Signal Standards

Elkhart County allows video, loop and in-pavement sensor detection at signal installations. Dilemma zones (if prevailing approach speed greater than 40 mph) may also be managed by radar system in addition to the other approved detection systems. Advanced detection is generally required on all approaches unless specifically waived by the Highway Department.

Each signal installation requires a battery back-up system, LED signal indication modules (all colors), backplates on all signal heads, and pole mounted supplementary signal heads. Signal heads and backplates shall be black aluminum.

Signal cabinets shall be Modified Type 'R' Cabinets with doors on front and back, backplane moved forward 4" and eight 110v outlets mounted on the sidewall near the top. Cabinets shall come provided with all necessary equipment to function properly. All cabinets shall provide an Ethernet switch as specified below.

Roadway lighting shall be required on all new signal installations, with luminaires mounted on the signal poles. Roadway lighting shall not be connected to the battery back-up system.

Loop detector housings shall be installed outside of the travel lanes in the shoulders or median if lane is adjacent to one of these areas. Interior lane housings shall be installed in the center of the lane. All signal components shall be NEMA TS-2 compliant. Pedestrian heads and push buttons are required where marked crosswalks exist, are planned, or pedestrian volumes warrant. New signal systems shall be installed on mast arms.

All permissive left turn phases shall be controlled by 4-section Flashing Yellow Arrow heads.

Approved Equipment:

Controller:	Econolite ASC/3-2100 with Ethernet port and Purdue Data Logging enabled or, Econolite Cobalt controller
Video Detection:	FLIR thermal sensors for detection, processed by Autoscope RackVision Terra
Conflict Monitor:	Reno A&E MMU2-1600GE
Loop Detectors:	New construction, under pavement, Reno A&E PLH Preformed Loop Replacement or Retrofit, saw cut installed, Reno A&E PLB Preformed Loop
In-Pavement Det.:	Sensys Networks VSN240-F-2 Flush Mount or TrafficWare POD Wireless Detection System
Loop Amplifier:	Reno A&E Model C-1203 with counting enabled
Load Switches:	Reno A&E LS-200

Advance Detection:	Wavetronix SmartSensor Advance or Loop or In-Pavement (see above). Multiple approach lanes must have individual lane by lane detection.
Pedestrian Head:	General Electric Model GT1 LED 16”x18” with countdown module Model PS7-CFF1-27A
Pedestrian Button:	Campbell Company AAPS with cabinet located APC
Roadway Lighting:	GE Evolve LED Roadway Luminaires Model No.: ERS4-0-TXCX-5-40-1-GRAY-L
Battery back-up:	Sensata Technologies 48M18-WBE. UPS and batteries housed in separate cabinet mounted on side of controller cabinet.
Conduit:	PVC meeting the requirements of NEMA TC-2, Type 2, Minimum diameter 3”, no greater than 30% of interior area filled by wiring. Advance detection may be via 2” PVC.
LED Modules	Must be InterTek-ETL certified to meet ITE specifications
Cabinet Ethernet Switch:	MOXA model EDS-G509-T
Ethernet Radio:	Intuicom Nitro58, 5.8 Ghz Range, Integrated Panel Preferred

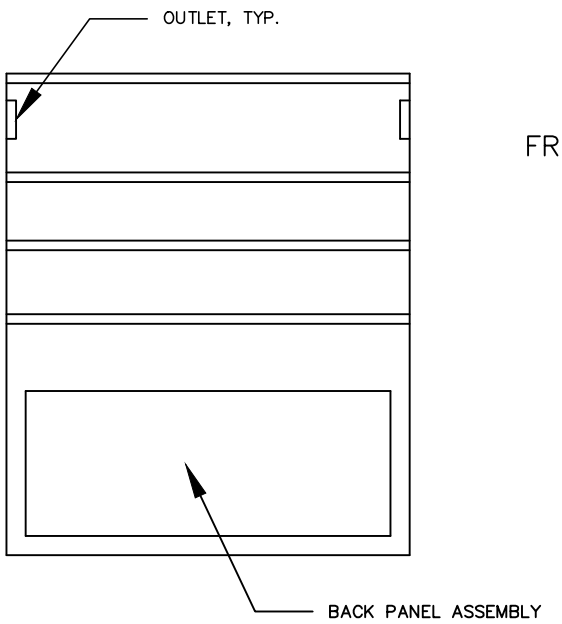
Each lane of an approach shall have its own detection channel on the controller. Adjacent lanes of the same movement may not be configured as a single channel.

