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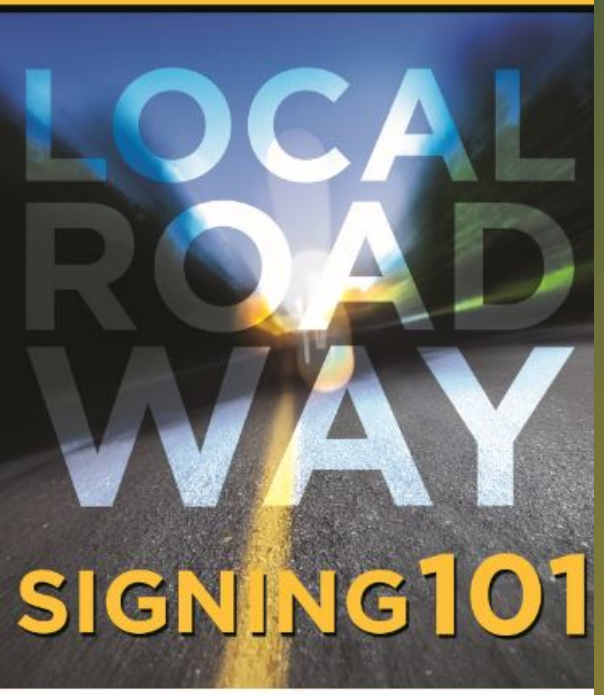
NORTH DAKOTA LOCAL TECHNICAL ASSISTANCE PROGRAM



LOCAL ROADWAY SIGNING 101

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NORTH DAKOTA LOCAL TECHNICAL ASSISTANCE PROGRAM

Presentation Author:
Dale C. Heglund, PE/PLS, NDLTAP Director – November 2015

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NORTH DAKOTA LOCAL TECHNICAL ASSISTANCE PROGRAM

LOCAL ROADWAY SIGNING — 101

COURSE DESCRIPTION

- MUTCD basics
- Low volume road departures
- Sign color, shape & size
- Sign hierarchy
- Components of roadway
- Vertical & lateral clearance of signs
- Sign offsets
- Sign support & bases
- Clear zones
- Sign inventory
- Sign condition assessment
- Sign policy
- Retroreflectivity

REGISTRATION / FEES
$25 PER PERSON

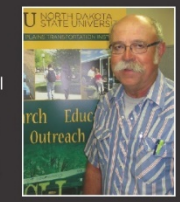
Register at www.ndltap.org
You must have an account with NDLTAP's Learning Management System to register for this training.

If you have questions about registration, contact the NDLTAP office: 701-328-9855
sandra.baisch@ndsu.edu or
denise.brown.1@ndsu.edu

NDIRF

Northland Chapter of ATSSA

INSTRUCTOR



Jon Mill graduated from Montana State University in 1970. Mill worked for NDDOT in the Valley City District for 11 years as a construction engineer. He is a Professional Engineer, and also a Professional Land Surveyor. Mill was the Burleigh County Highway Engineer for 29 years, and was a contractor with NDDOT on the 2009 Emergency Relief Flood Damage Inspection.

TARGET AUDIENCE

County, city and township signing personnel

North Dakota State University
Upper Great Plains Transportation Institute
North Dakota Local Technical Assistance Program (ND LTAP)

www.ndltap.org

phone: (701) 328.9855
fax: (701) 328.9866

Like NDLTAP on Facebook
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Support for this program is provided by the North Dakota Department of Transportation, the Federal Highway Administration, and the North Dakota Insurance Reserve Fund.

