NOTE:

1. AT EACH SITE, THERE IS AN EXISTING ANTENNA TOWER AND COMMUNICATION HOUSE THAT SHALL BE USED TO SUPPORT THE NEW ATCS BASE STATION INSTALLATION. TOWER SHALL BE EXTENDED BY 20 FT PER THE CONTRACT DRAWINGS.
**Antenna Specifications**

**Manufacturer**
- Model: WS430312

**Description**
- 12 ELEMENT PATTERN

**Electrical Specifications**
- General Frequency (MHz): 806-860 MHz
- Bandwidth @ center (MHz): 100 MHz
- Specific Frequency: 806-860 MHz
- Gain (dBi): 11, 15
- Maximum Beamwidth (degrees)
  - Vertical: 35 (deg)
  - Horizontal: 54 (deg)
- Front to Back Ratio (dB): 40
- Maximum Power Input (W): 500 watts
- VSWR @ 50 ohms: 1.5:1
- Polarization: Vertical/Horiz
- Lightning Protection: Ground

**Mechanical Specifications**
- Size (inches)
  - Length: 4
  - Width: 2
- Weight (lbs):
  - 125
  - 0.27
  - 16.6
  - 23.3

**Data Radio Antenna Specifications**

**Note:**
1. 0 dB Reference on single antenna pattern corresponds to 15.55 db Gain
2. 0 dB Reference on phased array pattern corresponds to 15.55 db Gain
3. Antenna Pointing Azimuths are with respect to True North

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**Peninsula Corridor Joint Powers Board**

**Standard Drawings**

**Train Control Communication ATCS (Data) Radio System**

**Monument Peak Base Station ATCS Antenna Array Details**

**Drawn By:**
- Bernard Bouchard

**Checked By:**
- Stephen Chub

**Copyright:**
- Caltrain

**Control No.:**
- 55-6503

**Date:**
- 09/30/11
DATA RADIO BASE STATION ANTENNA
SINGLE ANTENNA SPECIFICATIONS

NOTE:
1. 0 dB reference on single antenna pattern corresponds to 15dBd gain
2. 0 dB reference on phased array pattern corresponds to 15dBd gain
3. Antenna pointing azimuths are with respect to true north
NOTE
1. ELECTRICAL LOAD ANALYSIS:
   - DATA RADIO POWER CONSUMPTION: 11A 24VDC
     EQUIVALENT TO: 3A @ 110 VAC
   - ADD CORRECTIONS FOR EFFICIENCY, TEMP AND VARIATION: 3A @ 110VAC
   - ADD CONSUMPTION FOR MODULECTORS, RELAYS, CIRCUIT-BREAKERS
   - OTHER ACCESSORIES:
     - BATTERIES (24VDC)
       EQUIVALENT TO: 5A @ 110VAC
     - TOTAL AC POWER CONSUMPTION: 7A @ 110VAC

TO JUMP CIRCUIT BREAKER

TO BATTERY (24VDC)

TO BASE STATION DC LOAD

PENINSULA CORRIDOR JOINT POWERS BOARD

STANDARD DRAWINGS

TRAIN CONTROL COMMUNICATION
ATCS (DATA) RADIO SYSTEM
BASE STATION
ELECTRICAL LOAD ANALYSIS
NOTES:
1. ALARM WILL BE GENERATED IF TRANSIT POWER FAILS TO 30% OR LESS (-30% OR LESSER)
2. SENSOR MUST BE PLACED ADJACENT TO THE EQUIPMENT RACK AND SHALL PRODUCE AN ALARM
   IF THE TEMPERATURE READS GREATER THAN 3° ABOVE THE SET TOP OF RANGE VALUE.
3. THE LOW SENSOR SHALL GENERATE AN ALARM IF THE TOP TARES 3° ABOVE THE SET
   TOP OF RANGE VALUE.
1. CONCRETE TOWER SO THAT IT TILTS DOWN PARALLEL TO THE TRACKS
2. ENGINEER'S SEAL IS ONLY FOR ELECTRICAL PORTION OF DESIGN, SEE
   STRUCTURAL FOUNDATION DRAWINGS FOR CIVIL STRUCTURAL ENGINEER
   CERTIFICATION
3. THIS DRAWING SHOWS A GENERIC ANTENNA LAYOUT FOR THE FOLLOWING
   CP LOCATIONS

