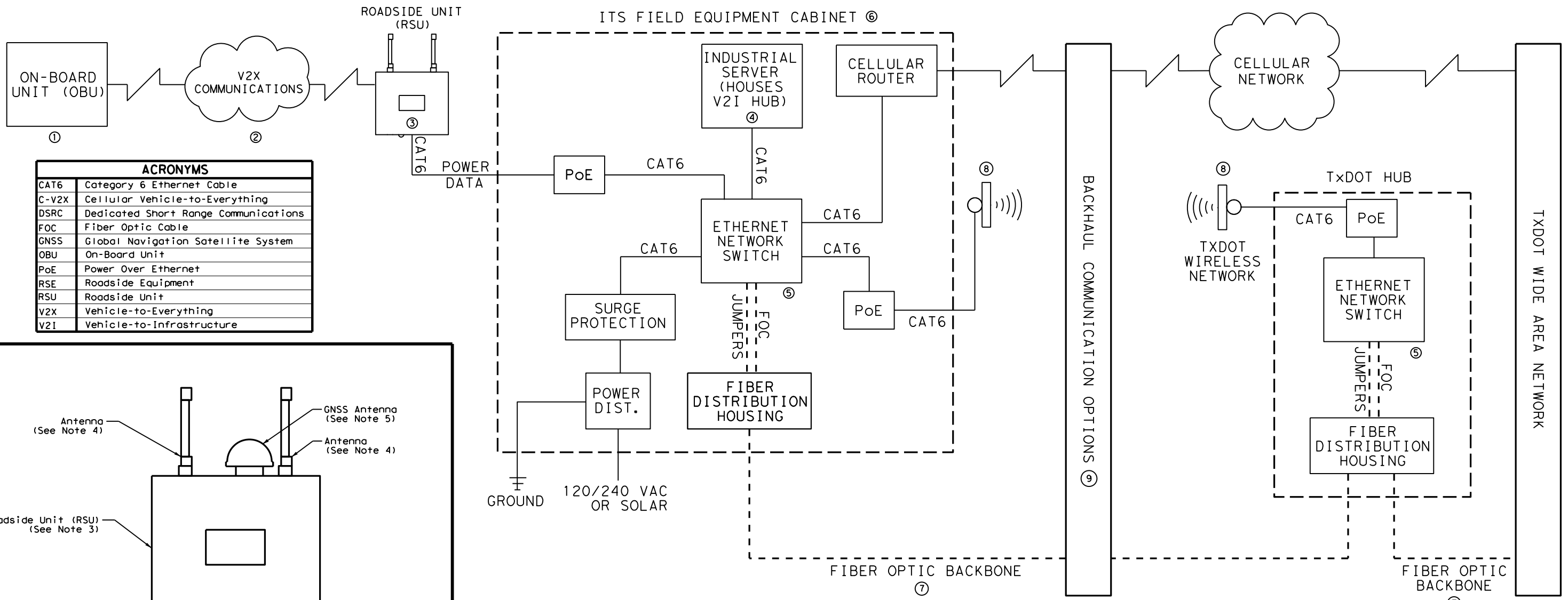
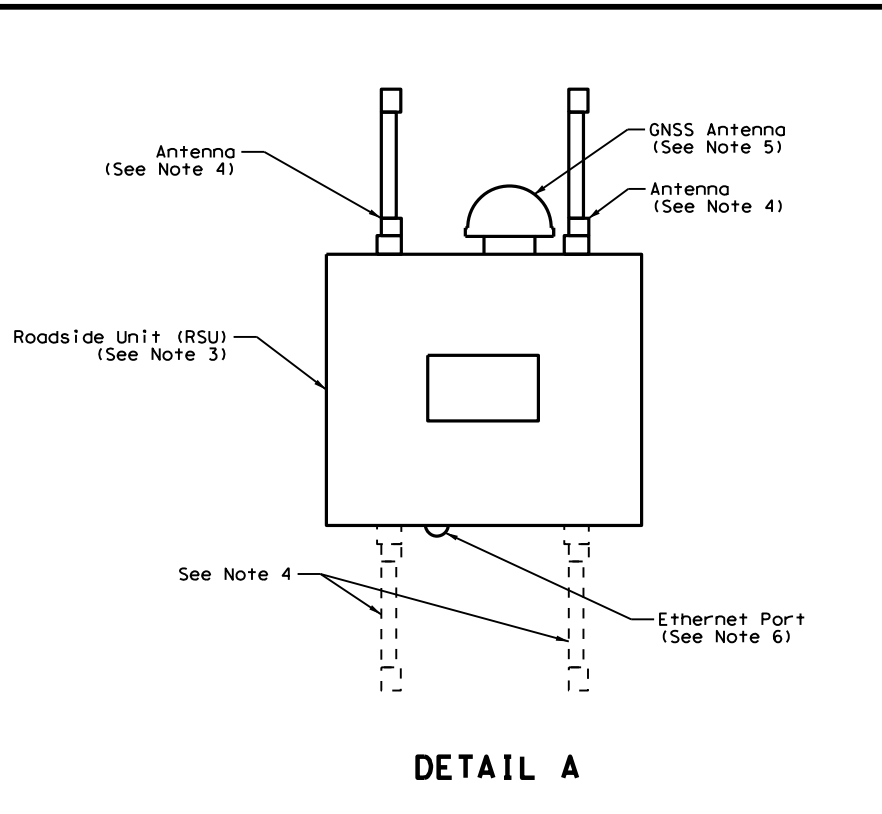


DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: FILE:



ACRONYMS	
CAT6	Category 6 Ethernet Cable
C-V2X	Cellular Vehicle-to-Everything
DSRC	Dedicated Short Range Communications
FOC	Fiber Optic Cable
GNSS	Global Navigation Satellite System
OBU	On-Board Unit
PoE	Power Over Ethernet
RSE	Roadside Equipment
RSU	Roadside Unit
V2X	Vehicle-to-Everything
V2I	Vehicle-to-Infrastructure



ROADSIDE EQUIPMENT SYSTEM ARCHITECTURE

GENERAL NOTES:

1. Mounting bracket(s), extension arms, antennas, cabling and PoE injector are incidental to the roadside unit. All items not listed, shown, or otherwise noted, but necessary for a complete installation, are paid for under other items.
2. ITS equipment at each cabinet varies by location. See plans for further detail.
3. Roadside unit equipment, mounting options, and capabilities vary by manufacturer.
4. Refer to manufacturer installation instructions regarding proper placement of Vehicle to Everything (V2X) Communications antennas. Antennas vary by manufacturer. Weatherproof antennas and cable entry points according to manufacturer instructions.
5. Global Navigation Satellite System (GNSS) Antenna design varies by manufacturer. Install according to manufacturer instructions.
6. Attach ethernet cable with coupler according to manufacturer instructions.

REFERENCE KEY NOTES:

- ① On-Board Unit (OBU) is located in the vehicle and may consist of physical hardware or mobile device. The OBU communicates SAE J2735 messages to Roadside Unit (RSU) along the roadside.

- ② V2X communications includes Dedicated Short Range Communications and Cellular Vehicle-to-Everything (C-V2X) communications. Refer to IEEE 802.11p, FCC Rule 47 CFR-Part 90-Subpart M, and FCC Rule 47 CFR-Part 95-Subpart L standards when utilizing Dedicated Short Range Communications. Refer to 3GPP Release 14 and 15, or latest release, standards when utilizing C-V2X communications.
- ③ RSU located along the roadside of access controlled facilities to send and receive messages from OBU located inside vehicle.
- ④ Vehicle-to-Infrastructure Hub converts NTCIP messages to SAE J2735 messages and vice versa. Refer to the Vehicle-to-Infrastructure Hub Deployment Guide authored by USDOT (FHWA-JPO-18-644).
- ⑤ Ethernet switch equipment at each location may vary. Field hardened Ethernet switch required.
- ⑥ Locate RSU equipment inside existing or proposed ITS field equipment cabinets. Cabinets may be pole or ground mounted. See plans for type, size, and location of cabinet. Refer to TxDOT ITS cabinet standards and specifications.
- ⑦ Refer to Special Specification, "Intelligent Transportation System (ITS) Fiber Optic Cable."
- ⑧ Refer to Special Specification, "Intelligent Transportation System (ITS) Radio."
- ⑨ See plans for cellular router, fixed wireless, or fiber communication backhaul specified.

SHEET 1 OF 5



ROADSIDE EQUIPMENT SYSTEM ARCHITECTURE (ACCESS CONTROLLED)

RSE (1) -21

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