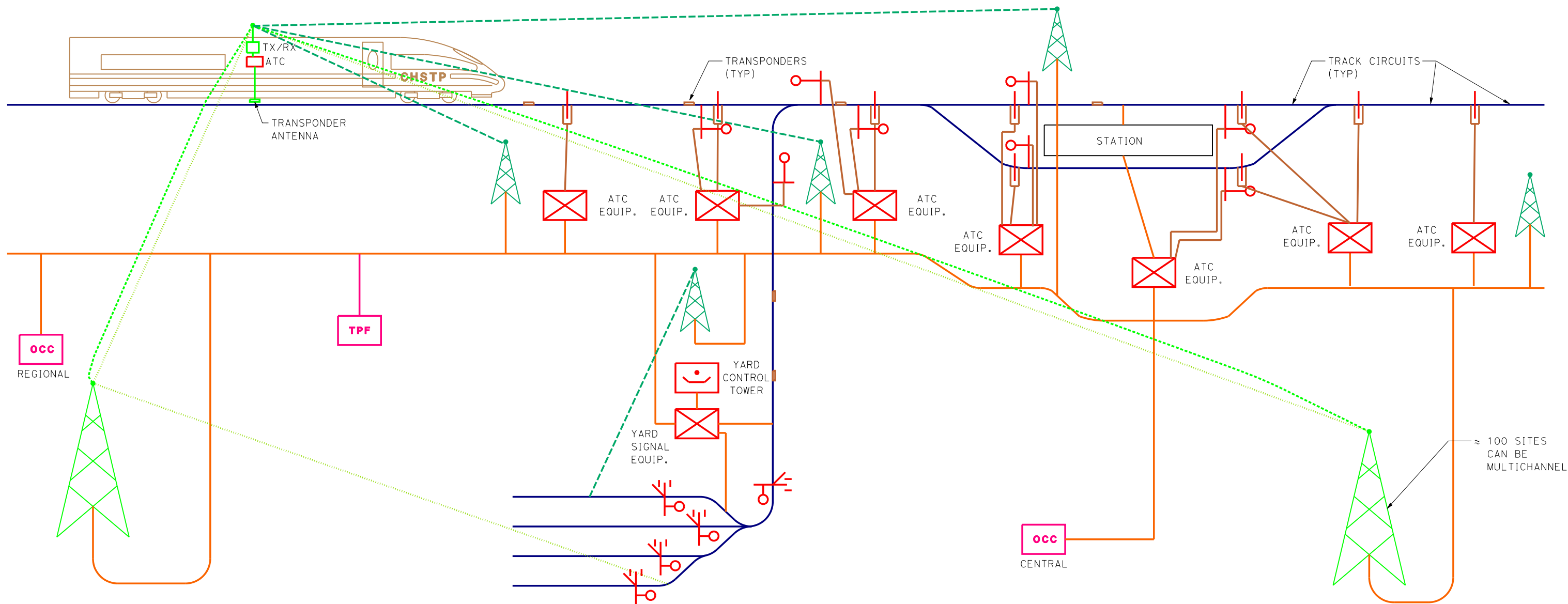


LEGEND:

- OCC OPERATIONS CONTROL CENTER
- TPF TRACTION POWER FACILITY
- X WAYSIDE ATC EQUIPMENT ROOM
- FIBER BACKBONE
- INSULATED RAIL JOINT
- TRANSPOUNDER (BALISE)
- T WAYSIDE SIGNAL (MAINLINE)
- T WAYSIDE SIGNAL (YARD)
- T POWER OPERATED DERAIL/OTHER ENFORCEMENT DEVICE

ATC/DATA/VOICE COMMUNICATIONS OPTIONS

- **GSM-R:** BANDWIDTH SEARCH IN PROGRESS
WILL SUPPORT ATC, VOICE OTHER DATA
- **IEEE 802.16M:** DATA COMMUNICATIONS (STD. BY 2013)
≈ 2.4 GHZ TO 2.9 GHZ OR 5.4 GHZ TO 5.9 GHZ
- **VOICE RADIO:** TRAIN TO WAYSIDE ANTENNA
≈ 450 MHZ RANGE - SUBJECT TO NARROW BANDING
- 22 NARROW BAND CHANNELS AVAILABLE
- ALSO REQUIRES 160 MHZ IN SHARED CORRIDORS
- **220 MHZ** MAYBE REQUIRED FOR PTC INTEROPERABILITY IN SHARED/COMMON CORRIDORS



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REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
E. MORTLOCK
DRAWN BY
E. MORTLOCK
CHECKED BY
H. GLICKENSTEIN
IN CHARGE
R. SCHMEDES
DATE
06/08/10

