

4.8 Meter Cassegrain Antenna

Antenna Technologies



Overview

The CPI Antenna Technologies' 4.8 meter antenna delivers exceptional performance for transmit/receive and receive only applications for C through Ka-Band frequencies. This antenna offers a deep dish reflector that incorporates precision-formed panels, contoured radials and hub assembly. It features an innovative feed and subreflector design which results in high gain, low noise temperature, high antenna efficiency and excellent rejection of noise and microwave interference.

The aluminum reflector is supported by a galvanized pedestal that provides the required stiffness for pointing and tracking accuracy. The pedestals are designed for full orbital arc coverage and are readily adaptable to ground or rooftop installations. The electrical performance is compliant with ITU and FCC sidelobe specifications. Type approved configurations are available for Intelsat (F1, E2), Eutelsat (L), Asiasat, Hispasat, EuropeStar or Singapore Telecom. All configurations meet CPI Antenna Technologies own type-approved quality assurance and performance guarantee.

FEATURES:

- 'Type-approved' bolt-together
- Up to 31.0 GHz operation, meeting ITU and FCC
- Aluminum reflector, galvanized pedestal
- 125 mph (200 km/h) wind survival

OPTIONS:

- C, X, Ku, DBS and Ka-Band feed configurations
- C/Ku receive-only feed systems
- Specialized feed systems (e.g., extended, multi-band)
- Improved feed cross-pol performance
- Fixed or motorizable pedestal mounts
- Antenna control system with tracking
- Reflector and feed deicing systems
- Environmental hub configurations
- Integrated transmit cross-axis kits
- Integrated LNA or LNB systems
- HPAs, converters and M&C systems
- Non-penetrating and load frame mounts
- Packing for sea and air transport
- Turnkey installation and testing

UPGRADES:

- X-Band low PIM reflector/feed configurations
- Extended azimuth travel
- High wind configuration
- Low operating temperatures
- High power configurations
- Multi-band feeds / Multi-pol switching

BENEFITS:

- High antenna efficiency
- Excellent rejection of noise and microwave interference

APPLICATIONS:

- Communications, Data Transfer, Broadcast

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Specifications

ELECTRICAL ⁽¹⁾	C-Band 4 Port Circular Polarized		C-Band 4 Port Linear Polarized ⁽⁴⁾		X-Band 4 Port Low PIM Circular	
	Receive	Transmit	Receive	Transmit	Receive	Transmit
Frequency (GHz)	3.400- 4.200	5.725 - 6.725	3.400 - 4.200	5.725 - 6.725	7.250 - 7.750	7.900 - 8.400
Antenna Gain, Midband dBi ⁽²⁾	43.30	47.00	43.80	47.50	49.00	49.40
VSWR	1.30:1	1.30:1	1.30:1	1.30:1	1.30:1	1.30:1
Pattern Beamwidth ⁽²⁾						
-3 dB, at midband	1.14°	0.74°	1.09°	0.71°	0.59°	0.55°
-15 dB, at midband	2.39°	1.55°	2.29°	1.49°	1.24°	1.16°
Antenna Noise Temperature (K)						
5° Elevation	66 K		55 K		78 K	
10° Elevation	57 K		46 K		68 K	
20° Elevation	52 K		41 K		62 K	
40° Elevation	50 K		38 K		58 K	
Typical G/T (dB/K) ⁽³⁾	23.9 (4.000 Ghz, 35 K LNA)		25.3 (4.000 Ghz, 30 K LNA)		28.1 (7.500 Ghz, 60 K LNA)	
Axial Ratio	0.50 dB	0.50 dB			1.21 dB	2.00 dB
Power Handling (total)	5 kW CW		10 kW CW		2 kW CW	
Cross Polarization						
On Axis	30.8 dB	30.8 dB	35.0dB	35.0 dB	23.2 dB	18.8 dB
Within a 1.0 dB Beamwidth	30.8 dB	30.8 dB	30.0 dB	30.0 dB	23.2 dB	18.8 dB
Port-to-Port Isolation						
Rx/Tx (Rx frequency)	0 dB	-85 dB	0 dB	-85 dB	0 dB	-120 dB
Tx/Rx (Tx frequency)	-85 dB	0 dB	-85 dB	0 dB	-120 dB	0 dB
RX to RX, TX to TX	17.0	17.0	30.0	30.0		
Sidelobe Performance	Meets ITU-RS-580		Meets ITU-RS-580		Meets ITU-RS-580	
RF Specification	975-4694		975-5029		975-5558	

⁽¹⁾ All values are at rear feed flange. ⁽²⁾ C-Band Rx values are at 4 GHz, X band are 7.50 and 8.15 Ghz

⁽³⁾ Typical G/T at 20° elevation with clear horizon using single bolt-on LNA feed. ⁽⁴⁾ Also available in extended frequency bands.

