

ITS Applications on Rural Highways



National Rural ITS Conference

August 27, 2013

Phil Schmalz, P.E.

Assistant McLeod County Engineer

McLeod County ITS Applications

- Installed 3 systems in 2011
- Intended to increase awareness of cross traffic
- TAPCO provided and installed the systems
- Funded primarily by Federal Highway Safety Improvement Funds (HSIP)
 - Approximately \$20k per intersection

ITS System 1 & 2

- McLeod CSAH 3 Corridor
- Two way stop condition
- Minor sight distance obstructions



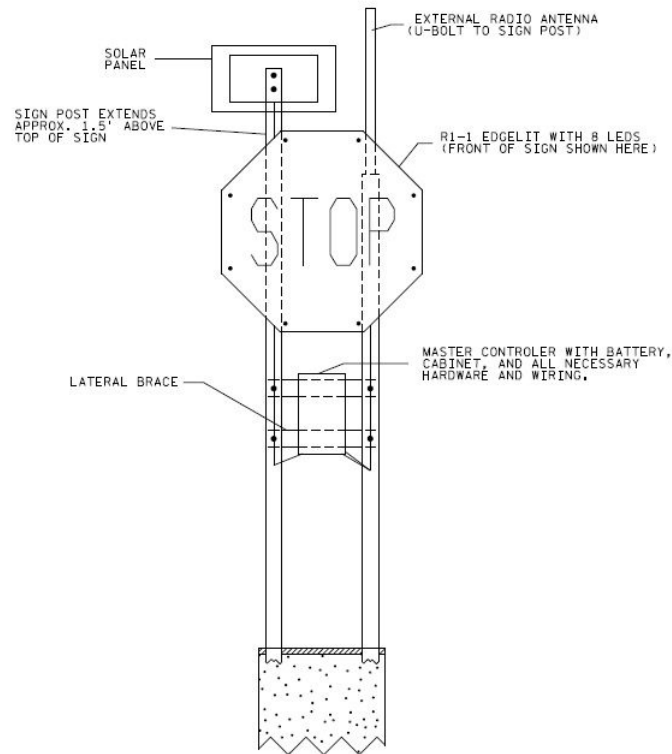
ITS System 1 & 2 ADT

- 1,300 2009 ADT CSAH 3
- 1,500 2009 ADT CSAH 15
- 1,000 2009 ADT CSAH 2

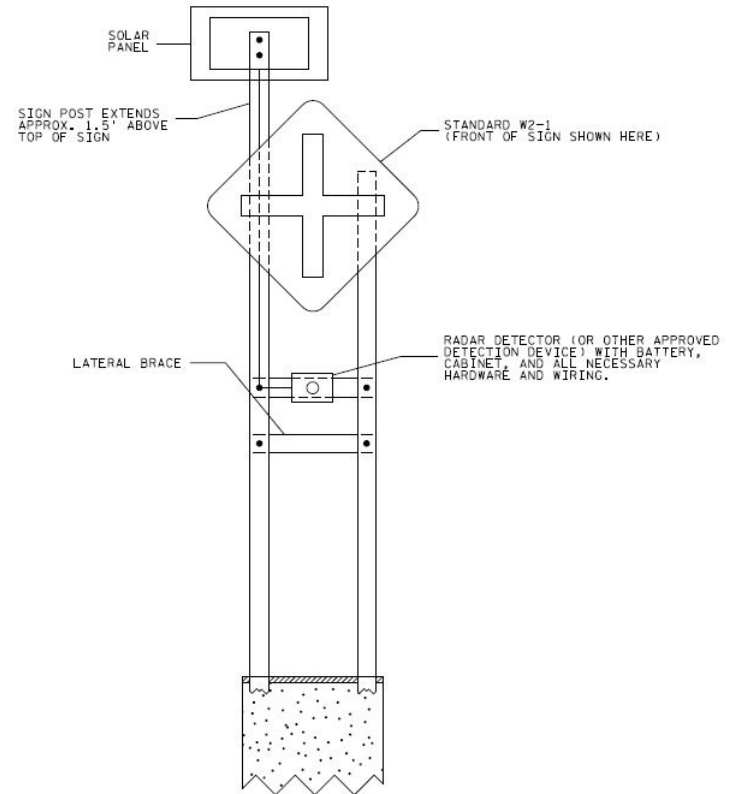
ITS System 1 & 2 Function

- Radar unit mounted on cross road sign (W2-1) to detect crossing uncontrolled traffic
- Edge LED flash stop signs activate when cross traffic is detected
- Draws extra attention to stopping drivers
- Solar powered system

ITS System 1 & 2 Details



TYPICAL MASTER CONTROLLER INSTALLATION
CSAH 3 APPROACH



TYPICAL RADAR DETECTION INSTALLATION
CSAH 2 APPROACH

NOTES:

1. ALTERNATIVE INSTALLATION CONFIGURATIONS MAY BE APPROVED BY THE ENGINEER PROVIDED THEY PERFORM THE FUNCTIONS INTENDED OF THE INTERSECTION WARNING SYSTEM.