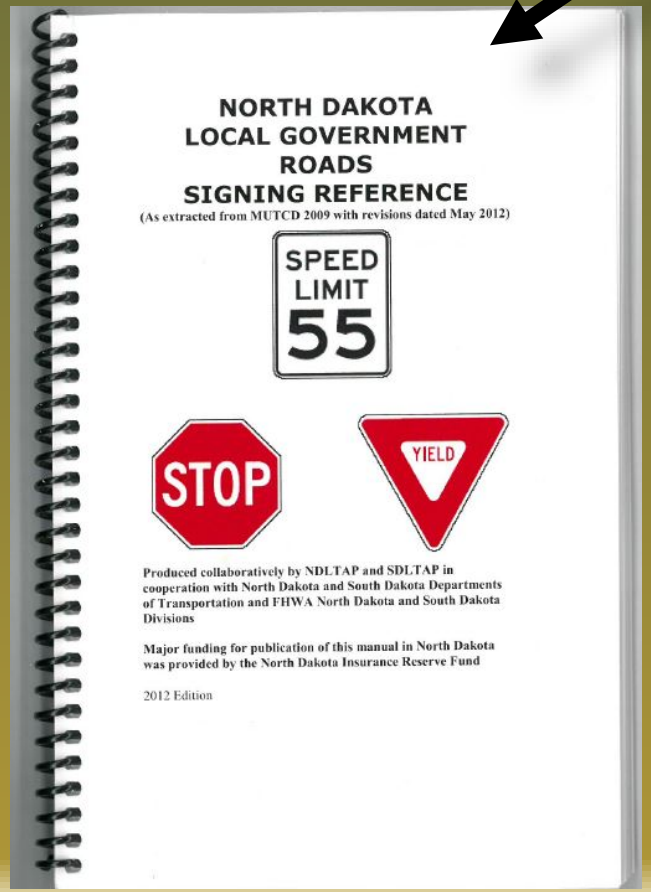
Goal

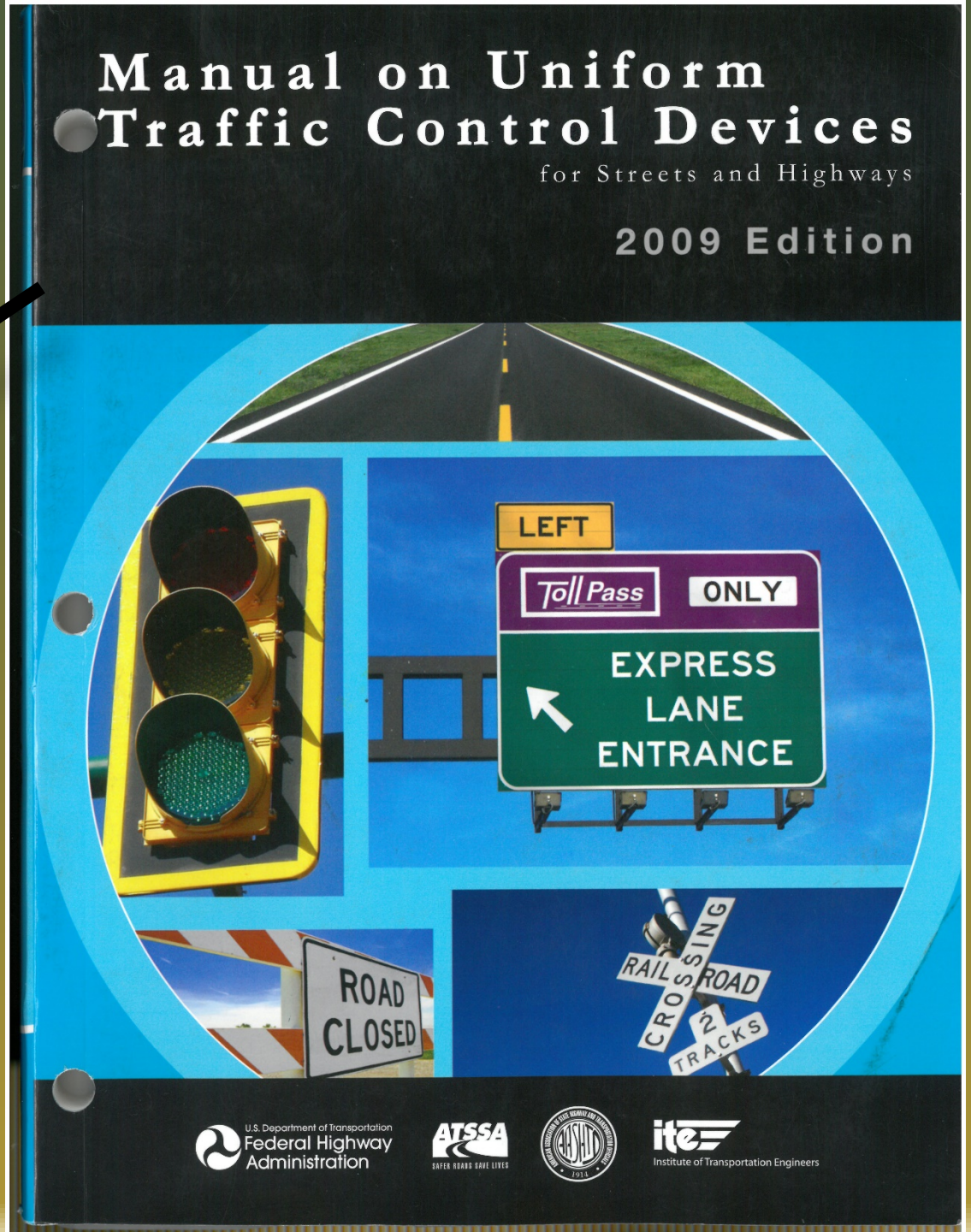
SAVE LIVES

IT'S WHAT WE DO

MUTCD

Manual on Uniform Traffic Control Devices





Signing Policy

- June 14, 2014 – Plan deadline
- Adopted Sign Maintenance System
- Sign Maintenance Budget
- Signs are an Asset.

https://www.youtube.com/watch?v=gUUUbs8xRcQ – ATSSA Replacement Cycle

There are No Sign Police

- Jurisdictions will not be cited and/or penalized by any enforcement agency.
- Citizen Response - Encourage Neighborhood Watch – Users are par the team.
- "Enforcement" will come via the legal system. (i.e. claims and suits filed by injured parties - *tort law*)
- **Tort Claims** - A civil wrong resulting in injury or damage. A Violation of a duty owed to an injured party.

Signing Standards

- Sign offsets & Spacing
- Breakaway Bases (NCHRP 350) or M.A.S.H.
- Color of signs
- Lettering heights
- Sheeting types

Duties of Road Agencies

- Provide Reasonably Safe Roads
- Warn of Existing Hazards

Reasonable Person

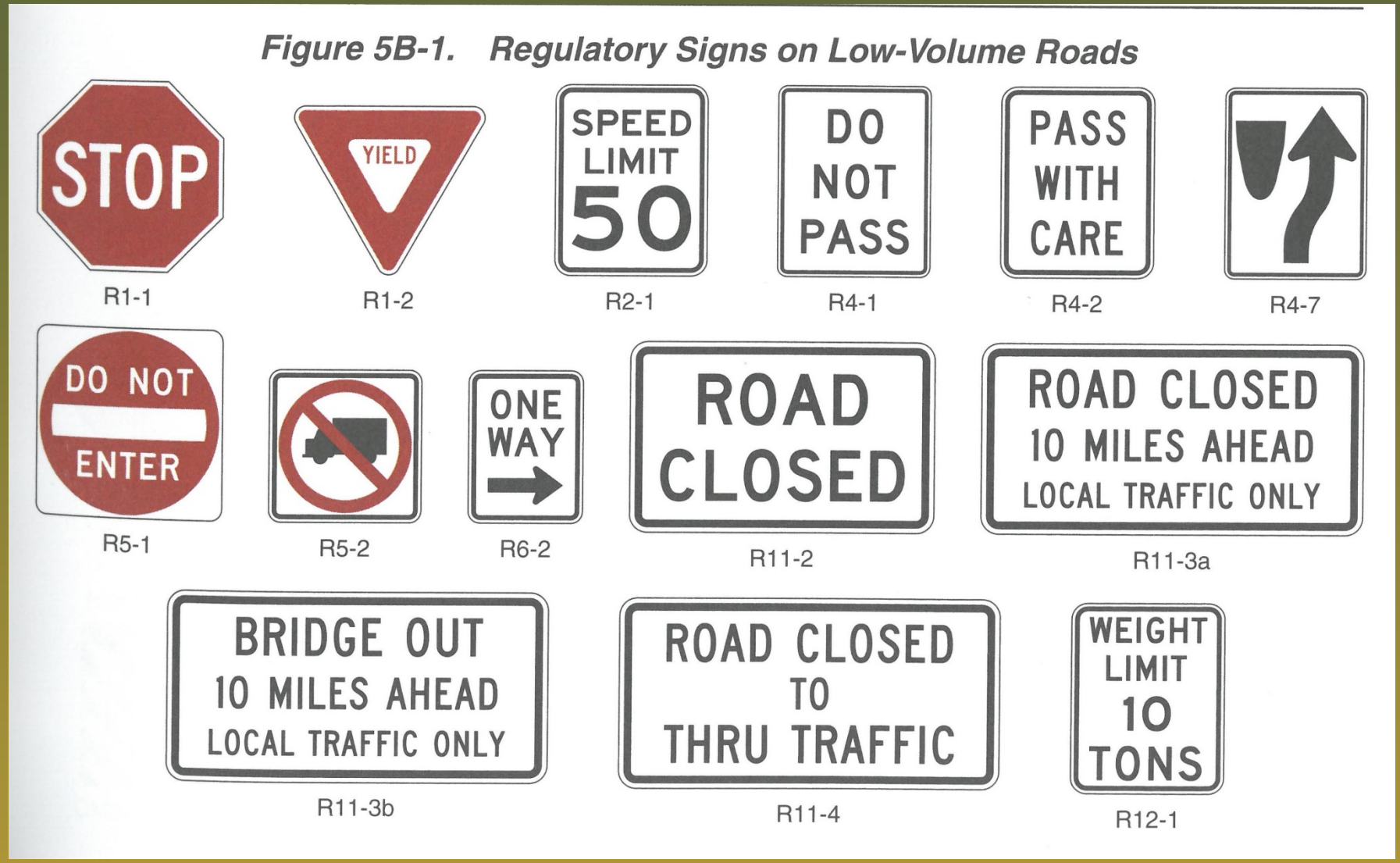
- Engineering Study – Engineering Judgement
- Reasonable expectation
- Ministerial Duty (i.e., must follow the signing 'law' – MUTCD); Discretionary Duty
- Roadway Standards
- Improve what is right and correct what is wrong
- Minimize signing – right sign at the right place