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Specifications

ELECTRICAL ⁽¹⁾	Ku-Band 4 Port Linear Polarized ⁽⁴⁾		DBS-Band 2 Port Linear Polarized		Ka-Band 4 Port Circular Polarized	
	Receive	Transmit	Receive	Transmit	Receive	Transmit
Frequency (GHz)	10.700-12.750	13.750-14.800	10.700-12.750	17.300-18.400	17.700-22.000	27.000-31.000
Antenna Gain, Midband dBi ⁽²⁾	53.00	54.70	53.10	56.90	57.20	59.90
VSWR	1.30:1	1.30:1	1.30:1	1.30:1	1.30:1	1.30:1
Pattern Beamwidth ⁽²⁾						
-3 dB, at midband	0.35°	0.30°	0.36°	0.23°	0.20°	0.15°
-15 dB, at midband	0.73°	0.63°			0.42°	0.32°
Antenna Noise Temperature (K)						
5° Elevation	80 K		73 K		227 K	
10° Elevation	67 K		59 K		185 K	
20° Elevation	58 K		50 K		150 K	
40° Elevation	53 K		44 K		123 K	
Typical G/T (dB/K) ⁽³⁾	31.6 (11.725 Ghz, 70 K LNA)		32.3 (11.725 Ghz, 70 K LNA)		32.9 (19.850 Ghz, 120° K LNA) 31.8 (19.850 Ghz, 200° K LNA)	
Axial Ratio					0.50 dB	0.50 dB
Power Handling (total)	2 kW CW		2 kW CW		500 Watts	
Cross Polarization						
On Axis	35.0 dB	35.0 dB	35.0 dB	35.0 dB	30.8 dB	30.8 dB
Within a 1.0 dB Beamwidth	35.0 dB	35.0 dB	30.0 dB	30.0 dB	30.8 dB	30.8 dB
Port-to-Port Isolation						
Rx/Tx (Rx frequency)	0 dB	-70 dB	0 dB	-75 dB	0 dB	-85 dB
Tx/Rx (Tx frequency)	-85 dB	0 dB	-85 dB	0 dB	-85 dB	0 dB
RX to RX, TX to TX	30.0	30.0			16.0	16.0
Sidelobe Performance	Meets ITU-RS-580, FCC		Meets ITU-RS-580, FCC		Meets ITU-RS-580, FCC	
RF Specification	975-5590		975-2446		975-4949	

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⁽³⁾ Typical G/T at 20° elevation with clear horizon using single bolt-on LNA feed. ⁽⁴⁾ Also available in extended frequency bands.

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Specifications

MECHANICAL/ENVIRONMENTAL ⁽⁵⁾		Fixed Post Mount Pedestal (PM)	Motorizable Kingpost Pedestal (KP)	Motorizable High Wind Kingpost Pedestal (KP-HW)
Antenna Diameter		4.8 meters (15.83 feet)		
Antenna Type		Compact cassegrain design		
Reflector Construction		16 precision-formed aluminum panels with heat-diffusing white paint Cleaned and brightened aluminum back-up structure		
Hub Dimensions		48 in (122 cm) OD, 29 in (74 cm) depth		
Mount Configuration		Elevation over azimuth pedestal, constructed of galvanized steel		
Drive Type		Manual struts	Manual strut or jack screw	Manual jack screws
Azimuth Travel		360° coarse, 40° fine adjustment	120° continuous	120° continuous
Elevation Travel		0 to 90° continuous	0 to 90° continuous	0 to 90° continuous
Polarization ⁽⁶⁾		+/- 90°	+/- 90°	+/- 90°
Foundation (L x W x D)		12.5 x 12.5 x 1.5 ft (3.8 x 3.8 x 0.38 m) 8.7 yds ³ (6.6 m ³) 1,125 lbs. (510 kg) 2000 psf		16.5 x 16.5 x 2.5 ft (5.0 x 5.0 x 0.76 m) 25.5 yds ³ (19.5 m ³) 1,680 lbs. (762 kg)
	Concrete Reinforcing Steel Subbase			
Shipping Containers		One 20 ft standard container	One 20 ft standard container	One 20 ft standard container
Weights	Reflector Pedestal	800 lbs (363 kg) 800 lbs (363 kg)	800 lbs (363 kg) 850 lbs (386 kg)	1100 lbs (499 kg) 1500 lbs (680 kg)
Wind Loading	Operational Survival (any Position) Survival (at Zenith)	45 mph (72 km/h) gusting to 60 mph (97 km/h) 125 mph (200 km/h) @ 58° F (15° C) N/A		Up to 62 mph (100 km/h) 180 mph (290 km/h) @ 58° F (15° C) 210 mph (338 km/h) @ 58° F (15° C)
Temperature	Operational Survival	+5° to +122°F (-15° to +50° C) -22° to +140°F (-30° to +60° C), low temperature options available		
Rain		Up to 4 in/h (10 cm/h)		
Relative Humidity		0 to 100% with condensation		
Solar Radiation		360 BTU/h/ft ² (1,000 Kcal/h/m ²)		
Ice		1 in (2.5 cm) on all surfaces or 1/2 in (1.3 cm) on all surfaces with 80 mph (130 km/h) wind gusts		
Atmospheric Conditions	Survival	As encountered in coastal regions and/or heavily industrialized areas		
Shock and Vibration		As encountered during shipment by airplane, ship or truck		

