Small Cell and IoT Pole Solutions For Today’s Smart Cities

INNOVATIVE. FUTURE-PROOF. LIFETIME WARRANTY.
SMART Pole Solutions from Hapco allow architects and planners to use imagination and creativity in implementing designs that are unique to their overall project vision. We design and manufacture custom solutions that turn concepts into realities, delivering Small Cell and Internet of Things (IoT) SMART Pole designs that are ready for whatever connected technologies the future may hold.

Smart Poles Your City’s Future Can Rely On

As Smart Cities connect existing and future digital technology to their infrastructure, multi-use attachment requirements will continue to grow. Example categories include:

- Small Cell Antennas
- Security Cameras
- Meter Boxes
- Wi-Fi Antennas
- Batteries
- Street Signs
- Banner Arms
- Fixture Arms
- Plant Hangers
- Solar Panels
- Security, Environmental, and Gunshot Detection Sensors

Functioning as more than a support for the lighting fixture, Hapco offers an industry-leading selection of aluminum SMART Poles options that are both flexible in design and future-proof. These SMART Pole Solutions allow for an integrated design that aesthetically blends into existing urban landscapes.

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SMART Pole Solutions

Hapco has been designing, engineering, and manufacturing the highest quality aluminum poles for over sixty-five years. With our reputation for excellence making us one of the most recognized…and specified…names in the light pole industry, we are the perfect partner for your Smart City project.

Dedicated R & D
A pioneer in the research that shaped the aluminum pole industry, our commitment to R&D has produced decades of efficient product designs and industry-first patents. Our SMART Pole offering builds on this experience and dedication, creating an unequaled combination of aesthetics, strength and adaptability in “Smart City Ready” poles.

Engineering Excellence
Hapco’s decades of Engineering knowledge is unequaled in the industry, earning a respected reputation for both design capabilities and product quality. With the knowledge and experience to meet demanding project specifications, our Engineering team designs SMART Poles with the perfect blend of functionality and aesthetics to match any architectural style.

Manufacturing Expertise
Hapco draws on the most advanced aluminum manufacturing technologies and decades of experience to create superior street and area lighting products. Our 325,000 square foot facility combines knowledgeable and dedicated employees with a world-class aluminum manufacturing operation containing automated powder paint lines, on-site fluting, and AWS certified welders. The custom nature of Smart City applications makes each SMART Pole requirement unique. Our dedicated custom lines stand ready to produce the Solution to your next project.

Focused on Quality
ISO9001:2015, Certified Welding Fabricator (CWF) and AISC Certified Fabricator certifications provide confidence of the highest quality products measured by the highest standards in the industry.
Multi-Chamber Aluminum Poles

Hapco’s Multi-Chamber aluminum poles are the perfect SMART Pole Solution for the growing complexity of communications and control systems in today’s Smart Cities.

- **Eliminate the Possibility of Signal Interference.**
  Allows the use of multiple power sources.

- **Separate Access to Each Chamber.**
  Security for each individual provider.

- **Adaptable and Future-Proof.**
  Ready for future expansions and technologies.

- **Internal Web Design Improves Loading Capacities.**
  Increased Loading for Whatever the Future May Hold.

## Dual-Chamber - Round

- **Mounting Heights:** Up To 45’
- **Butt Diameters:** 6” and 10”
- **Wall Thickness:** .250”
- **Shaft Material:** Aluminum Alloy 6005A-T5

**Design Options:**
- 6” Straight
- 10” Straight
- 10” Transitioning to 6”

See Pages 22-23

## Tri-Chamber - Round

- **Mounting Heights:** Up To 45’
- **Butt Diameters:** 6” and 10”
- **Wall Thickness:** .250”
- **Shaft Material:** Aluminum Alloy 6005A-T5

**Design Options:**
- 6” Straight
- 10” Straight
- 10” Transitioning to 6”

See Pages 10-15, 18-21

## Transition Adapters

**Dual and Tri-Chamber - Round**

Patent-Pending Multi-Chamber Transition Adapters provide aesthetic pole design options with continuous signal isolation.
SMART TRAC

Hapco’s SmartBase line of aluminum pole cabinets provide the perfect solution to house the many equipment options associated with SMART Pole technology. All Multi-Chamber and SMART TRAC pole options can be incorporated into a SmartBase design, with sizes adjusted based on project requirements. SmartBase options keep Streetscapes uncluttered, beautifully blending function and aesthetics.

