 mph
 and sign is still recommended.

Sign location may need to be adjusted

Sign
 Recommended 
 @ 849' West
 of drive @
 3128 E. Eagle
 (Location may
 need to be adjusted
 due to Dysart Rd.) x

3128
 E. Eagle

891' to E Dysart
 Road

349' Observed

1825'

N

slightly since it falls so close to Dysart Rd
 WL

School Bus Stop AHEAD Determination

7141 Wagner Rd.

Requested by Spallman

Target Ht. = 4.0'

Observer = 3.5'

S.D. North = 572'

S.D. South = 1400' ±

$$d = 60(1.47)2.5 + \frac{60^2}{30(0.30 + 0.04)}$$

$$d = 220.5 + 461.5$$

$$d = 682'$$

$$682 + 35 + 25 = 742' \text{ required}$$

$$SD = 572'$$

Sign recommended @ 1072'

North of Drive @ 7141 Wagner Rd

WL, BB, BS, JS

Aug, 19, 1992

Sign
RECOMMENDED@ 1072' North
of Drive @ 7141

Wagner Rd.

500'

572'
ObservedDrive @ 7141
Wagner RdBus
Travel

School Bus Stop AHEAD Sign Determination

6402 Wagner Rd.

Requested by Hwy Trooper Achenbach

Target Ht = 4.0'

Observer = 3.5'

S.D. NORTH = 939'

S.D. SOUTH = 2000' ±

$$d = 60(1.47) 2.5 + \frac{60^2}{30(0.30 - 0.03)}$$

$$d = 220.5 + \frac{3600}{8.1}$$

$$d = 220.5 + 444.4$$

$$d = 665$$

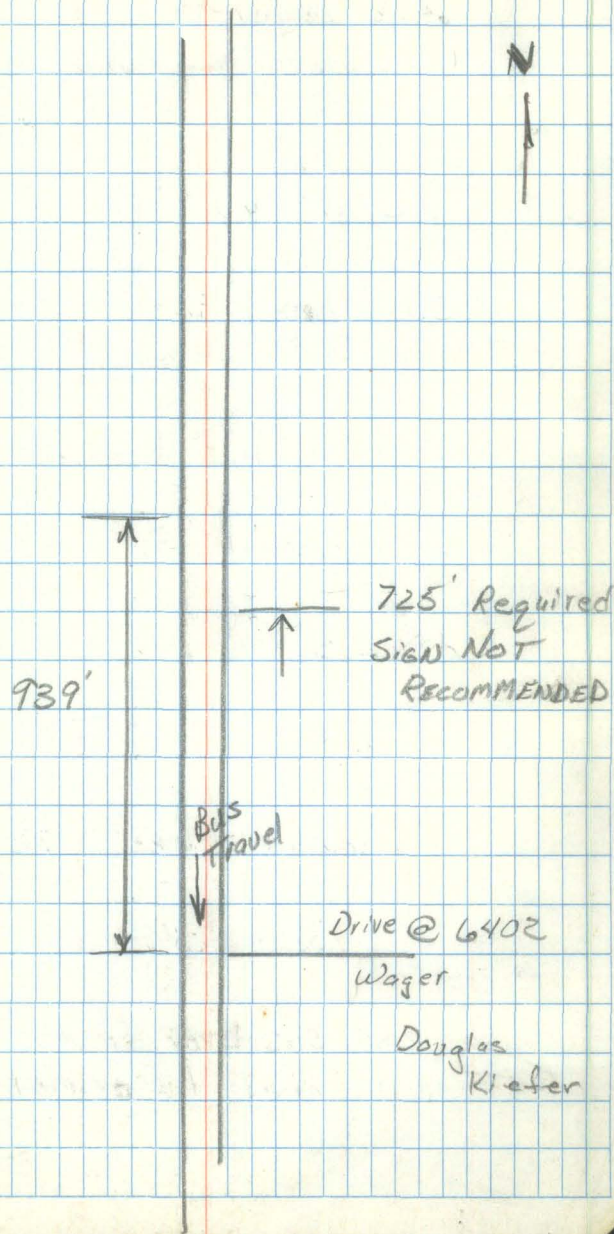
$$665 + 35 + 25 = 725' \text{ required}$$

$$SD = 939'$$

School Bus Stop AHEAD Sign
is NOT RECOMMENDED

WL, BS, JS

Oct, 26, 1992



Location: Kimball Ave 9443 & 9526
 Requested by Sharon Draste
 Director of Transportation
 Waterloo Community Schools