⁽⁵⁾ Some specifications may vary based on the combination of equipment, options and/or upgrades ordered.

⁽⁶⁾ Polarization drive can mechanically travel +/- 90° with no integrations or RF Electronics/Plates. Final Polarization travel will depend on the design or the integrations and RF electronics/plates. Most CPI designs using all CPI products and electronics are designed to travel +/- 90° for standard products.

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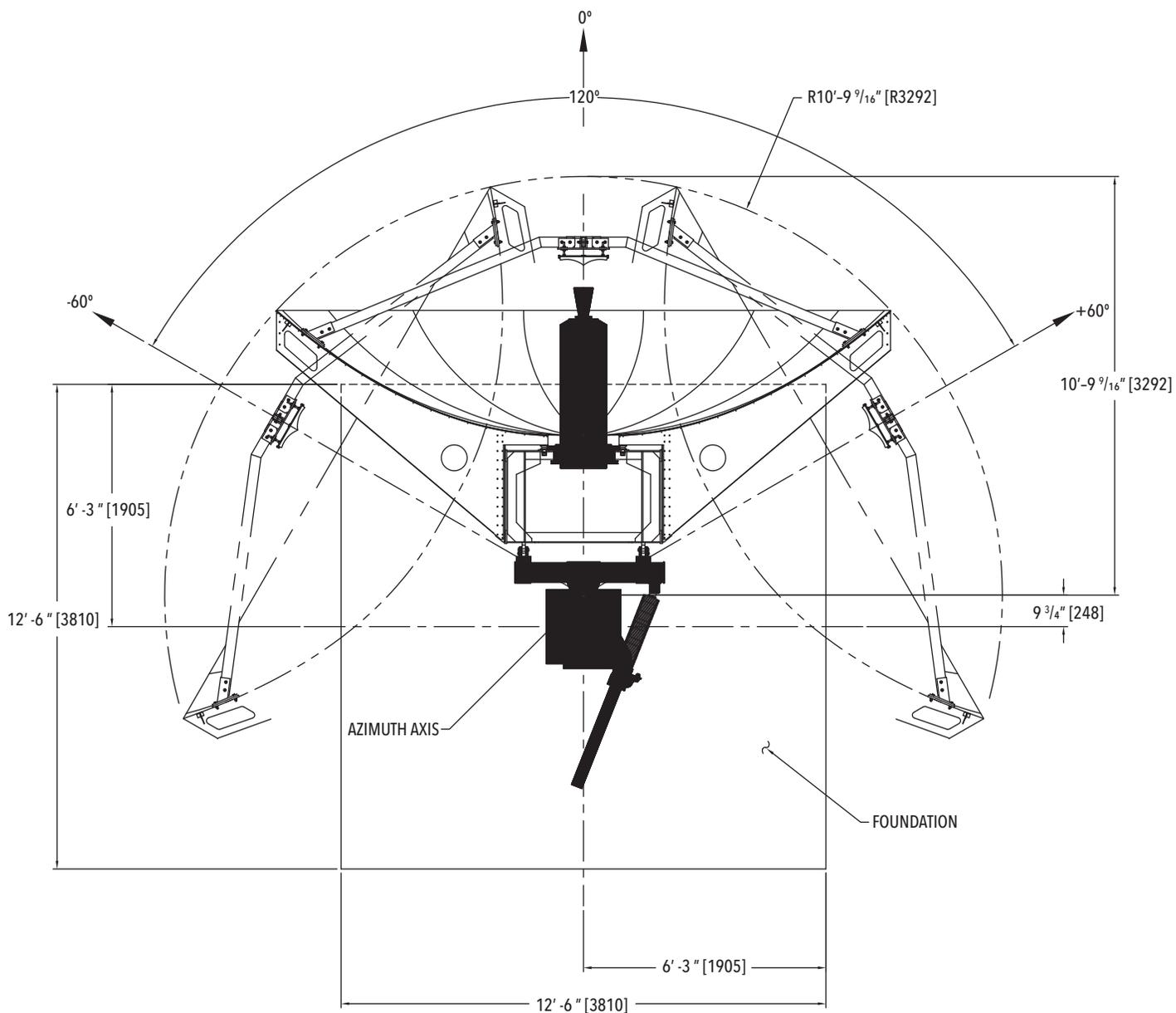
Specifications