Uniformity - Trail to Interstate

Color, Shape and Size

Regulatory Signs

Figure 5B-1. Regulatory Signs on Low-Volume Roads



Fluorescent Yellow-Green

Shape

Size

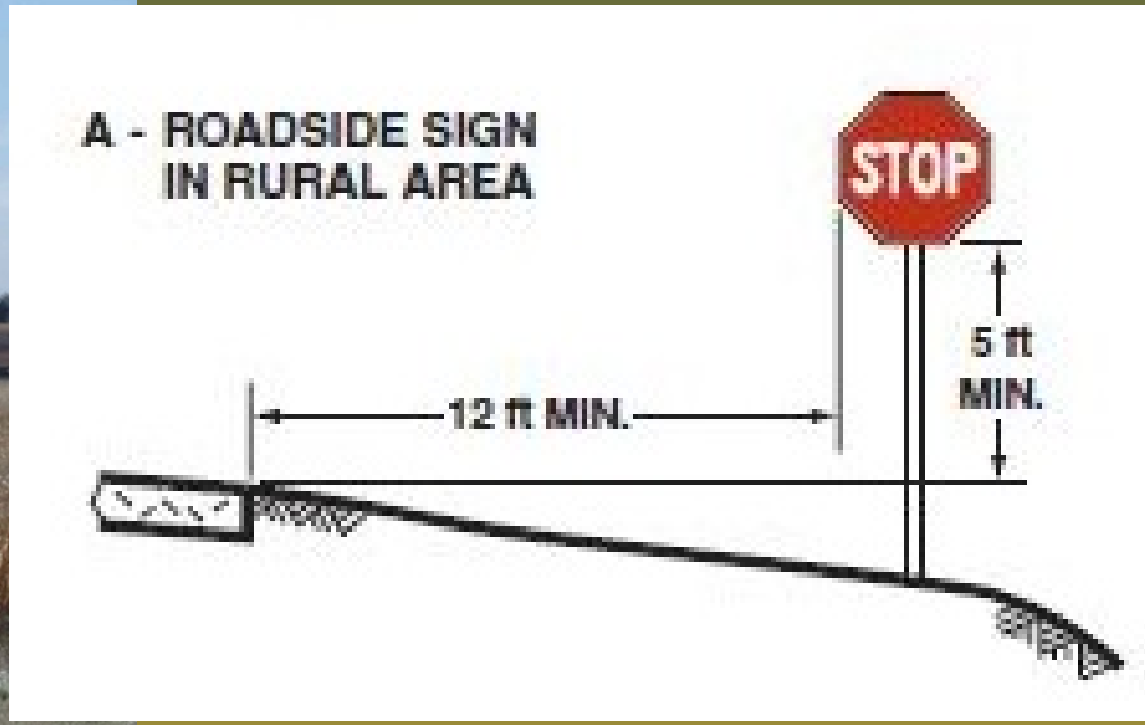

SPEED
LIMIT
4
SPEED
LIMIT
45


ONE WAY
STOP
STOP
DIVIDED
HIGHWAY

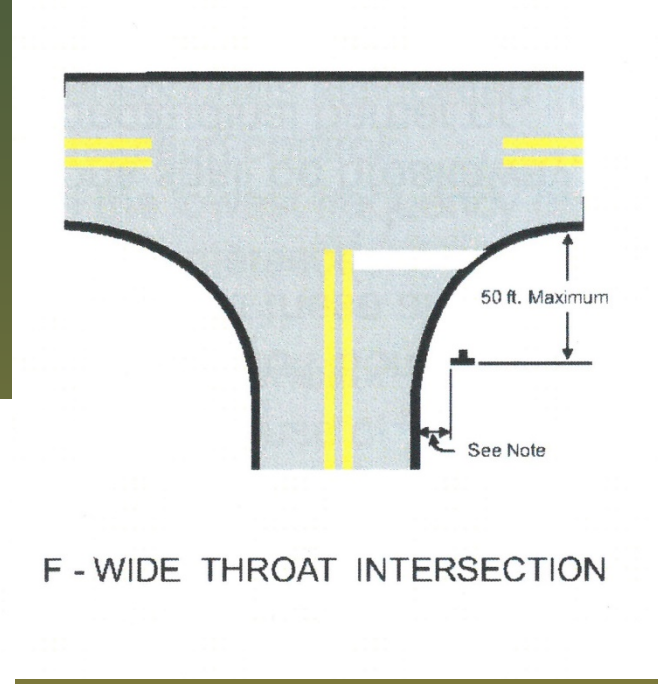
Sign Placement

https://www.youtube.com/watch?v=kxe8bRKuhlo - ATSSA New Signs

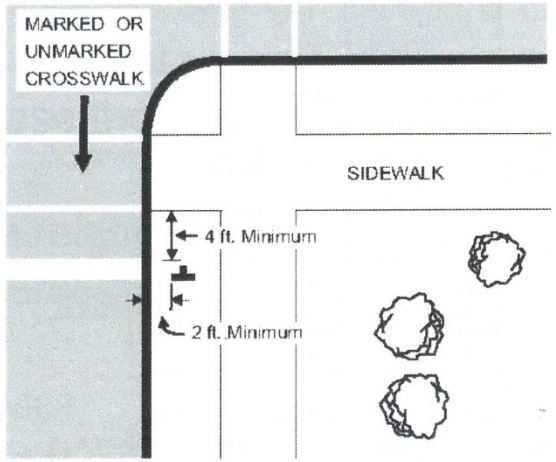
Offset and Height



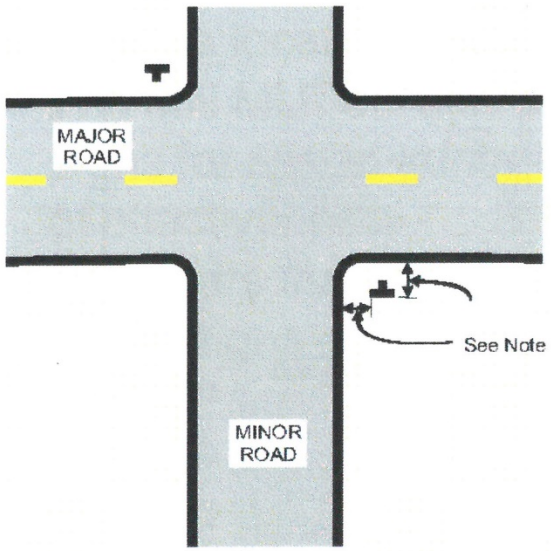
Placement



F - WIDE THROAT INTERSECTION



D - URBAN INTERSECTION



C - MINOR CROSSROAD


RAIL ROAD
CROSSING
2
TRACKS
R
R
TRUCK
ROUTE

Public Participation
(a.k.a., neighborhood watch)

A best practices statement would be:

"The _____ County Highway Department/the City of _____ Public Works Department will repair/replace signs after receipt of notice that a sign has been damaged based on the following schedule:

- High Priority Signs (STOP signs) – within one business day
- Intermediate Priority Signs (Reg., Warning and Guide Signs required by the MN MUTCD) – within 2 scheduled business days
- Lower Priority Signs (All other Regulatory, Warning & Guide signs) – within 3 scheduled business days"