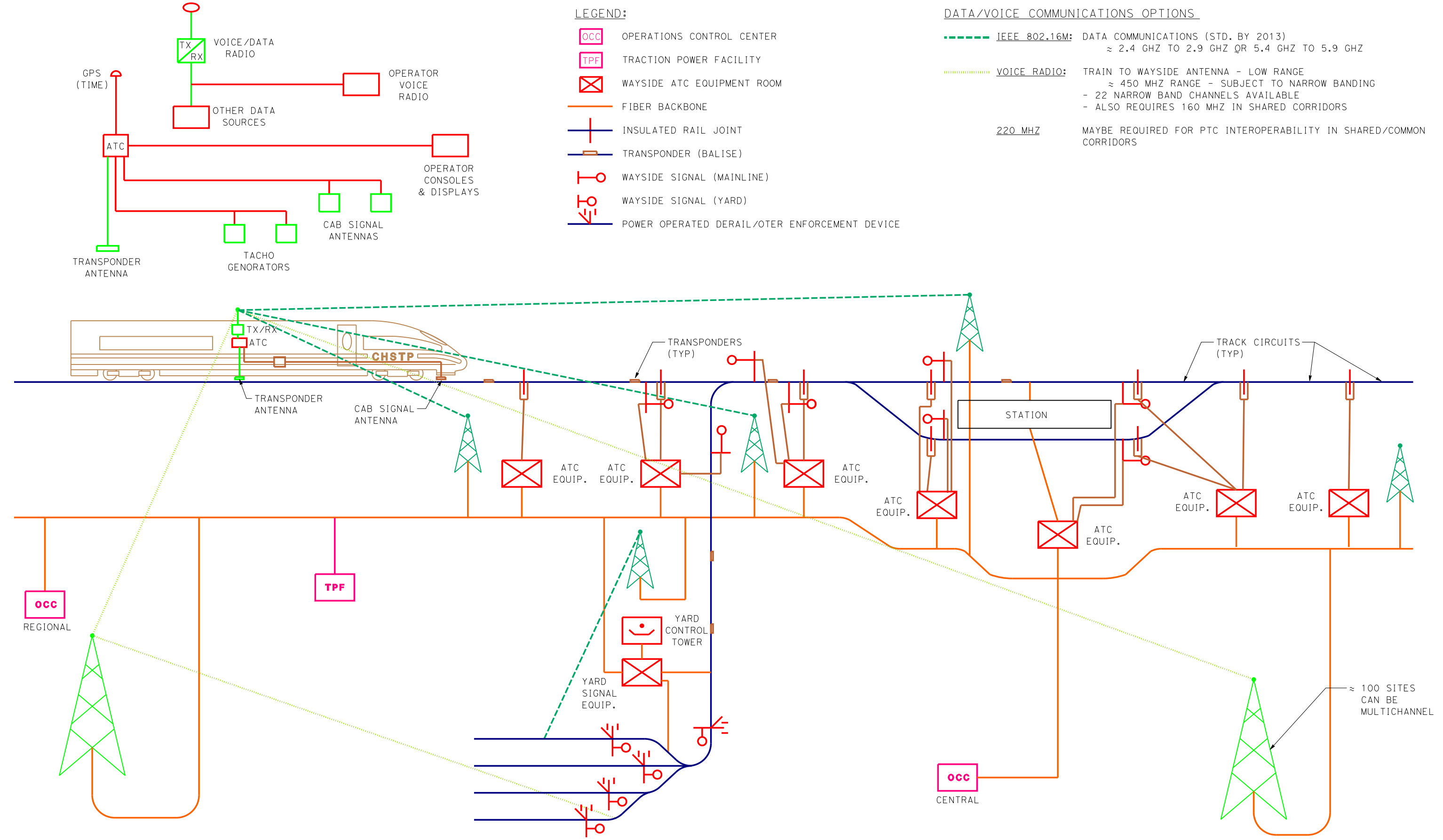


CALIFORNIA HIGH-SPEED TRAIN PROJECT

COMMUNICATIONS AND ATC SCHEMATIC CONCEPT
(ERTMS EIRENE TYPE SYSTEMS, VOICE AND OTHER DATA)

CONTRACT NO.	13259
DRAWING NO.	TM 3.3.1-A
SCALE	NO SCALE
SHEET NO.	

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DESIGNED BY
E. MORTLOCK
DRAWN BY
D. SOLTERO
CHECKED BY
H. GLICKENSTEIN
IN CHARGE
R. SCHMEDES
DATE
06/08/10



CALIFORNIA HIGH-SPEED TRAIN PROJECT
COMMUNICATIONS AND ATC SCHEMATIC CONCEPT
(CAB SIGNAL SYSTEM, VOICE AND OTHER DATA)

CONTRACT NO.
13259
DRAWING NO.
TM 3.3.1-B
SCALE
NO SCALE
SHEET NO.