<table>
<thead>
<tr>
<th>CP NO.</th>
<th>CP NAME</th>
<th>M.P.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CP GENEVA</td>
<td>5.5</td>
</tr>
<tr>
<td>2</td>
<td>CP GRIFF</td>
<td>12.6</td>
</tr>
<tr>
<td>3</td>
<td>CP STERLING</td>
<td>14.0</td>
</tr>
<tr>
<td>4</td>
<td>CP PALM</td>
<td>18.2</td>
</tr>
<tr>
<td>5</td>
<td>CP MAJESTIC</td>
<td>21.6</td>
</tr>
<tr>
<td>6</td>
<td>CP CHARM</td>
<td>26.0</td>
</tr>
<tr>
<td>7</td>
<td>CP JUNCTION</td>
<td>27.2</td>
</tr>
<tr>
<td>8</td>
<td>CP ALPINE</td>
<td>39.2</td>
</tr>
<tr>
<td>9</td>
<td>CP BOWERS</td>
<td>41.6</td>
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PENINSULA CORRIDOR JOINT POWERS BOARD

STANDARD DRAWINGS

TRAIN CONTROL COMMUNICATION
ATCS (DATA) RADIO SYSTEM
40 FOOT TILT-DOWN TOWER
TILT MECHANISM
NOTES:
1. CONFORM TOWER SO THAT IT TILTS DOWN PARALLEL TO THE TRACKS
2. ENGINEER'S SEAL IS ONLY FOR ELECTRICAL PORTION OF DESIGN. SEE TOWER FOUNDATION DRAWINGS FOR civil STRUCTURAL ENGINEER CERTIFICATION
3. THIS DRAWING SHOWS A GENERIC ANTENNA LAYOUT FOR THE FOLLOWING LOCATIONS:

<table>
<thead>
<tr>
<th>CP NO</th>
<th>CP NAME</th>
<th>M.P.</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>CP BRIDGE</td>
<td>4.0</td>
</tr>
<tr>
<td>5</td>
<td>CP BART</td>
<td>6.6</td>
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<tr>
<td>14</td>
<td>CP WATERTOWN</td>
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<tr>
<td>15</td>
<td>CP MATT</td>
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<tr>
<td>16</td>
<td>CP HENRY</td>
<td>30.4</td>
</tr>
</tbody>
</table>

SECTION

CONCRETE PILE

RADIO TOWER FOUNDATION

ROUTE CABLE FROM RADIO ANTENNA TO RF PORT ON RADIO EQUIPMENT

TOWER WILL FOLD DOWN IN THE DIRECTION TOWARDS THE CONTROL HOUSE

8' X 10' CONTROL HOUSE

SECTION
NOTES:
1. CONSIDER TOWER SO THAT IT TILTS DOWN PARALLEL TO THE TRACK.
2. ENGINEER'S SEAL IS ONLY FOR ELECTRICAL PORTION OF DESIGN. SEE TOWER FOUNDATION DRAWINGS FOR CIVIL STRUCTURAL ENGINEER CERTIFICATIONS.
3. THIS DRAWING SHOWS A GENERIC ANTENNA LAYOUT FOR THE FOLLOWING OF LOCATIONS.

<table>
<thead>
<tr>
<th>CF NO.</th>
<th>CF NAME</th>
<th>M/C</th>
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<tbody>
<tr>
<td>1</td>
<td>CP COMMON ST</td>
<td>3.8</td>
</tr>
<tr>
<td>2</td>
<td>CP TUNNEL</td>
<td>5.0</td>
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