Vandalism

Advisory Speed Plates

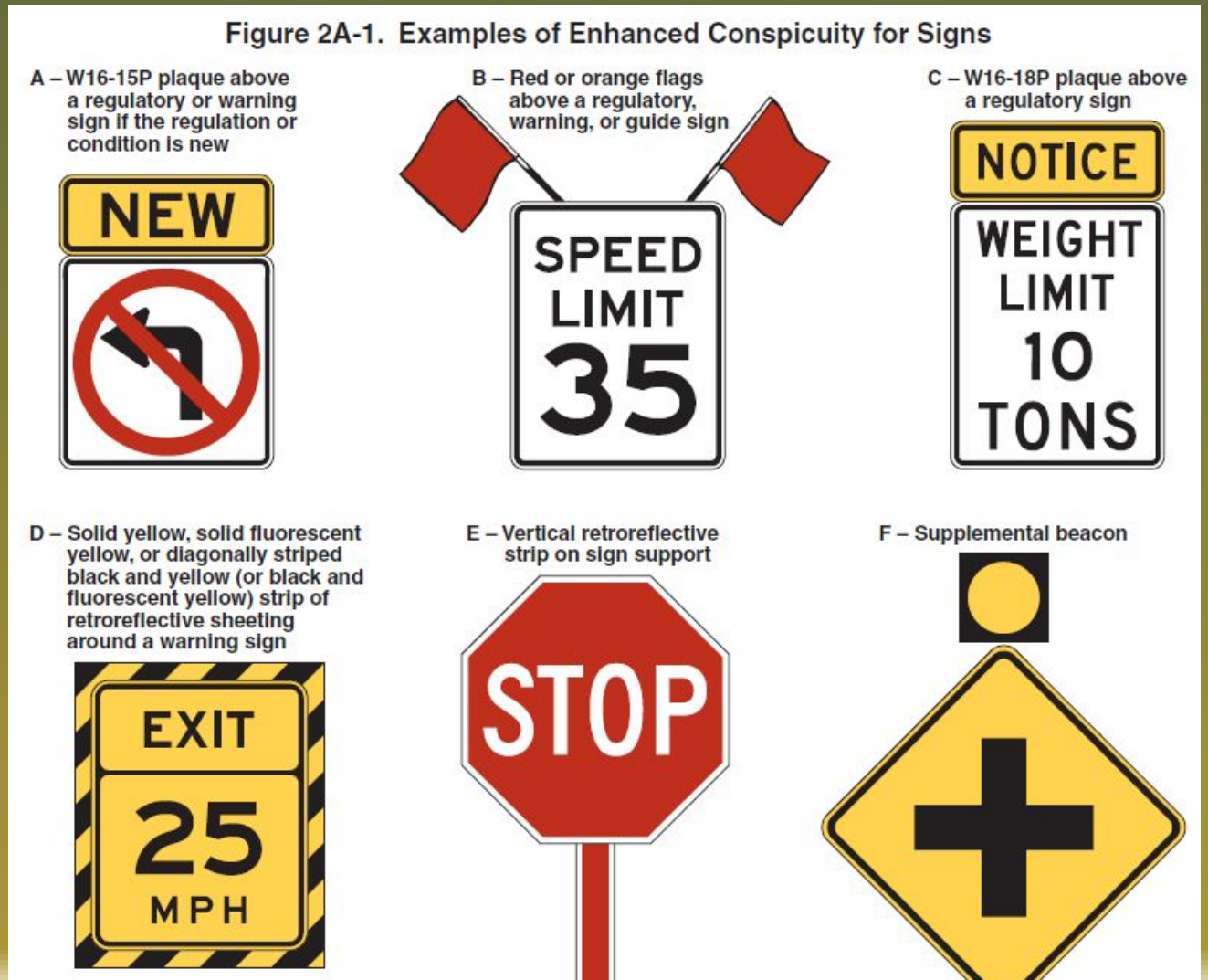
Curve or Turn

Clear Zone Concept

- Clear Zone definition – the obstructed, traversable area provided beyond the edge of the through traveled way for the recovery of errant vehicles
- “Yellow Book” - stated 30 Ft
- 1977 AASHTO’s Guide for Selecting, Locating and Designing Traffic Barriers - based on traffic volumes, speed and roadway geometrics


SOFT
SHOULDER

Conspicuity –
(to make more noticeable)