MECHANICAL/ENVIRONMENTAL ⁽⁵⁾		KXKA	Bullgear
Antenna Diameter		4.8 meters (15.83 feet)	
Antenna Type		Compact cassegrain design	
Reflector Construction		16 precision-formed aluminum panels with heat-diffusing white paint Cleaned and brightened aluminum back-up structure	
Hub Dimensions		48 in (122 cm) OD, 29 in (74 cm) depth	
Mount Configuration		Elevation over azimuth pedestal, constructed of galvanized steel	
Drive Type		Manual jack screws	Bullgear
Azimuth Travel		200°, 2 segments	200° continuous
Elevation Travel		0 to 90° continuous	0 to 90° manual jack screws
Polarization ⁽⁶⁾		+/- 90°	+/- 90°
Foundation (L x W x D)		16.5 x 16.5 x 2.0 ft (5.0 x 5.0 x 0.61 m)	16.5 x 16.5 x 1.5 ft (5.0 x 5.0 x 0.61 m)
	Concrete Reinforcing Steel Subbase	20.2 yds ³ (15.5 m ³) 1,980 lbs. (900 kg)	15.5 yds ³ (11.8 m ³) 1,325 lbs. (601 kg) 2000 psf
Shipping Containers		One 40' HC container	One 40 ft standard container estimated
Weights	Reflector Pedestal	800 lbs (363 kg) 2000 lbs (907 kg)	800 lbs (363 kg) 2,500 lbs (1,134 kg)
Wind Loading	Operational Survival (any Position)	45 mph (72 km/h) gusting to 60 mph (97 km/h) 125 mph (200 km/h) @ 58° F (15° C)	
Temperature	Operational Survival	+5° to +122°F (-15° to +50° C) -22° to +140°F (-30° to +60° C), low temperature options available	
Rain		Up to 4 in/h (10 cm/h)	
Relative Humidity		0 to 100% with condensation	
Solar Radiation		360 BTU/h/ft ² (1,000 Kcal/h/m ²)	
Ice		1 in (2.5 cm) on all surfaces or 1/2 in (1.3 cm) on all surfaces with 80 mph (130 km/h) wind gusts	
Atmospheric Conditions	Survival	As encountered in coastal regions and/or heavily industrialized areas	
Shock and Vibration		As encountered during shipment by airplane, ship or truck	