Target Ht = 4.0' Observer = 3.5'

9443 SD = 2568' North; 384' South

9526 SD = 370' North; 3098' South

$$d = 60(1.47)2.5 + \frac{60^2}{30(0.30 + 0.03)}$$

$$d = 220.5 + \frac{3600}{8.1}$$

$$d = 220.5 + 444.4$$

$$d = 664.5$$

$$d + 25 + 35 = RD$$

$$664.5 + 25 + 35 = RD$$

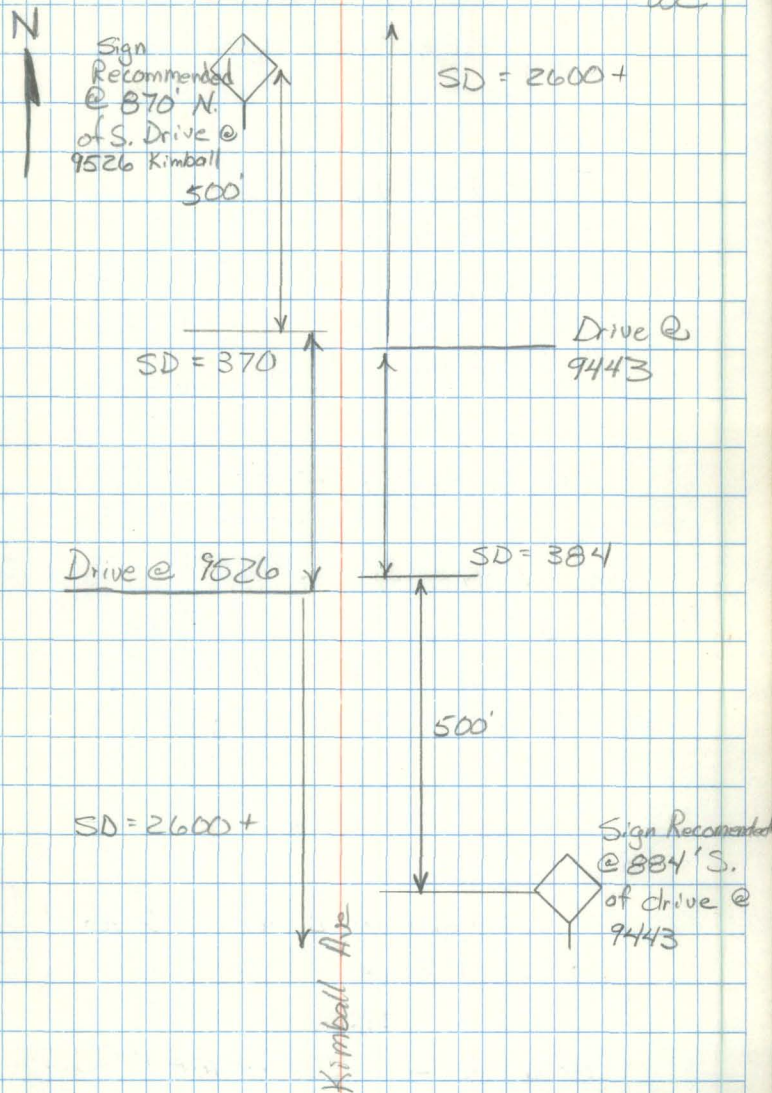
$$\text{Required Distance} = 725'$$

Sign recommended at 870' North
 of South drive @ 9526 Kimball
 also

Sign recommended at 884' South
 of drive @ 9443 Kimball

School Bus Stop Ahead Sight Distance Determination Sept 21, 93

WK



School Bus Stop Ahead Sign Survey
Requested by Marlene Rodemaker
9503 Taylor Rd. Jonesville
987-2077

Target Ht = 4.0 ft

Observer = 3.5 ft

Target @ Entr. to 9503 Taylor Rd

SD North = 562'

SD South = 1292'

$$d = 60(1.47)^2 + \frac{30(0.30 + 0.01)}{9.8}$$

$$d = 220.5 + 387.1$$

$$d = 220.5 + 387.1$$

$$d = 607.6 \approx 608'$$

$$d + 25 + 35 = RD$$

$$608 + 25 + 35 = RD$$

$$\text{Required Distance} = 668'$$

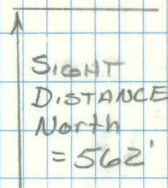
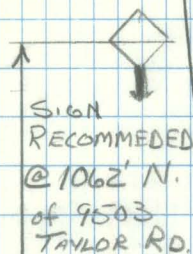
Sign recommended at 1062' North
of Drive @ 9503 Taylor Rd.