- Sign Posts
- Trailers
- Allowance to better announce a roadway condition

Flag Page 35

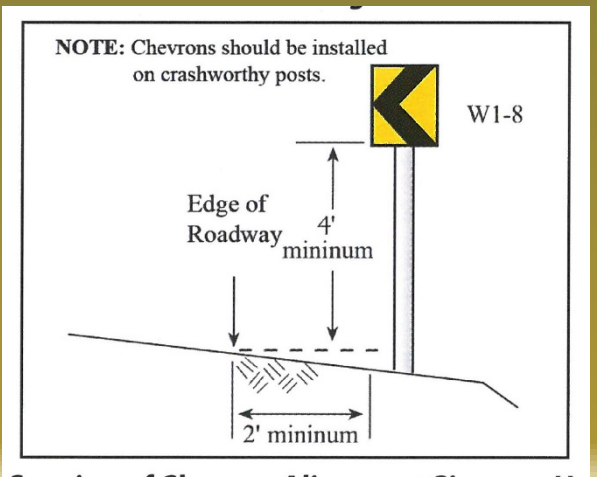

STOP
ALL WAY
REGULAR 2.00
DIESEL 2.65
LIVE BAIT


STOP


STOP


NEW

Chevron signs may be mounted at 4-foot height

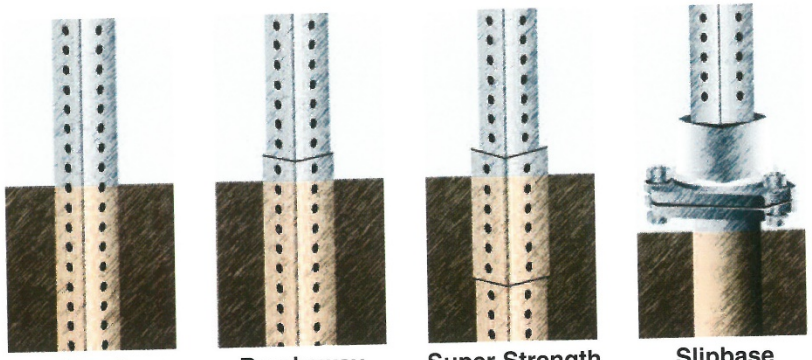


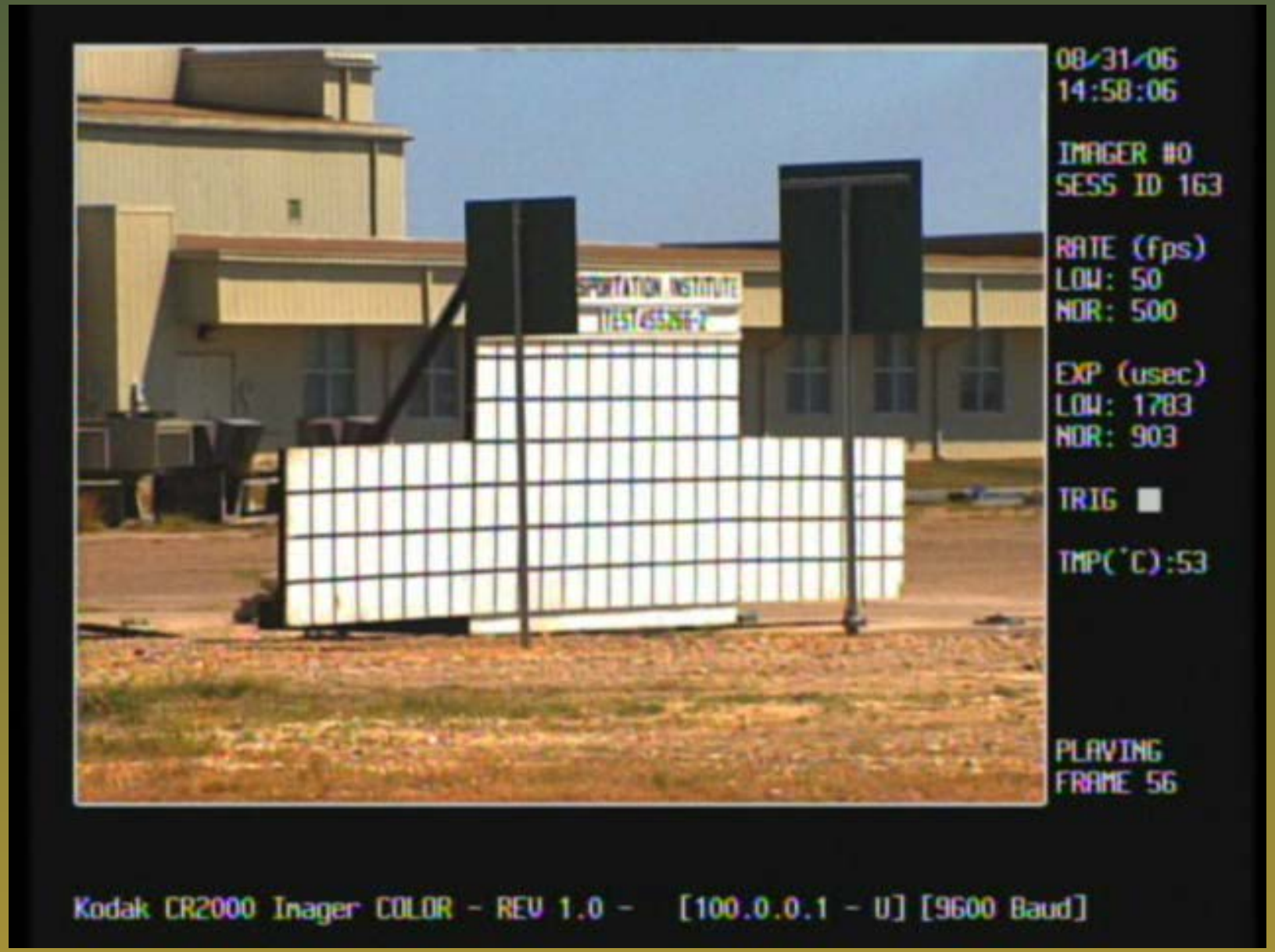
Prior to ALL Sign Installations

811®

Know what's **below.**
Call before you dig.

SQUARE TUBE


Direct Installation
Breakaway Installation
Super Strength Installation
Slipbase Installation


08/31/06
14:58:06
IMAGER #0
SESS ID 163
RATE (fps)
LOW: 50
NOR: 500
EXP (usec)
LOW: 1783
NOR: 903
TRIG
TMP(°C):53
PLAYING
FRAME 56
Kodak CR2000 Imager COLOR - REV 1.0 - [100.0.0.1 - U] [9600 Baud]


02/16/09
12:34:03
IMAGER #3
SESS ID 101
RATE (fps)
LOW: 50
NOR: 1000
EXP (usec)
LOW: 19980
NOR: 953
TRIG
IMP(°C):19
PLAYING
FRAME 160
Kodak HG2000 Imager COLOR - REV 1.3 - [100.0.0.1 - U] [9600 Baud]

Inventory

Agency ______________________________ Sheet ___ of ___

Traffic Sign Inspection Sheet – SAMPLE 1

Date Surveyed ___________

Zone _______ Roadway ______________________ Location/Direction ___________

From ______________________________ To ______________________________

Milepoint	Direction	Sign Type	MUTCD Number	Sign Size	Sign Message	Retroreflectivity OK	Remove Sign	Replace Sign	Adjust Height	Steel Post	Wood Post	New Post	Level Post	Remarks

Inspector

✓ = okay
X = needs attention

Traffic Sign Inspection Sheet – SAMPLE 2

Agency ____________ Road Identification ______________ Direction ____________

Beginning Point ____________________ Ending Point ____________________

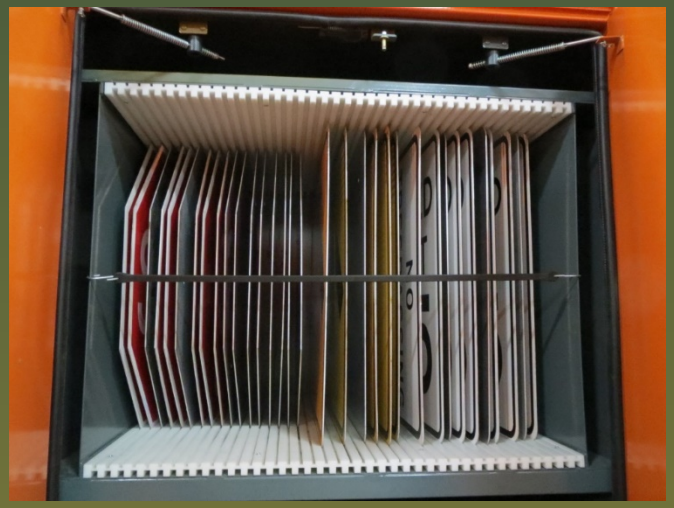
Date ____________ Inspector ____________________

Odometer Reading	Side of Road	Sign No.	Sign I.D.	Sign Type	Sign Inspection			
					Date	Action Taken	Date	Action Taken