See Pages 14-15

SMART TRAC

Hapco’s patent-pending aluminum POLE SYSTEM, offers innovative multi-use poles and accessory mounting options that are the perfect blend of functionality, versatility, strength and aesthetics.

Mounting Heights: Up To 50'
Butt Diameters: 4", 6", 8" and 12"
Wall Thickness: .250"
Shaft Material: Aluminum Alloy 6005A-T5

Design Options:
4" Straight
6" Straight
8" Straight
12" Straight
8" Transitioning to 6"
6" Transitioning to 4"
8" to 6" to 4"

SMART TRAC, Quad-Chamber Round
See Pages 26-28

Tri-Chamber - Fluted Round
See Pages 16-17

Mounting Heights: Up To 50'
Butt Diameter: 8" and 10"
Wall Thickness Up To: .4375"
Shaft Material: Aluminum Alloy 6005A-T5

Design Options: 8" Straight
10" Straight

Dual-Chamber - Square
See Pages 24-25

Mounting Heights: Up To 30'
Butt Square: 6"
Wall Thickness: .250"
Shaft Material: Aluminum Alloy 6005A-T5

Design Options: 6" Straight

Tri-Chamber - Fluted Round
See Pages 16-17

Dual-Chamber - Square
See Pages 24-25
Advantages of Aluminum

Cities look to the future when choosing SMART Pole platforms for Small Cell and IoT applications, and no better choice of material aligns with the essential priorities of longevity and future-proofing than aluminum.

The superior properties of aluminum make it both the perfect choice and best value for outdoor lighting poles and brackets.

Aluminum is Corrosion Resistant
On contact with air, aluminum forms a protective layer of aluminum oxide that guards against corrosion. This natural resistance to corrosion ensures that your aluminum lighting pole will resist the ravages of time, temperature and humidity while providing years of low maintenance care.

Aluminum is Lightweight
Aluminum provides the perfect combination of lightweight material with high strength-to-weight ratios. At one-third the weight of steel, aluminum poles are much easier to handle and install, providing substantial installation savings in both labor and equipment.

Aluminum Provides Lower Overall Cost of Ownership
The properties of aluminum make it a tremendous value when the overall cost of ownership is considered. Higher installation and maintenance costs for aluminum alternatives, combined with guaranteed replacement costs of shorter lifecycle materials, contribute to aluminum having the lowest cost of ownership of any lighting pole option.

Decades-Long History of Proven Performance
Hapco has been manufacturing quality Aluminum Pole Products for more than 60 years, with many of the original installations still in service with no structural issues or noticeable differences in appearance. The longevity and durability of our products can be validated with our industry-leading Lifetime Warranty on aluminum pole assemblies (see Pages 9).

Aluminum is 100% recyclable. Aluminum recycling benefits present and future generations by conserving energy and other natural resources.
Advantages of Aluminum

When compared to alternative materials, the advantages of aluminum are substantial.

Steel is Not Corrosion Resistant

- Steel will begin to deteriorate as soon as it is installed.
- Rust creates adhesion issues, leading to poor aesthetics and higher maintenance costs.
- Inherently shorter lifecycles lead to guaranteed pole failure and replacement.

Composite Poles are Susceptible to the Environment

- Composite poles are affected by ultraviolet fading and fiber blooming, quickly leading to poor aesthetics.
- Repainting and replacement costs associated with composite lead to higher cost of ownership.
- Damage by mowing or trimming is common.

Concrete Poles are Heavy with Poor Aesthetics

- Concrete poles are susceptible to spalling (crumbling), staining and fading.
- Concrete has poor aesthetics due to a lack of uniformity of color between the pole, fixture, and pole accessories.
- Difficult to install, requiring expensive installation equipment and larger installation crews.
- Slower, less efficient installations translate into extended job completion times.
Superior Powder Coat Finishes
Hapco Powder Coating operations employ state-of-the-art processes utilizing weather-resistant triglycidyl isocyanurate (TGIC) polyester powders that are electrostatically applied, oven-cured and bonded.

- Advanced, AAMA 2604 Powders
- Superior Gloss, Color Retention, And Weathering Capabilities
- Higher UV and Scratch Resistance

AAMA 2604 Super Durable Powders
All finish coatings are not created equal. The American Architectural Manufacturers Association (AAMA) provides classifications for powder coating that have been widely recognized as the standards for testing and performance of coatings on architectural aluminum products. AAMA 2604, known as Super Durable powder coat, is formulated with advanced polyester resin technology that utilizes higher performance pigments. Hapco uses Super Durable AAMA 2604 powders for all powder coated poles.