Six months after construction of any signal that is not a County funded project, the developer must submit a report comparing the turn movements logged by the controller vs. those manually counted during the same period. This information will be used to adjust signal timings to real traffic, and to verify the operation and calibration of the required data logging function.

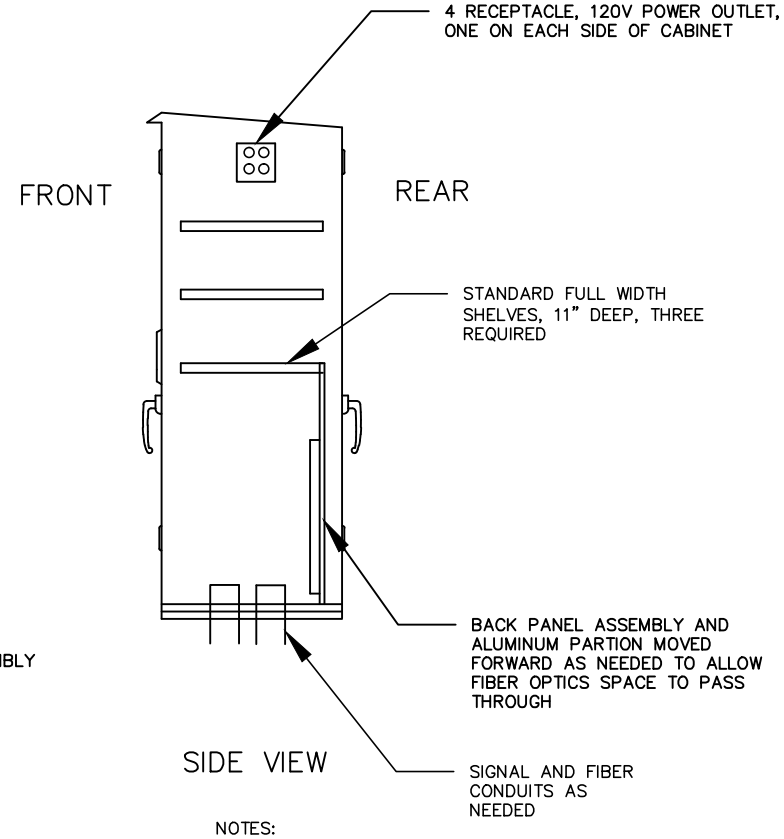
More detailed specifications/model numbers can be provided upon request.

Signal installations shall provide fiber optic, Ethernet radio, or cell modem connections to the central management system. Contact the Highway Department to determine which connection type is appropriate for the intersection location and for specific requirements on equipment and standards.

(rev. 6/16)



FRONT VIEW



SIDE VIEW

NOTES:

- FRONT DOOR HINGED ON RIGHT SIDE
- REAR DOOR HINGED ON LEFT SIDE
- BOTH DOORS PROVIDED WITH DOOR STOPS AT TOP AND BOTTOM
- ALUMINUM PARTITION MOUNTED FORWARD OF REAR DOOR, BACK PANEL MOUNTED TO FRONT SIDE OF IT
- CABINET RAILS LOCATED ON BACK SIDE OF PARTITION FOR ADDITIONAL COMPONET MOUNTING ACCESSIBLE FROM REAR DOOR
- BACK PANEL SHALL BE NEMA TS2 TYPE 1 PLUG N' GO

MODIFIED TYPE 'R' CABINET

Elkhart County
HIGHWAY DEPARTMENT

MODIFIED TYPE 'R' CABINET

REV (6/11)