Page ___ of ___

http://my.acquisign.com

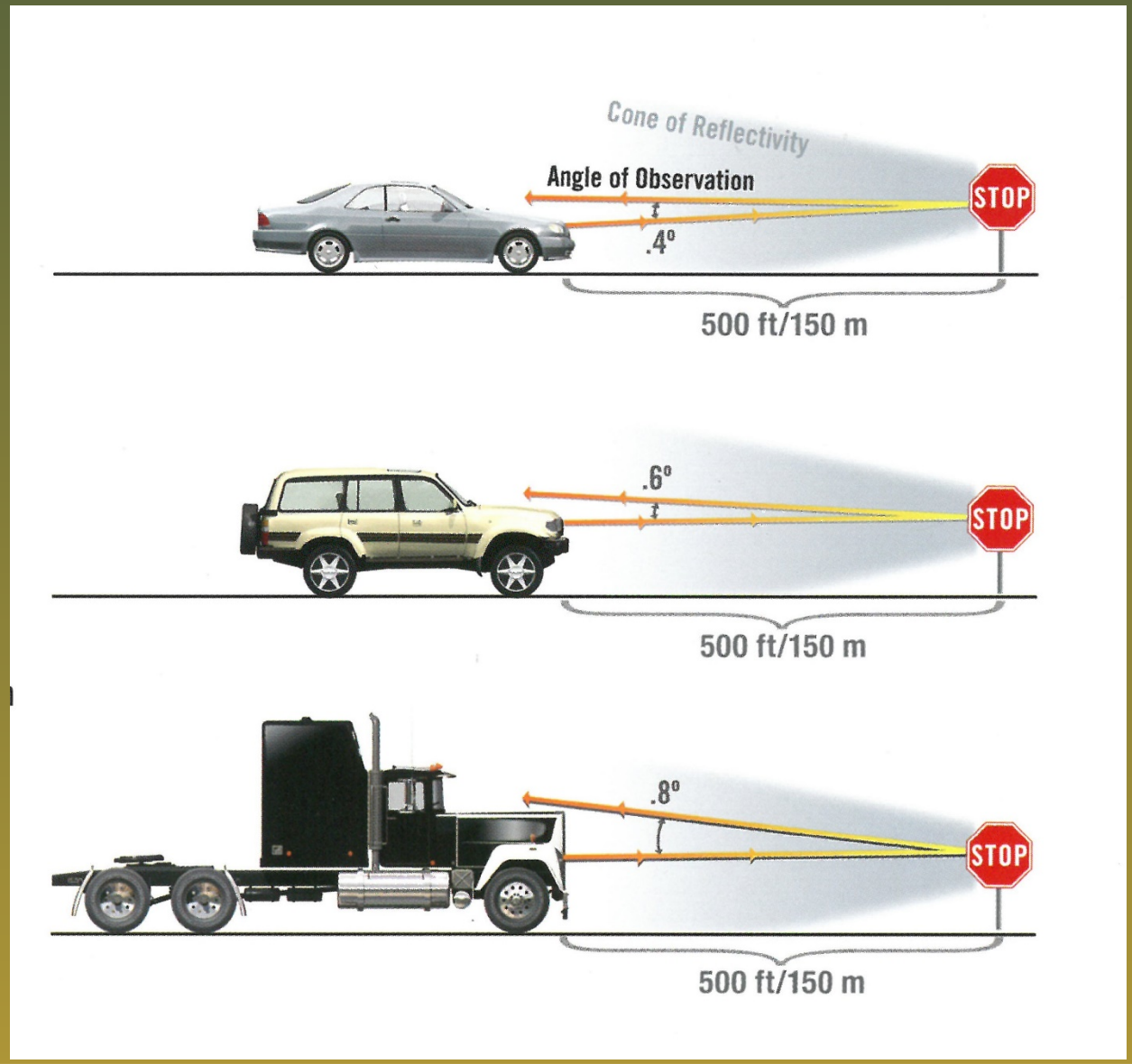
Truck and Shop Inventories



Retroreflectivity

https://www.youtube.com/watch?v=6lw_pOtwIWY – ATSSA Retroreflectivity

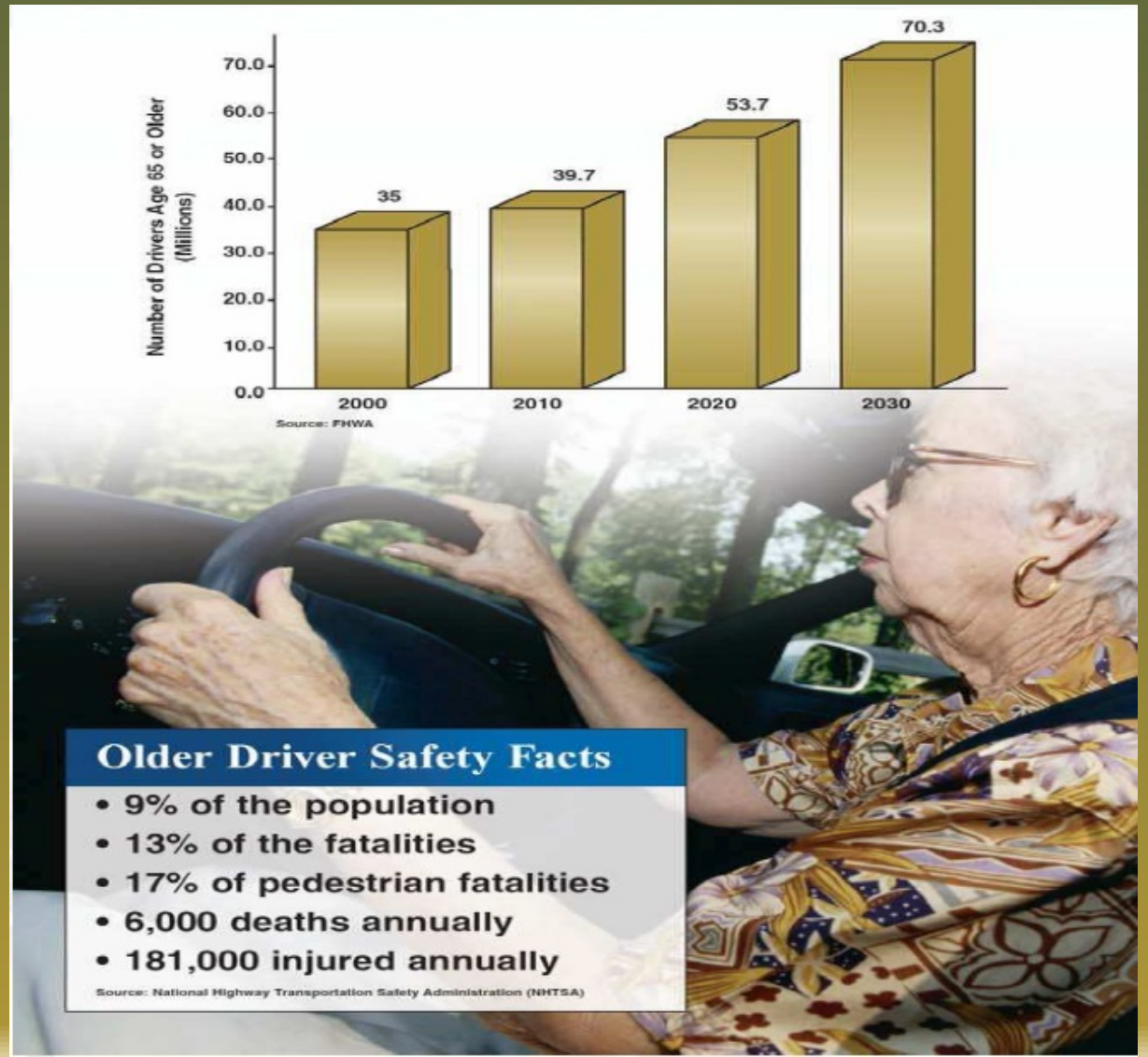
Vehicle Observation Angles



Retroreflective Signs

https://www.youtube.com/watch?v=1oCdPqHrG-0 - ATSSA Older Drivers

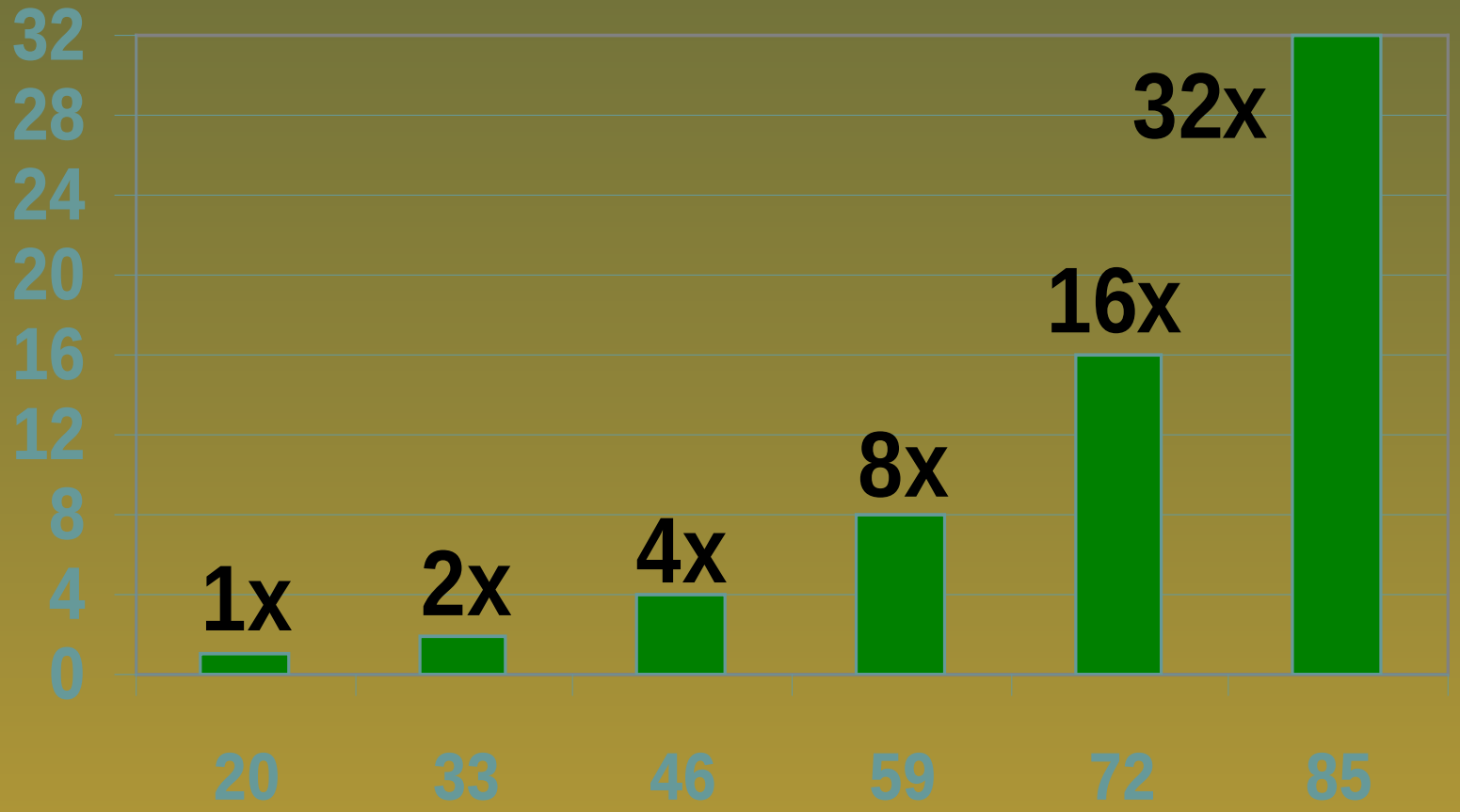
Age Produces a Different Driver



- Field of view narrows
- Accommodation time increases
- Adaptation time increases

Older Driver Vision

- Starting at age 20, the amount of light needed to see doubles every 13 years



3M Life Cycle Costs

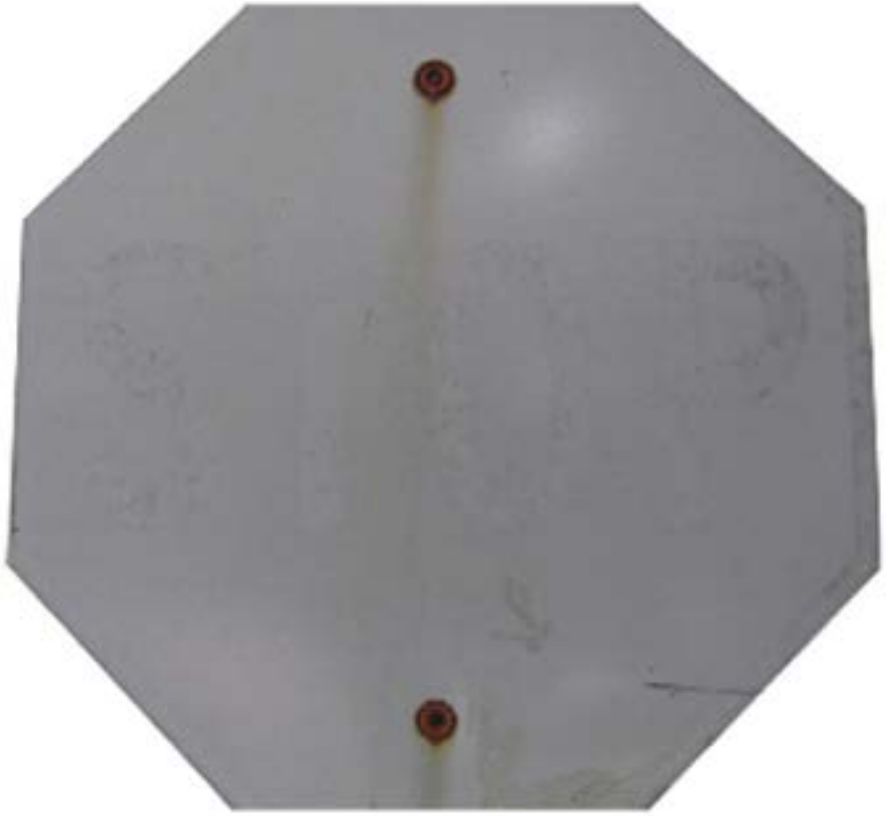
Signs deteriorate at different rates. Age, location, sun exposure and sheeting type all affect a sign's useful lifespan. The best measure of the cost of a sign is its life-cycle cost (i.e. the cost of the sign divided by its useful life). Factor in labor, hardware, administrative expenses and other costs that are incurred each time a sign needs replacement and the savings for longer-lasting signs gets even better.

Sheeting Attributes	Engineering Grade Reflective Sheeting	3M™ High Intensity Prismatic Reflective Sheeting	3M™ Diamond Grade™ DG³ Reflective Sheeting
ASTM Types	I	III, IV, X	Proposed Type XI
Retroreflectivity (0.5°, -4°)	30 cd/lux/m²	200 cd/lux/m²	400 cd/lux/m²
Overall Performance	May not meet federal minimum reflectivity levels over the life of the sign	Good	Excellent
Cost of Sign*	$35.94	$40.63	$55.50
Expected Life	7 years	10 years	12 years
Cost per year	$5.13	$4.06	$4.63

*Example only – actual cost may vary.