Standard Colors

- Dark Bronze BM
- Black BA
- Dark Green BV
- Gray GC
- White BH

RAL and Custom Colors
In addition to our standard colors, Hapco offers thousands of RAL and custom color options. Simply provide any RAL Color Number or Color Chip Sample and Hapco will provide the perfect AAMA 2604 Powder Coat Color for your next project.
Hapco Aluminum
The Green Choice

Hapco Aluminum Poles provide an environmentally responsible choice of material and approach with the burgeoning green movement, allowing specifiers to aggressively pursue a design based upon sustainable principles.

Aluminum resists the ravages of time, temperature, corrosion, humidity, and warping, creating an incredibly long life cycle when compared to alternative materials. This results in a far lower environmental impact through reduced material replacement energy.

Hapco Aluminum, a sustainable material for now and the future!

Lifetime Quality... Guaranteed

At Hapco, it is our mission to create lasting customer relationships by providing the industry’s highest quality products. We do this by combining the most advanced, industry-leading manufacturing technologies with exceptional engineering and design.

Because we stand behind our products and truly believe in their longevity and durability, all aluminum SMART pole assemblies are covered by a Lifetime Warranty.
Tri-Chamber Round - 6" Straight
Tri-Chamber Round

Shaft Design: Tri-Chamber – 6" Straight
Shaft Material: Aluminum Alloy 6005A-T5
Wall Thickness: .250"
Base Design: York 20" Clamshell
Base Material: Aluminum Alloy 356
Butt Diameter: 6"
Mounting Height: 20'
Anchorage: Direct Buried

Alum. Pole Plate Alloy 6063-T6 (See Detail B-B)

6" Tri Chamber Tube
.250” Wall Alloy 6005A–T5

Two Piece Cast Alum. Base Cover (84648–001) Alloy 356 With Door And Stainless Steel Screws

2 1/2” Dia. x 8” Long Slotted Wire Holes (Lined With Edge Trim)

SAMPLE DESIGN
SMART Pole Solutions

Tri-Chamber Round - 10" Straight
Tri-Chamber Round

Shaft Design: Tri-Chamber - 10" Straight

Shaft Material: Aluminum Alloy 6005A-T5

Wall Thickness: .250"

Butt Diameter: 10"

Mounting Height: 28'

Anchorage: 4-Bolt Base
Tri-Chamber SmartBase
Tri-Chamber SmartBase

Shaft Design: Tri-Chamber – 10" Straight
Shaft Material: Aluminum Alloy 6005A-T5
Wall Thickness: .250"
Base Design: SmartBase Pole Cabinet
Base Material: Aluminum Alloy 356
Base Wall Thickness: .425"
Butt Diameter: 18.35"
Mounting Height: 29'-4"
Anchorage: 4-Bolt Base Plate

Pole Top Prepared To Accept Antenna and Shroud (by others)

2" NPS Slipfitter

1 1/2" x 5 1/8" Elliptical Section

Wire Hole With 1" I.D. Rubber Grommet

Tapered Alum. Tube (4" O.D.) .125" Wall Alloy 6063-T6

2 1/2" x 5 1/8" Elliptical Section

Wire Hole With 1" I.D. Rubber Grommet

10" Dia. Tri-Chamber .250" Wall Alloy 6005A-T5

Aluminum 2 Piece Cover

18.35" (466 mm)
Dia. Alum. Tube
.425" (10.8 MM)
Wall Thickness

Two 45" x 9 3/8"
Cutouts With Covers

Lower Section Profile 18.35" Dia. Tube

Aluminum 2 Piece Cover

Aluminum Base Plate 24" Dia. Bolt Circle

SAMPLE DESIGN
SMART Pole Solutions

Tri-Chamber Round Fluted - 8" Straight
Tri-Chamber Fluted

Shaft Design: Tri-Chamber - Fluted
8" Straight

Shaft Material: Aluminum Alloy 6005A-T5

Base Design: Arlen 20"w Clamshell

Base Material: Aluminum Alloy 356

Butt Diameter: 8"

Mounting Height: 22'

Wall Thickness: .350"