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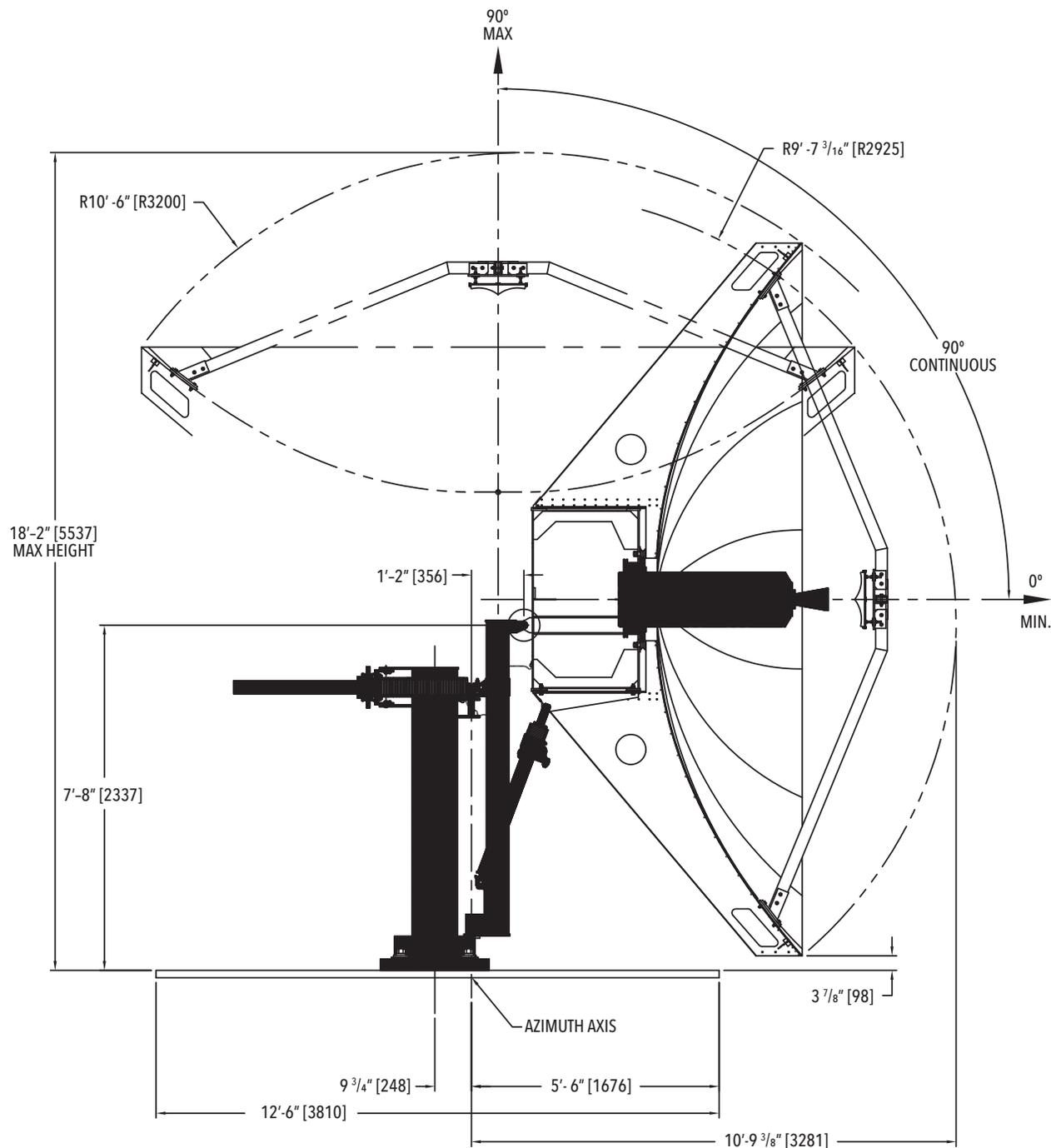
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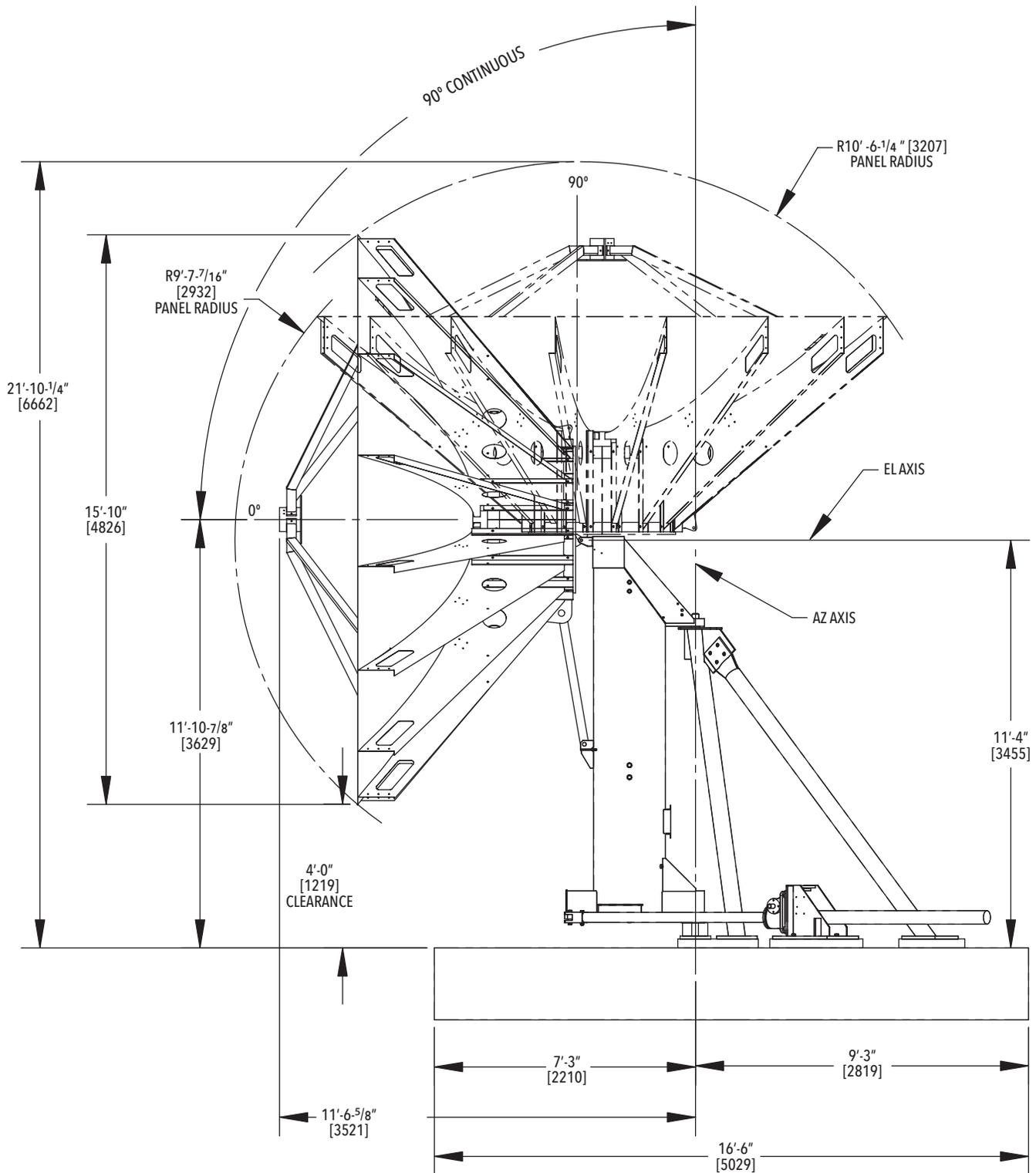
KP/PM PEDESTALS
PLAN VIEW