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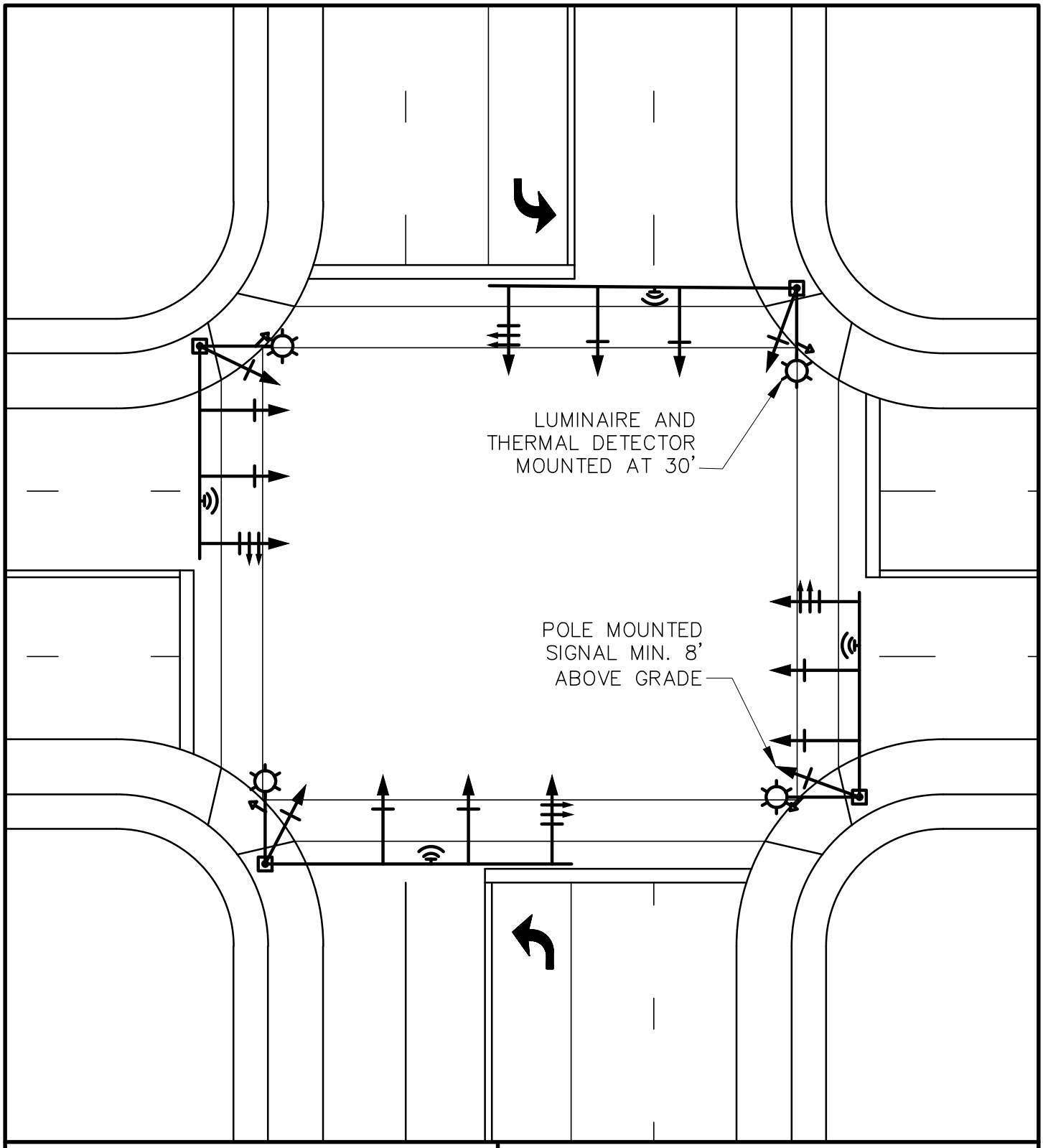

LEGEND

- 4 SECTION FYA SIGNAL WITH BACKPLATE
- 3 SECTION SIGNAL WITH BACKPLATE
- LUMINAIRE
- SIGNAL POLE
- THERMAL DETECTOR

Elkhart County
HIGHWAY DEPARTMENT

TYPICAL TRAFFIC SIGNAL INSTALLATION

REV (4/16)