

SMART Pole Solutions

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.



Table of Contents

SMART Pole Solution Offering	4-5
Advantages of Aluminum	6-7
Powder Coat Finishes	8
The Green Choice	9
Lifetime Warranty	9
Sample Designs - Multi-Chamber Poles . . .	10-25
SMART Trac	26-28
Arms	29
Decorative Clamshell Bases	30-31

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 off this experience and dedication, creating an unequalled combination of aesthetics, strength and adaptability in “Smart City Ready” poles.

Engineering Excellence

Hapco’s decades of Engineering knowledge is unequalled 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.

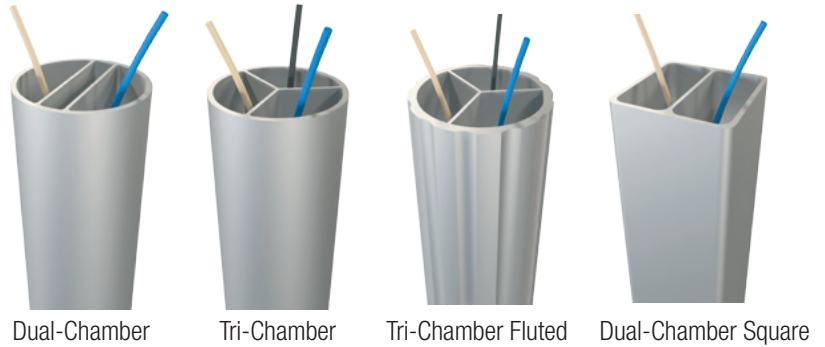


SMART Pole Solutions

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



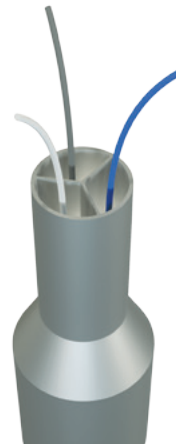
Dual-Chamber
See Pages 22-23

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"

Transition Adapters Dual and Tri-Chamber - Round

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



Dual-Chamber Transition Adapter



Tri-Chamber Transition Adapter

Tri-Chamber - Round



Tri-Chamber
See Pages 10-15, 18-21

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"



Tri-Chamber - Fluted Round



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

Tri-Chamber - Fluted Round

See Pages 16-17

Dual-Chamber - Square



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

Design Options: 6" Straight

Dual-Chamber - Square

See Pages 24-25

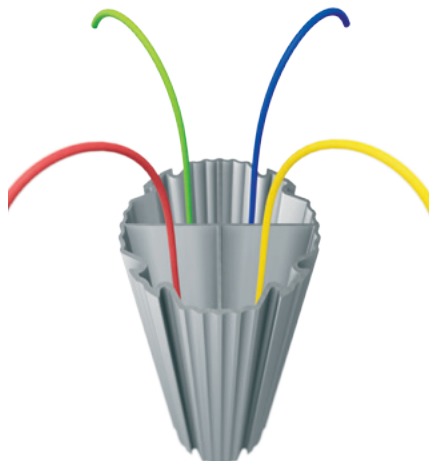
SmartBase

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



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



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.

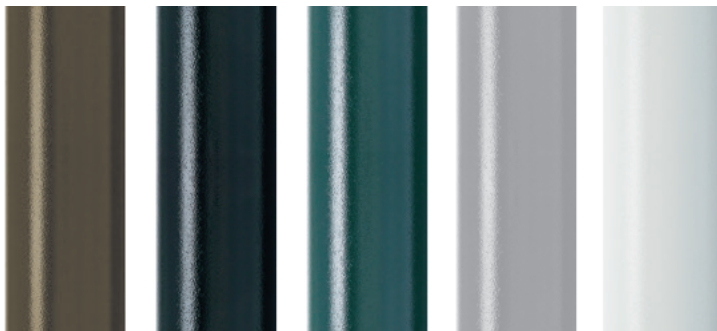
- Advanced, AAMA 2604 Powders
- Superior Gloss, Color Retention, And Weathering Capabilities
- Higher UV and Scratch Resistance



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.