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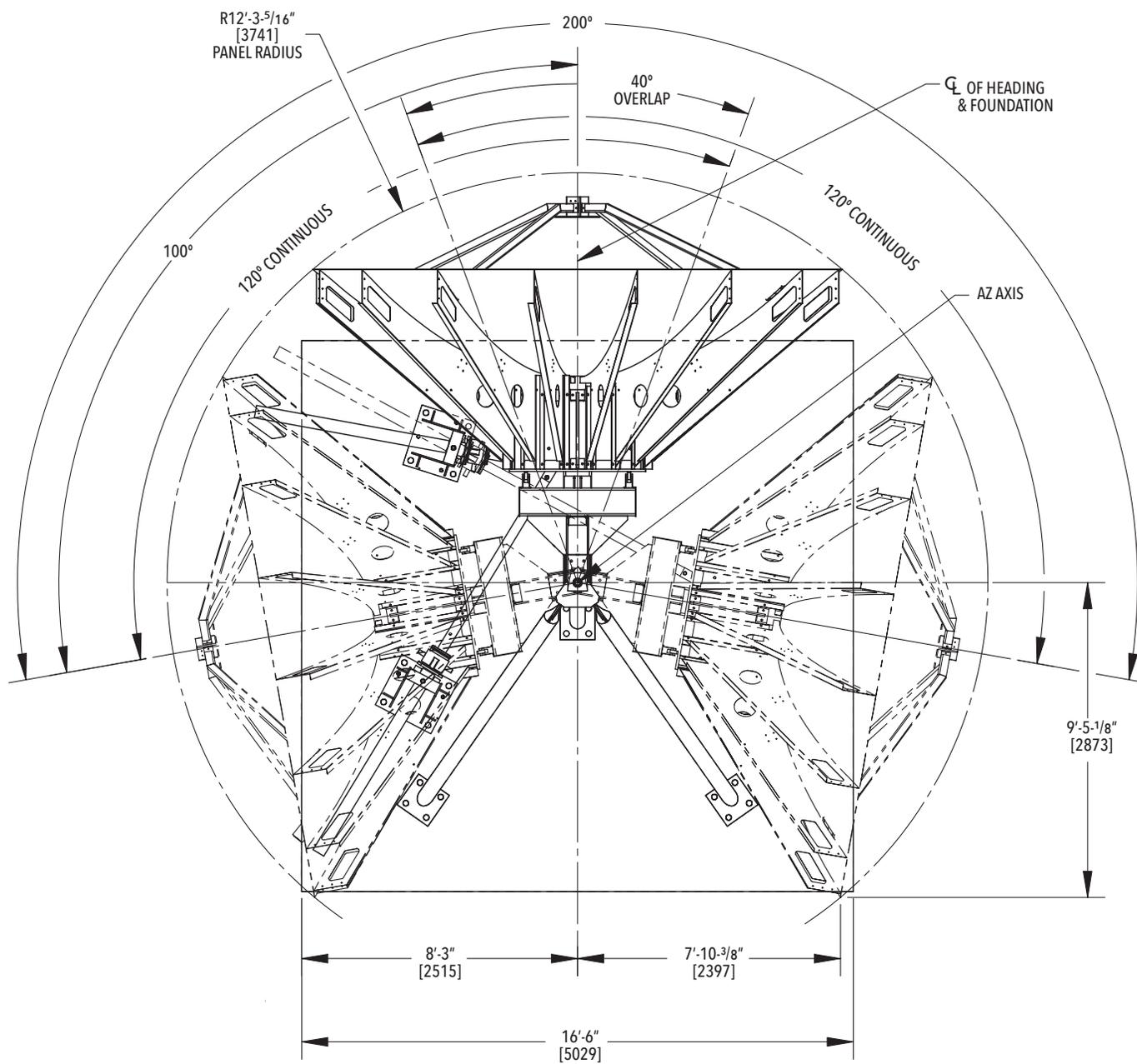
KP/PM PEDESTALS
SIDE VIEW