WL

Nov. 22, 1993

WL, JS

21



DRIVE @
9503 Taylor

SIGHT
DISTANCE
South
= 1292'

SIGN
NOT
RECOMMENDED

School Bus Stop AHEAD
Sign Survey
Requested by Jesup Schools

10509 Dubuque Rd.
Bill Mastellar residence

Target Ht = 4.0 ft
Drivers eye = 3.5 ft

Target @ entrance to 10509
Dubuque Rd

SD from West = 960'

SD from East = 1840'

$$d = 60(1.47)2.5 + \frac{60^2}{30(0.30 - 0.04)}$$

$$d = 220.5 + \frac{3600}{7.8}$$

$$d = 682.5 \text{ ft}$$

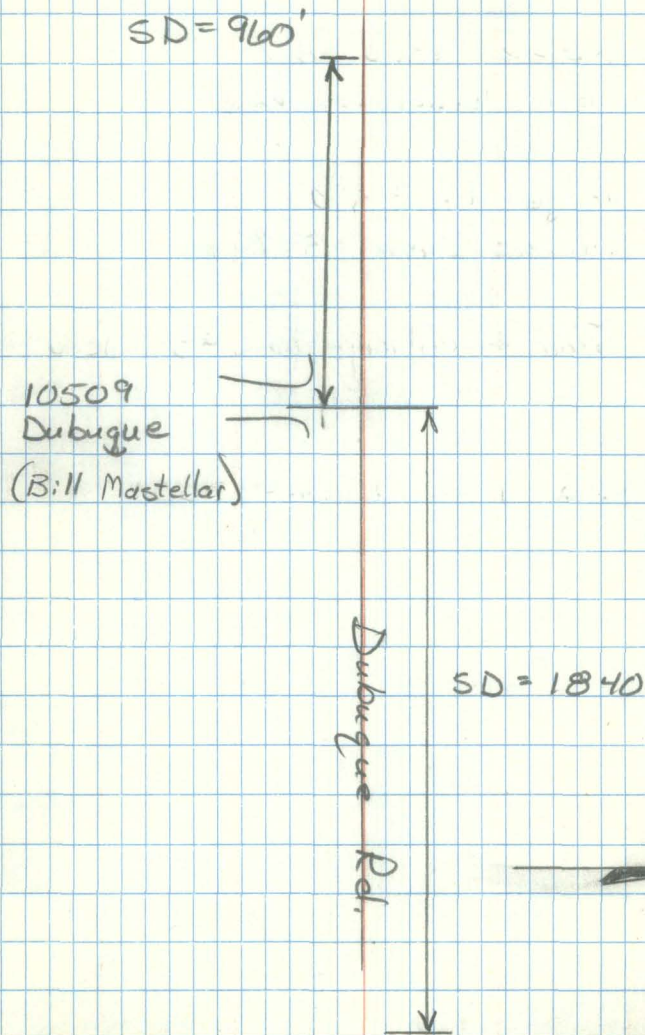
$d + 25 + 35 = \text{Required Distance}$

$$RD = 742.5 \text{ ft}$$

Since Sight Dist. is greater than
Required Dist., sign is Not
justified.

Sept 9, 1991

22
WL



School Bus Stop Ahead

Sign Survey

Requested By Jesup Schools 824.73

Sept 9, 1994

WL

5835 Jesup Rd 829.3

Dennis Weber residence 827.35

Target Ht = 4.0 ft

Drivers Eye = 3.5 ft

H. Target @ entrance to 5835 Jesup Rd.

SD from South = 3000' +

SD from North = 3000' +

Sign Not justified

SD = 3000' +

SD = 3000' +

SD = 3000' +

150 ft N

200 ft N

5835 Jesup
(Dennis Weber)

Jesup Rd.

SD = 3000' +

School Bus STOP AHEAD
Sign Survey
Requested by Kathleen Ingles

1438 E. Dunkerton Rd.
Kathleen Ingles Residence

Target Ht. = 4.0 ft.
Drivers Eye = 3.5 ft.

Target at entrance to 1438 E. Dunk

SD from East = 516 ft

SD from West = 1842 ft

$$d = 60(1.47)2.5 + \frac{60^2}{30(0.30 - 0.00)}$$
$$d = 220.5 + \frac{3600}{9}$$
$$d = 620.5$$

$d + 25 + 35 = \text{Required Safe Dist}$
 $RSD = 680.5$

SD to East is less than
minimum 680.5. Sign to
be placed 1016 ft East of
entr. to 1438 E. Dunk.