Lifetime Warranty

Hapco warrants its aluminum pole assemblies for their lifetime to be free of defects in material and workmanship and to be free from corrosion, except those items normally consumed in service. This warranty does not cover failures or corrosion due to:

- Improper installation.
- Misapplication – product used outside of specified use.
- Damage from handling, transportation, installation, vehicular impact, abuse, or vandalism.
- Site specific wind induced or other vibration.
- Installation in soils with a pH under 5 or over 9.
- Improper grounding.

Hapco will, at its sole option, repair, replace, or credit Buyer's account for any product that does not conform to this warranty.

HAPCO MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. HAPCO SHALL NOT BE LIABLE FOR ANY OTHER LOSS OR DAMAGE, INCLUDING BUT NOT LIMITED TO CONSEQUENTIAL DAMAGES, LIQUIDATED DAMAGES AND BACK CHARGES.

This warranty does not include reimbursement for the expense of installation or removal of equipment, transportation, or any other expenses which may be incurred. This warranty applies to the pole assembly only and does not include anchor bolts, connecting hardware, or foundation. Authorization must be obtained from Hapco before any material is returned. This warranty excludes finishes such as powder coating, anodizing, and satin. The foregoing states the lifetime of the products intended use. The foregoing states the lifetime of the products intended use. The foregoing states the lifetime of the products intended use.