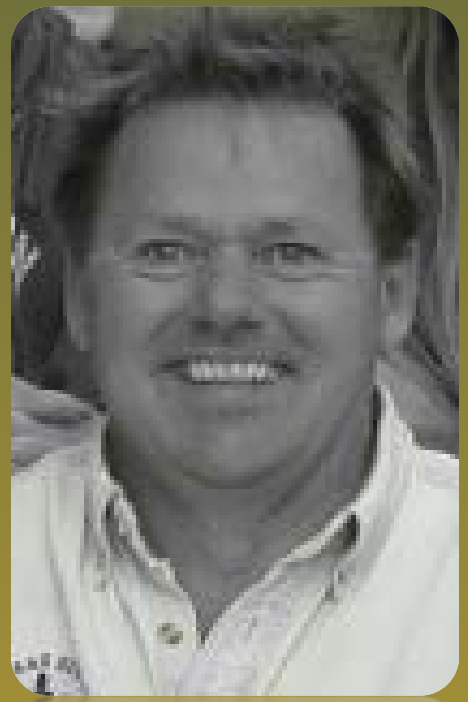
From This

To This



NDLTAP Technical Resource

Dale Heglund, NDLTAP Director
701-318-6893
dale.heglund@ndsu.edu



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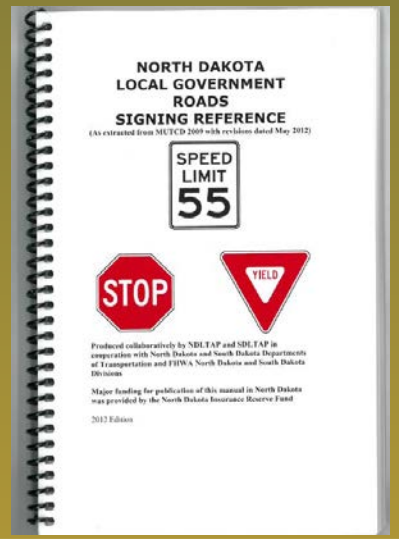
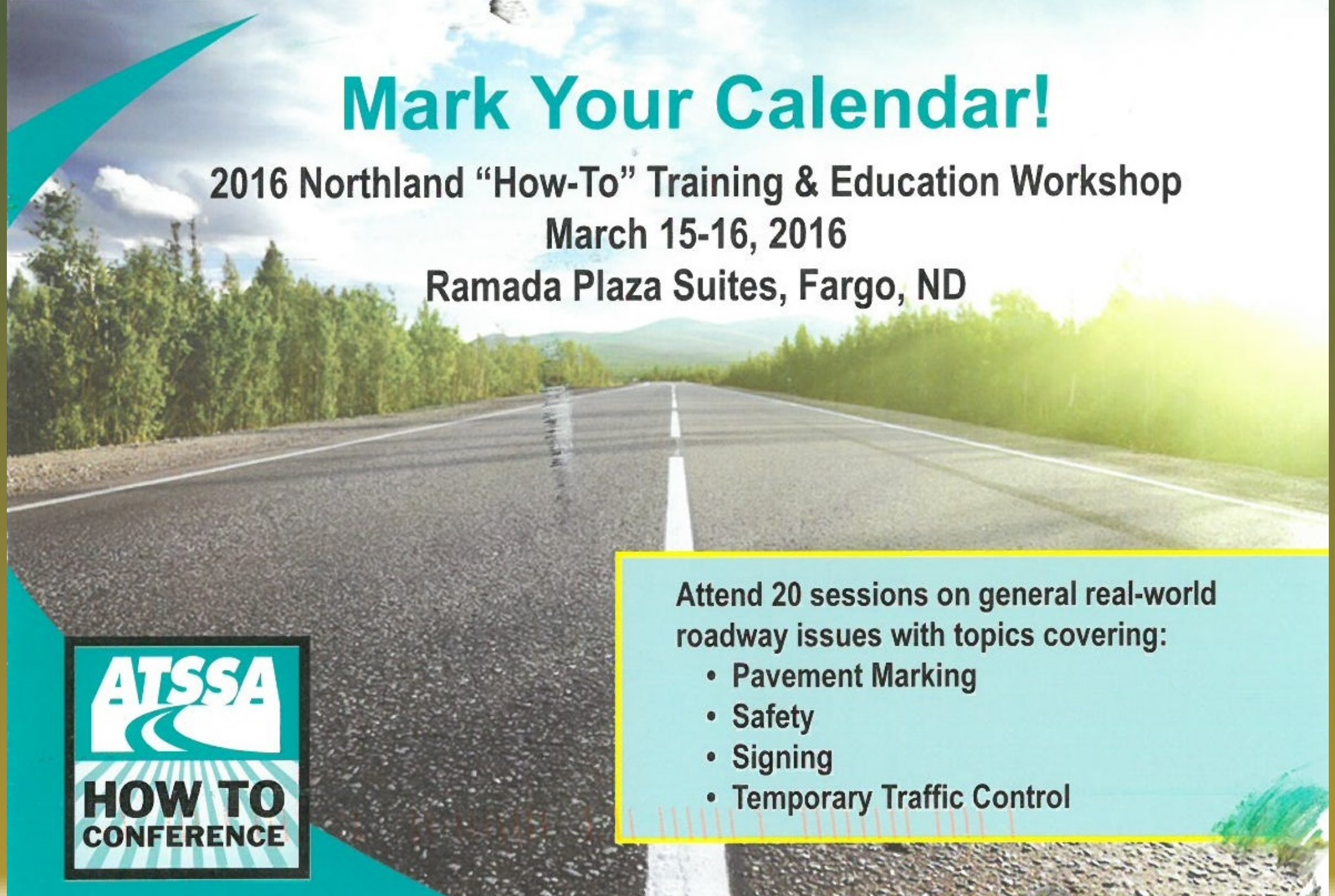
NORTH DAKOTA LOCAL TECHNICAL ASSISTANCE PROGRAM

North Dakota Local Technical Assistance Program
515 ½ East Broadway, Suite 101
Bismarck, ND 58504



Suppliers

- Lyles
- Newman
- 3-D/Dakota Fence
- Rough Rider Industry Sign Shop
- TSS
- M&R
- NorMont Equipment



Mark Your Calendar!

2016 Northland "How-To" Training & Education Workshop

March 15-16, 2016

Ramada Plaza Suites, Fargo, ND

ATSSA HOW TO CONFERENCE

Attend 20 sessions on general real-world roadway issues with topics covering:

- Pavement Marking
- Safety
- Signing
- Temporary Traffic Control

Presentation Partners

Presentation author: Dale Heglund

Presentation information: FHWA and MUTCD

Presentation format: Ken Kadrmas and NDSU/UGPTI

Photos: Mark Verke, NDIRF, Dale Heglund, NDLTAP, Denise Brown, NDLTAP

Sign-post crash-test video: Midwest Roadside Safety Facility at the University of Nebraska-Lincoln

Other video: American Traffic Safety Services Association

Additional material: NDDOT, SDLTAP, MNLTAP