2. SHOP DRAWINGS MUST BE SUBMITTED AND APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.
3. ALL SIGNS SHALL BE 36" IN SIZE AND SHEETING SHALL BE DG3 OR APPROVED EQUAL.
4. CONTRACTOR SHALL ENSURE THAT ALL L.E.D. SIGN PANELS AND RADAR UNITS ARE ALIGNED PROPERLY TO FUNCTION IN ACCORDANCE WITH THE APPROACHING TRAFFIC. ANY MISALIGNMENT SHALL BE CORRECTED TO THE ENGINEER'S SATISFACTION.
5. ALL SIGN STRUCTURES SHALL BE TYPE 2U-1A WITH KNEE BRACE.
6. EXACT SIGN LOCATIONS TO BE STAKED BY THE ENGINEER IN THE FIELD.

System 1 Stop Sign



System 1 Detection Sign



System 1 Radar & Control Box



08/23/2013

ITS System 3

- New CSAH 115 SW Hutchinson ring road
- Traffic control change with project
- Two way stop condition



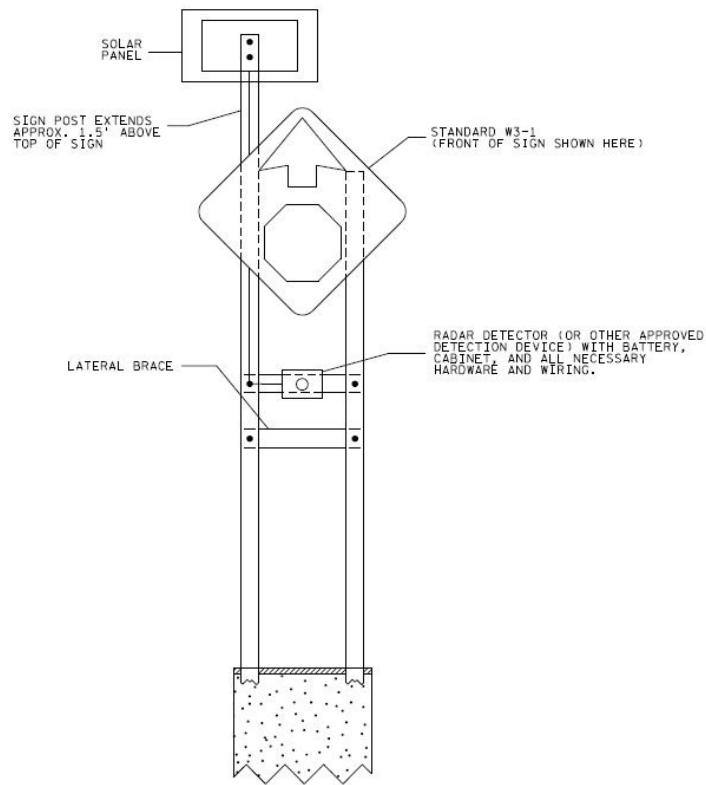
ITS System 3 ADT

- 1,000 2009 ADT CSAH 115 (pre-construction)
 - 3,150 ADT CSAH 115 projected (post-construction)
 - 1,700 2009 ADT CSAH 7
-
- Dominant movement changed after bypass construction
 - Stop direction changed as a result
 - Some vehicles ran the stop sign or failed to yield
 - Constant flash LED edge lit stop signs were installed