aluminum pole assemblies shipped on or after

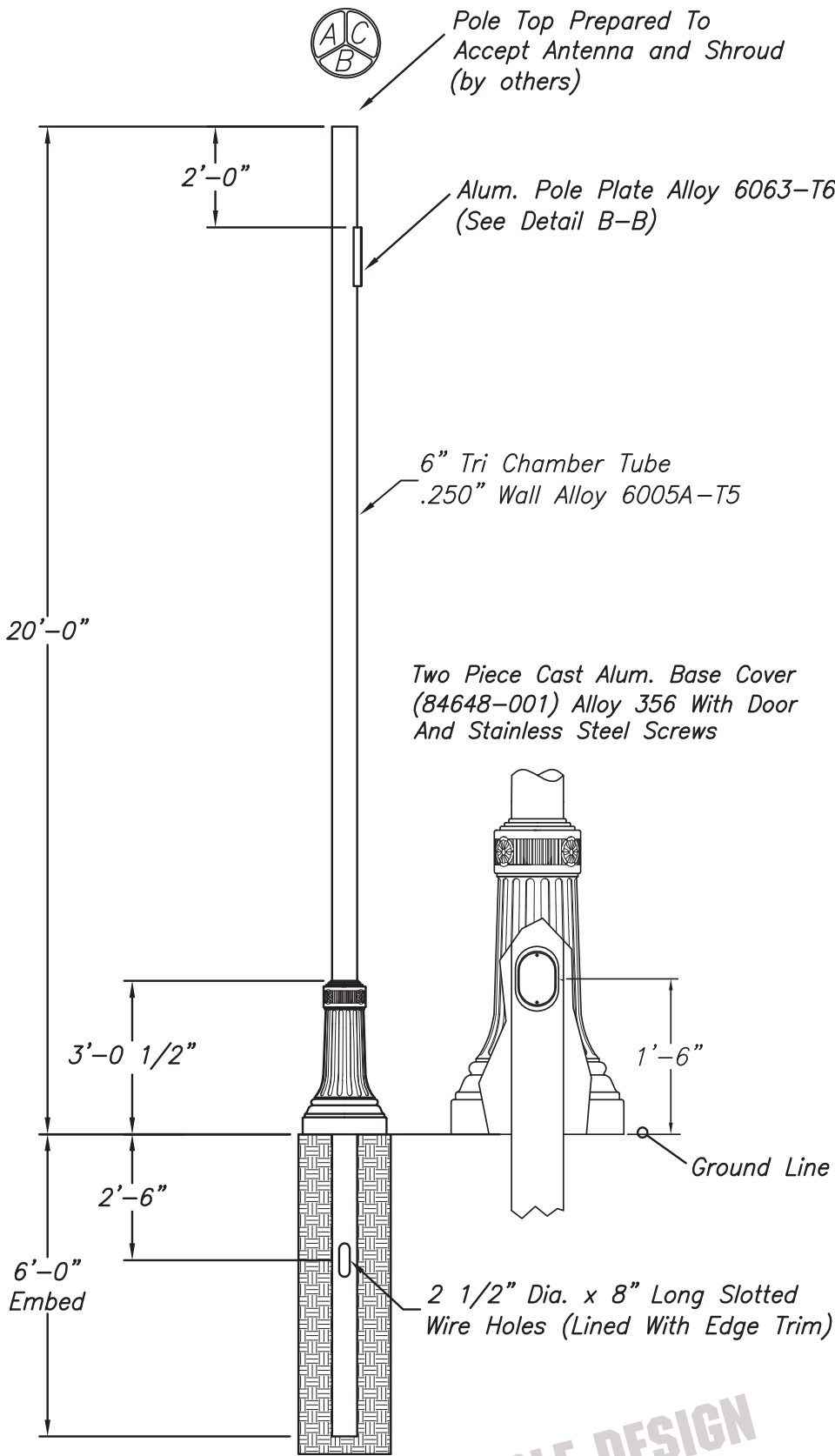
SMART Pole Solutions

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



SAMPLE DESIGN



SMART Pole Solutions

Tri-Chamber Round - 10" Straight