Anchorage: Direct Buried

Pole Top Prepared To Accept Antenna and Shroud (by others)

Alum. Pole Plate Alloy 6063—T6
(2 @ 180°, See Bracket Mounting Detail)

4” Channel Mounting Plate (5 Places)

Reinforced Handhole (4” x 6”) With Tethered Cover, Gasket, And SS Screws

Cabinet

Disconnect

Reinforced Handhole (4” x 6”) With Tethered Cover, Gasket, And SS Screws

Meter

8” Dia. Fluted Tri-Chamber Extruded Alum. Tube
.350” Wall Alloy 6005A—T5

Two Piece Alum. Cast Base Cover
(79012—004) Alloy 356F With S.S. Screws
Base Cover To Be Ordered Separately

Ground Line

2½”x8” Slotted Wire Hole

20” Dia.

SAMPLE DESIGN
SMART Pole Solutions

Tri-Chamber Round - 10" to 6" Transition
Tri-Chamber Round

Shaft Design: Tri-Chamber – 10" to 6" Transition

Shaft Material: Aluminum Alloy 6005A-T5

Wall Thickness: .250"

Base Design: York Modified 24" Clamshell

Base Material: Aluminum Alloy 356

Butt Diameter: 10"

Mounting Height: 28'

Anchorage: Direct Buried

SAMPLE DESIGN
SMART Pole Solutions

Tri-Chamber Round - 10" to 6" Transition
Tri-Chamber Round

Shaft Design: Tri-Chamber – 10" to 6" Transition
Shaft Material: Aluminum Alloy 6005A-T5
Wall Thickness: .250"
Butt Diameter: 10"
Mounting Height: 42'
Anchorage: Direct Buried

SAMPLE DESIGN
Dual-Chamber Round - 6" Straight
**Dual-Chamber Round**

**Shaft Design:** Dual-Chamber – 6" Straight

**Shaft Material:** Aluminum Alloy 6005A-T5

**Wall Thickness:** .250"

**Butt Diameter:** 6"

**Mounting Height:** 30'

**Anchorage:** 4-Bolt Base

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Pole Top Prepared To Accept Antenna and Shroud (by others)

Reinforced Handhole (3" x 5") With Cover And Stainless Steel Screws (2 @ 180°)

Vibration Damper (Factory Installed)

Handholes Thru Holes In Tenon

Cross Section Of Tube

6" Dia. Dual Chamber Tube .250" Wall Alloy 6005A–T5

Reinforced Handhole (3" x 5") With Cover And Stainless Steel Screws (2 @ 180°)

Ground Lug Tapped 1/2"–13NC Opposite Handhole Ø

Cast Alum. Base Flange (16355) Alloy 356–T6 With Two Piece Base Cover (100635) And Stainless Steel Screws
SMART Pole Solutions

Dual-Chamber Square - 6” Straight
**Dual-Chamber Square**

*Shaft Design:* Dual-Chamber - Square 6" Straight

*Shaft Material:* Aluminum Alloy 6005A-T5

*Wall Thickness:* .250"

*Base Design:* T-Base

*Base Material:* Aluminum Alloy 356

*Butt Square:* 6"

*Mounting Height:* 35'

*Anchorage:* 4-Bolt T-Base

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**6" Sq. Dual Chamber Pole With Corner Radius Tube**

.250" Wall, Alloy 6005A-T5

**Cast Alum. Base Flange (2346)**

Alloy 356-T6 With Snap On Covers

**Transformer Base**

Alloy 356-T6 With Door, S.S. Hex. Head Screw and (8) Steel Heavy Galvanized Washers

**Ground Line**

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**Internal Damper**

(Factory Installed)

**Pole Top Prepared To Accept Antenna and Shroud (by others)**

**Tube Cross-Section**

(Reference SQ336000250)

**SAMPLE DESIGN**
SMART TRAC, Hapco’s patent-pending aluminum POLE SYSTEM, offers innovative multi-use poles and accessory mounting options that are the perfect blend of functionality, versatility, strength and aesthetics.

Transition Rings
Cast Aluminum Transition Rings provide AESTHETIC pole options across a range of design criteria. Transition Rings are available in both 8” to 6” and 6” to 4” sizes.

Multiple Design Configurations
SMART TRAC offers cities a broad range of design possibilities. Choices include 4”, 6”, 8” and 12” diameter STRAIGHT designs, along with 6” transitioning to 4”, 8” transitioning to 6”, and 8” to 6” to 4”.