Oct 11, 1994

2 ←

Sign Recommended
@ 1016' East
of Entr. to
1438 E. Dunkerton

SD = 516

E. Dunkerton Rd.

1438 E. Dunkerton

SD = 1842'

B.M. #1

6.60

S. of
Road

13.8 92.80

11.8 94.8

9.6 97.00

10.7 95.9

12.9 93.7

12.3 94.3

5.2 101.4

N. of Rd

9.9 96.7

~~12~~ 12.5 94.1

9.9 96.7

9.8 96.8

9.0 97.6

5.4 101.2

E Rd. & Pipe

4.9 101.7

B.M. #1 6.60 106.60

100.00

B 30d spike in Tel. Pole, W. Side Dr. Lt.

98' E Waterway

85' S. along & Pipe

45' S. Top Bank

38' S. along & Pipe, Fence

31' S. along & Pipe

18' S. along & Pipe

15' south along & Pipe

8' along & Pipe

& Creek along R.O.W., 7'E. of last shot

44.5' (R.O.W.)

34

27' N.

North
Edge Shoulder, 17' along & Pipe

30d spike in Tel. Pole, W. Side drive, Lt.

windslow

B.M. East
end N. Curb 5.03 88888 883.85

φ 2.23 880.94 10.17 878.71

0.69 872.66 8.97 871.97

65

S. Grown S. end east Pier ^{#665} 10.02 862.64

" " " Pier 5 ¹⁰ 8.15 864.51

" " " " 4 14.10 858.56

" " " " 3

φ 11.42 883.37 ^{82.97} 1.71 ^{70.95} 871.95

9.88 889.51 ^{80.51} 3.74 ^{78.61} 879.63

B.M. 4.67 ^{83.84} 884.87

9.0

March	men	ho
18	2	4
19	1	4
19	2	7 1/2
19	2	4 1/2
20	3	11
21	4	11 1/2
22	1	8 1/2
22	4	14 1/2
23	3	19
25	2	4
25	1	5
26	1	6.5
26	2	8
26	7	8
27	1	9
27	3	8
27	1	10
28	1	9
28	1	11
28	1	10
29	1	10 1/2
april		
2	1	6

50' from E. side 945'
50' from W. side lot 1002

3X3

4.25 ft ~~4~~ To sh

0+00 stop sign at 218 in LaPorte
end start start end
3432 5105 2952 4115

3562

Western market
PO Box 534
Bloomfield N.J.
1-201-429-7541

CURVE FORMULAE

D = Degree of Curve

IM 9.101

IV

Procedures:

A. Determining Available Sight Distance.

The available sight distance (SD) is determined by making observations at each site under study. Assumptions and criteria used for this part of the study are as follows.

1. The driver's eye height is 3.50 feet.
2. The height of the target used at the driveway where passengers are picked up or discharged is 4.0 feet. This is approximately 1/2 the height of a school bus and would include the flashing lights and a substantial portion of the bus itself.
3. The observation point is positioned on the roadway at approximately the same lateral location as the driver's eye.

By using the above assumptions and criteria, the available sight distance is determined.

B. Determining The Stopping Sight Distance.

The method of computing stopping sight distance is taken from the 1984 edition of A Policy on Geometric Design of Highways and Streets published by AASHTO. Stopping sight distance is composed of two parts. First is the distance traveled during perception and reaction and second is the actual distance to brake to a stop. The following formula is used.

$$d = V(1.47t) + \frac{V^2}{30(f+g)}$$

The terms in this equation are defined as follows.

- d = The total stopping sight distance in feet.
- V = The initial speed in miles per hour.
- t = The perception/reaction time in seconds.
- f = The coefficient of friction between the tires and the roadway.
- g = The grade expressed as a decimal.

Assumptions made in computing the stopping sight distance are as follows.

1. The initial speed is 60 MPH for a rural location which allows for a factor of safety over the posted 55 MPH speed limit. If the location is in a reduced speed zone, use the actual posted speed limit.
2. Perception time is 1.5 seconds.
3. Reaction time is 1.0 seconds.
4. Total perception - reaction time (t) equals 2.5 seconds.
5. The coefficient of friction (f) is 0.30 which is representative of wet pavement conditions.
6. The grade used is the actual percent divided by 100 or the average grade if the approach is on a vertical curve.