Tri-Chamber Round

Shaft Design: Tri-Chamber - 10" Straight

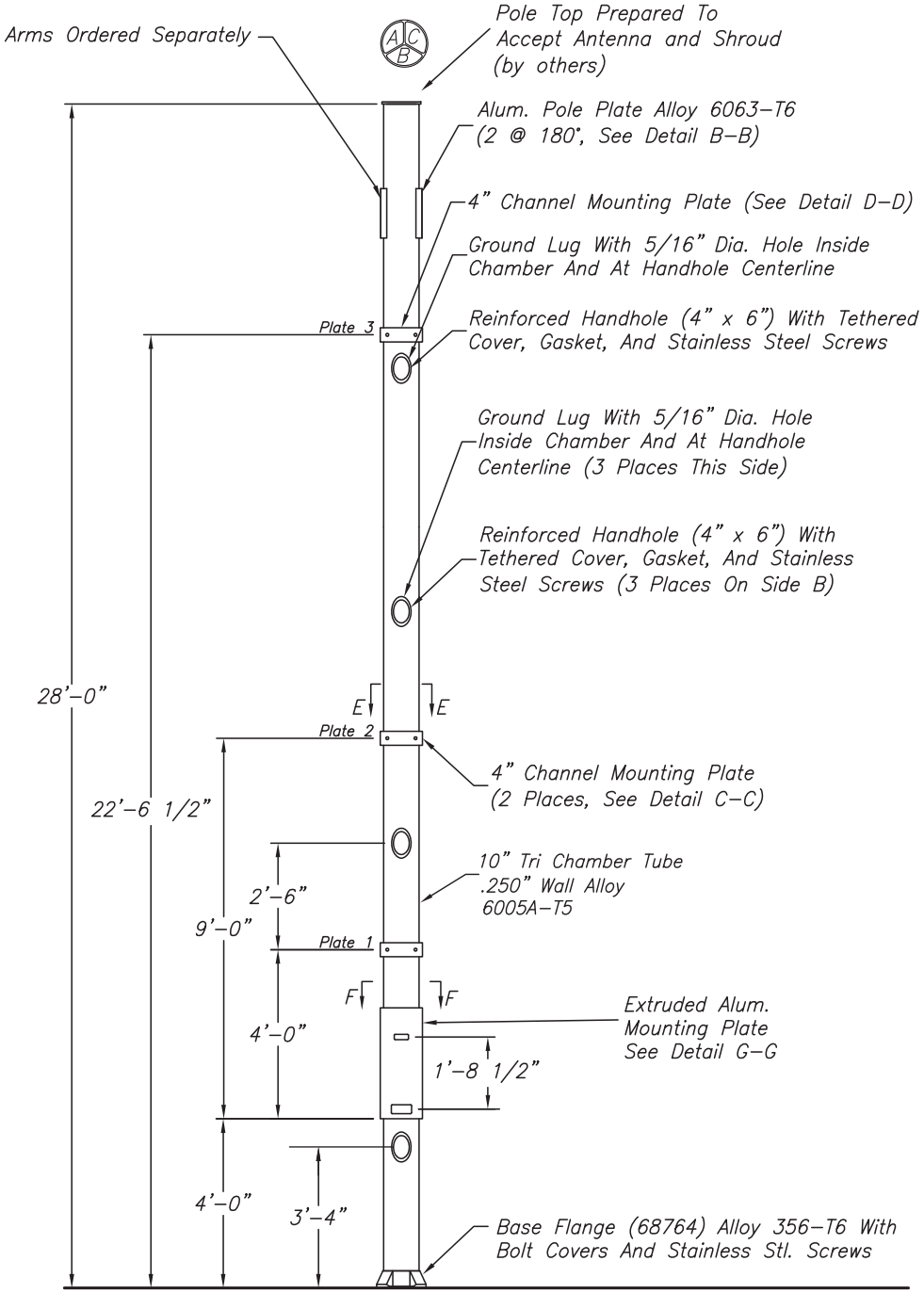
Shaft Material: Aluminum Alloy 6005A-T5

Wall Thickness: .250"

Butt Diameter: 10"

Mounting Height: 28'