4.8 Meter Cassegrain Antenna



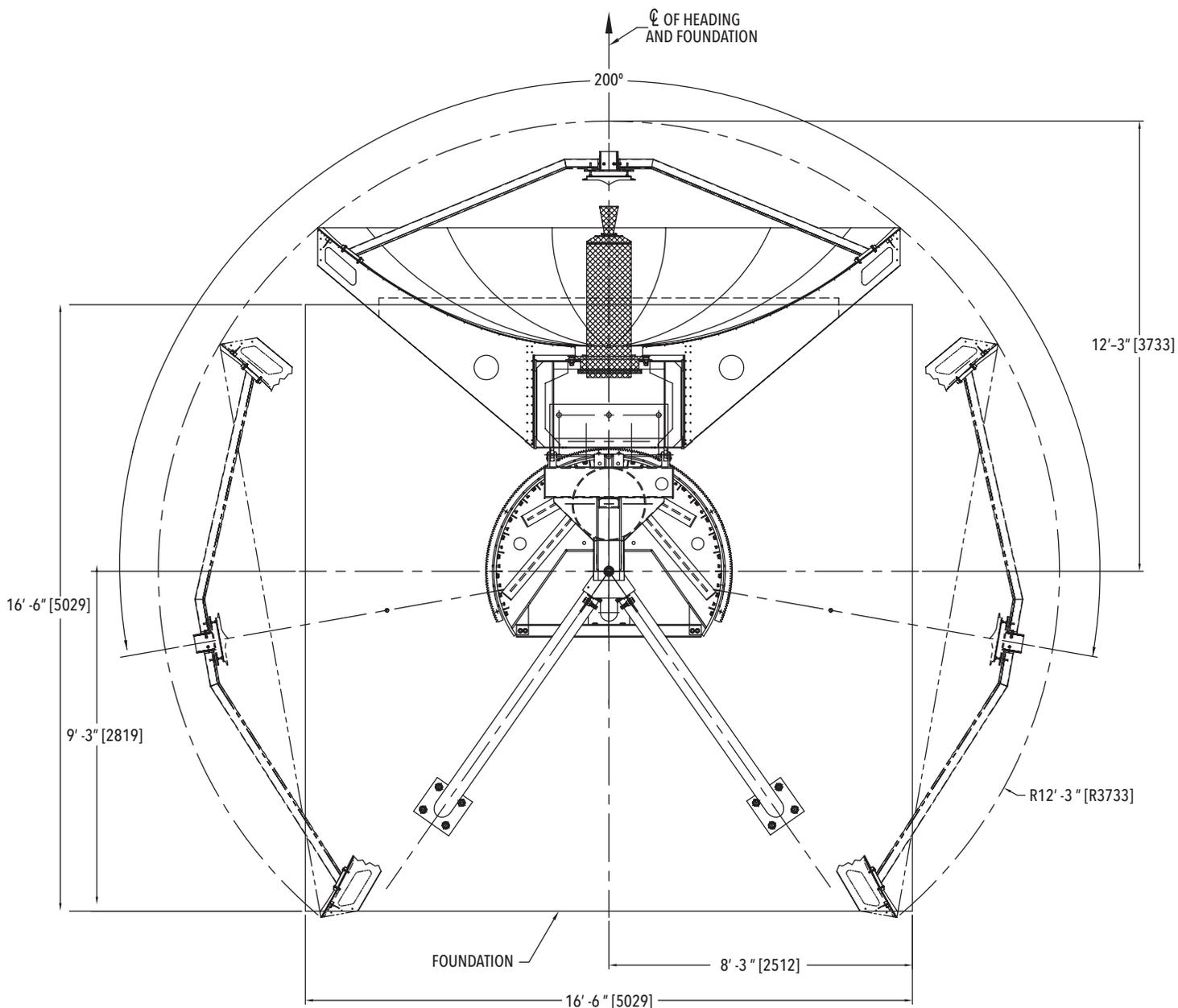
**KA - 2 POSITION
SIDE ELEVATION**

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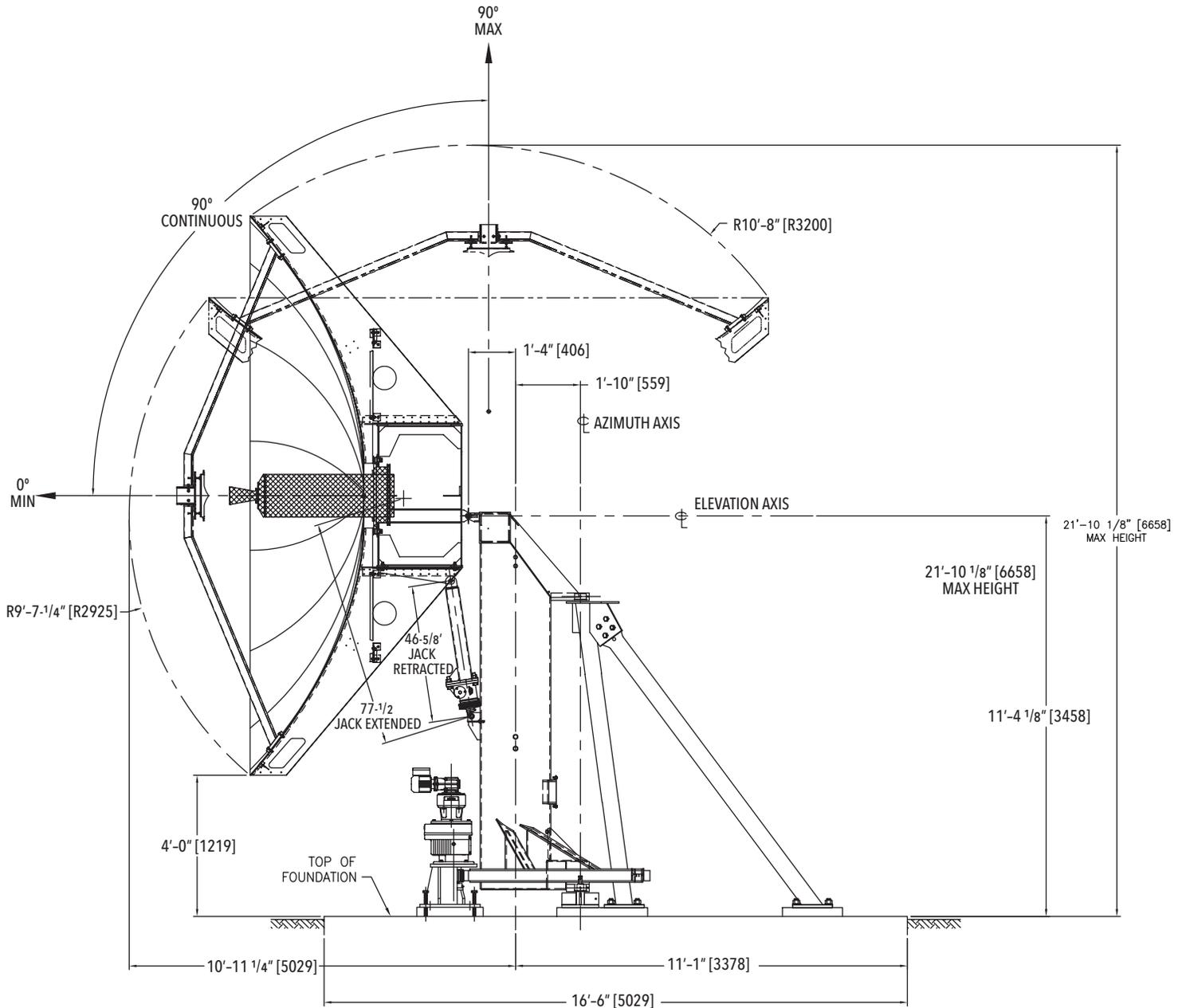
KA - 2 POSITION
PLAN VIEW

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BULL GEAR
PLAN VIEW

4.8 Meter Cassegrain Antenna



BULL GEAR SIDE VIEW

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The data should be used for basic information only.
Formal, controlled specifications may be obtained from CPI for use in equipment design.



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For more detailed information, please refer to the corresponding CPI technical description if one has been published, or contact CPI. Specifications may change without notice as a result of additional data or product refinement. Please contact CPI before using this information for system design. © 2023 Communications & Power Industries LLC. Company proprietary; use and reproduction is strictly prohibited without written authorization from CPI.

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