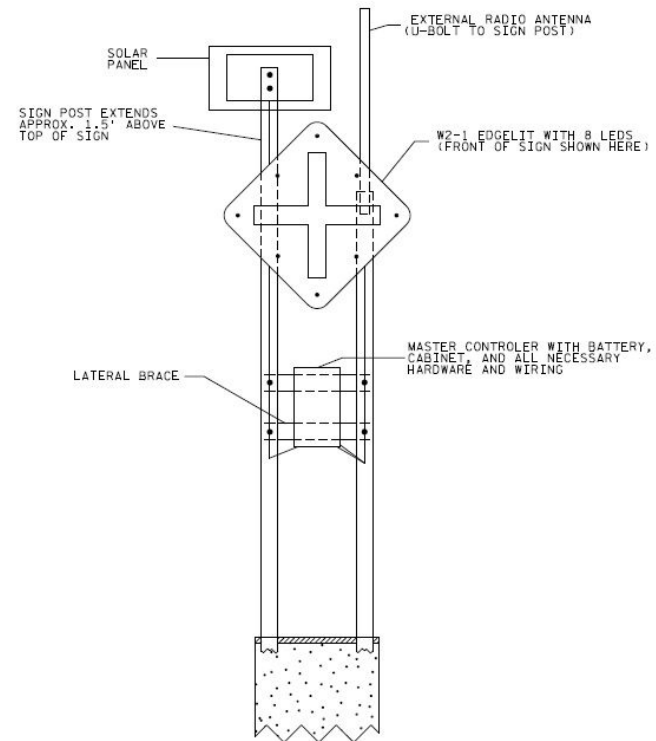
ITS System 3 Function

- Radar unit mounted on stop ahead sign to detect approaching stopping traffic
- Edge LED flash cross traffic signs (W2-1) activate when cross traffic approaches
- Additional awareness to look at stopping vehicles in case they fail to stop and yield
- Solar powered system

ITS System 3 Details



TYPICAL RADAR DETECTION INSTALLATION
CSAH 7 APPROACH



TYPICAL MASTER CONTROLLER INSTALLATION
CSAH 115 APPROACH

NOTES:

1. ALTERNATIVE INSTALLATION CONFIGURATIONS MAY BE APPROVED BY THE ENGINEER PROVIDED THEY PERFORM THE FUNCTIONS INTENDED OF THE INTERSECTION WARNING SYSTEM.
2. SHOP DRAWINGS MUST BE SUBMITTED AND APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.
3. ALL SIGNS SHALL BE 36" IN SIZE AND SHEETING SHALL BE D63 OR APPROVED EQUAL.
4. CONTRACTOR SHALL ENSURE THAT ALL L.E.D. SIGN PANELS AND RADAR UNITS ARE ALIGNED PROPERLY TO FUNCTION IN ACCORDANCE WITH THE APPROACHING TRAFFIC. ANY MISALIGNMENT SHALL BE CORRECTED TO THE ENGINEER'S SATISFACTION.
5. ALL SIGN STRUCTURES SHALL BE TYPE 2U-1A WITH KNEE BRACE.
6. EXACT SIGN LOCATIONS TO BE STAKED BY THE ENGINEER IN THE FIELD.

System 3 Cross Road Sign



System 3 Detection Sign



System Brains and Battery



Fault Notification

- TAPCO provided an online monitoring system
- We requested an on-site notification system
- TAPCO came up with the LED green light
- If the light goes out the system is in fault
- Requires observation by county staff

Fault Notification (LED green light)



Thank You!