SMART TRAC is the FOUNDATION for tomorrow’s Smart Cities.
**Quad-Chamber Design**
Each SMART TRAC shaft is designed with four separate chambers which provide secure access to multiple individual providers. Separation is continuous throughout the pole, including through the base and transitions.

**Handholes**
Handholes for each SMART TRAC chamber can be provided in all four shaft sizes.

**Four Shaft Sizes**
SMART TRAC shafts are offered in 4", 6", 8", and 12" Diameters. Each shaft is designed with four “TRAC” systems at 0°, 90°, 180°, and 270°. “TRAC” profiles are identical on all sizes, allowing accessory attaching hardware to work with all SMART TRAC designs. **Note:** Heavy-Duty Arm Mounting Brackets are specific to 6", 8" and 12" diameter shafts.

**Signal Isolation Solution**
SMART TRAC is the PERFECT Signal Isolation Solution for Multi-Use poles utilized by today’s Smart Cities.

**Direct Buried Options**
Direct Buried *(Embed)* SMART TRAC options are available in all sizes and mounting heights, allowing for faster, more cost-efficient installations.

**Decorative Base Options**
Hapco offers an extensive collection of 2-Piece Decorative Bases for use with all SMART TRAC pole designs. See Pages 30-31
Locking Cam
The Patent-Pending design of SMART TRAC allows the use of a Locking Cam for the mounting of a variety of pole accessories. When tightened against the pole, the grooves of the Locking Cam twist, pull, and tighten against the tracs of the pole. Strong, secure, and simple installations that can be moved, modified, or removed and replaced without the unsightly bands and drill holes associated with standard pole accessory installations.

Locking Cam with Cover Box

Two sizes of Cover Boxes provide a range of installation options for both wired and unwired accessories.

Heavy-Duty Arm Mounting Bracket

SMART TRAC’s Heavy-Duty Bracket is designed for use with the most common arm designs and can be used in combinations for Truss Arms and Custom Designs. NO DRILLING of the pole is required, allowing jobsite placement and future movement.

Locking Cam with Extruded Strip Covers

Larger footprint, vertical, or heavier accessories can utilize a multiple Locking Cam and Extruded Strip Cover design.
Aluminum Arms

From classic to contemporary to decorative, Hapco has over 60 years’ experience in designing and fabricating aluminum arms for projects containing diverse architectural styles.

Whether you are looking to create an integrated design that blends into existing streetscapes, or a unique design created for a custom project, Hapco has the unparalleled experience and resources to fabricate quality ARM SOLUTIONS.

Sample Designs Shown
Clamshell Decorative Bases

Hapco Clamshell Aluminum Bases are 2-piece base designs that are assembled and bolted around the pole base after pole installation. Clamshell Base styles are available for use with anchor mounted and direct buried SMART Pole designs.

- **American**
  - Diameter: 11"-12"
  - Height: 2'-6"
  - 4"-5" Butt Diameters

- **Arlen 17"**
  - Diameter: 17"
  - Height: 1'-8"
  - 4"-5" Butt Diameters

- **Arlen 20"**
  - Diameter: 20"
  - Height: 1'-11"
  - 6"-8" Butt Diameters

- **Arlen 24"**
  - Diameter: 24"
  - Height: 2'-6"
  - 7"-10" Butt Diameter

- **Arlen 30"**
  - Diameter: 30"
  - Height: 3'-9"
  - 10"-12" Butt Diameters

- **Covington**
  - Diameter: 20"
  - Height: 4'-2"
  - 7"-10" Butt Diameters

- **Homewood**
  - Diameter: 14"
  - Height: 3'-5"
  - 4"-6" Butt Diameters

- **Jefferson 15", 18" & 21"**
  - Diameter: 15" & 18"
  - Height: 8-1/2" & 11-1/4"
  - 4"-10" Butt Diameters

- **Nationwide**
  - Diameter: 22"
  - Height: 4'-0"
  - 7"-8" Butt Diameters

- **Palms**
  - Square: 22"
  - Height: 2'-3"
  - 5"-10" Butt Diameters
Custom Capabilities

In addition to our standard Decorative Base offering, Hapco’s in-house design team and state-of-the-art R&D technologies allow us to replicate and craft custom castings to match any architectural style or design.