Anchorage: 4-Bolt Base

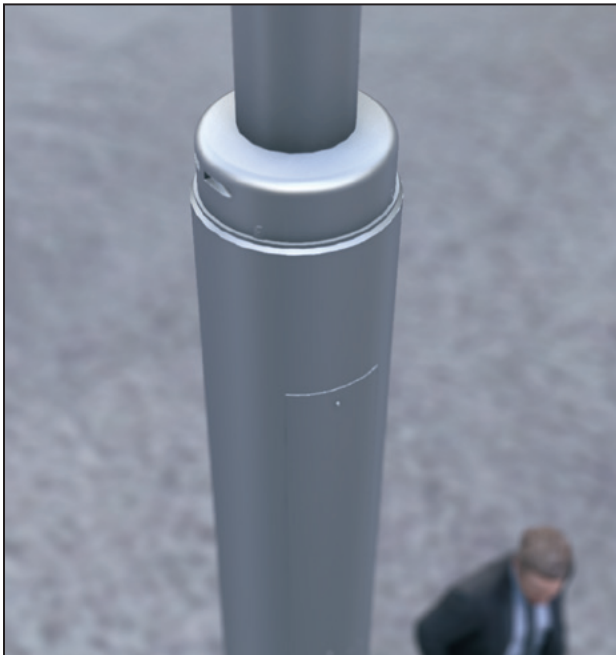


SAMPLE DESIGN



SMART Pole Solutions

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

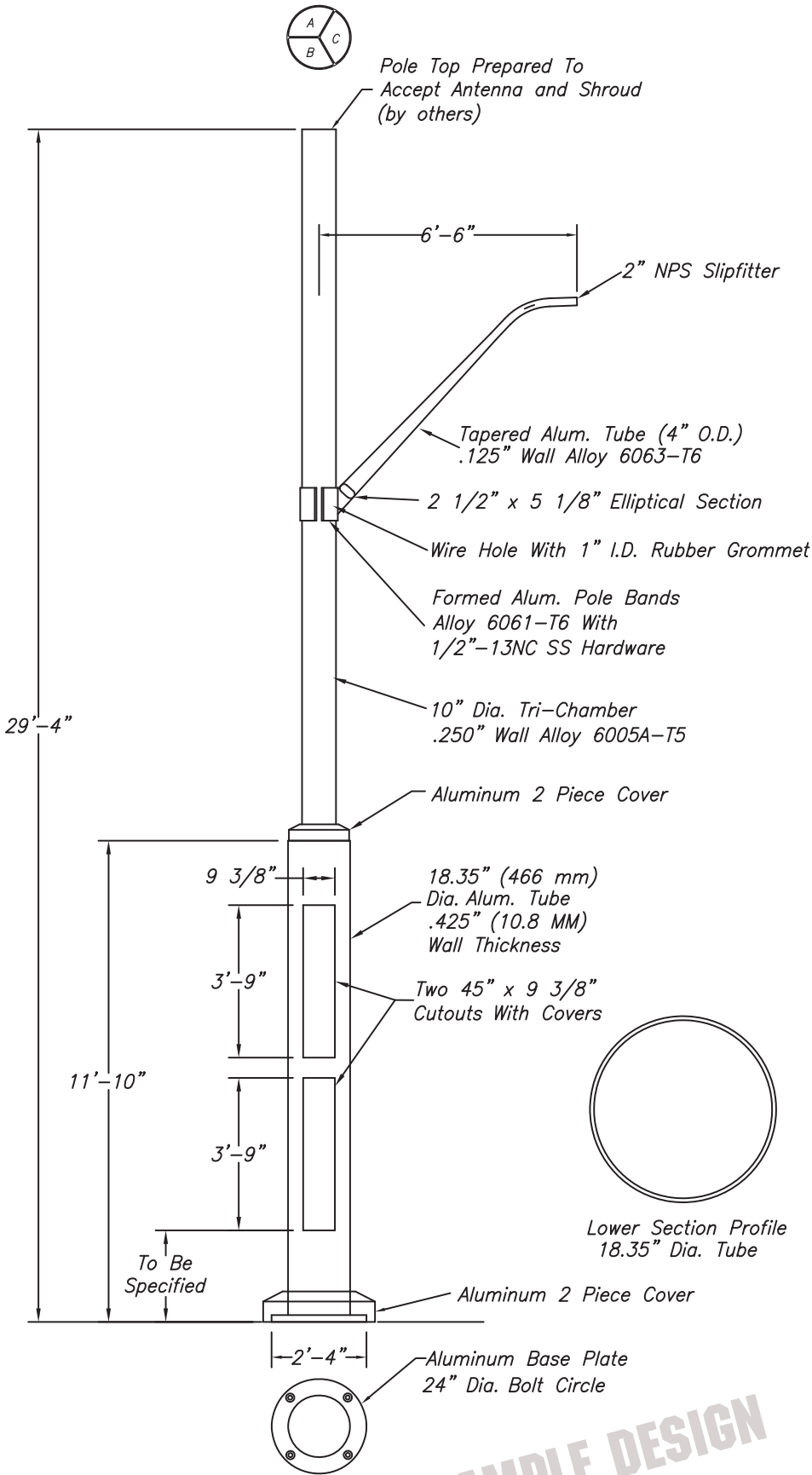
Base Material: Aluminum Alloy 356

Base Wall Thickness: .425"

Butt Diameter: 18.35"

Mounting Height: 29'-4"

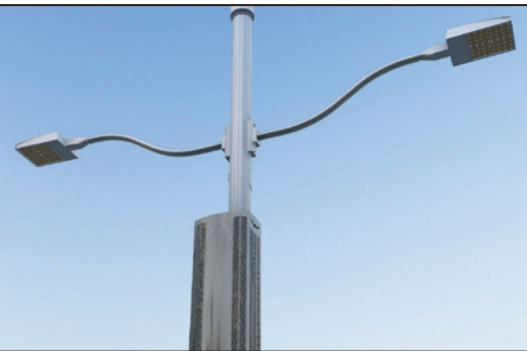
Anchorage: 4-Bolt Base Plate

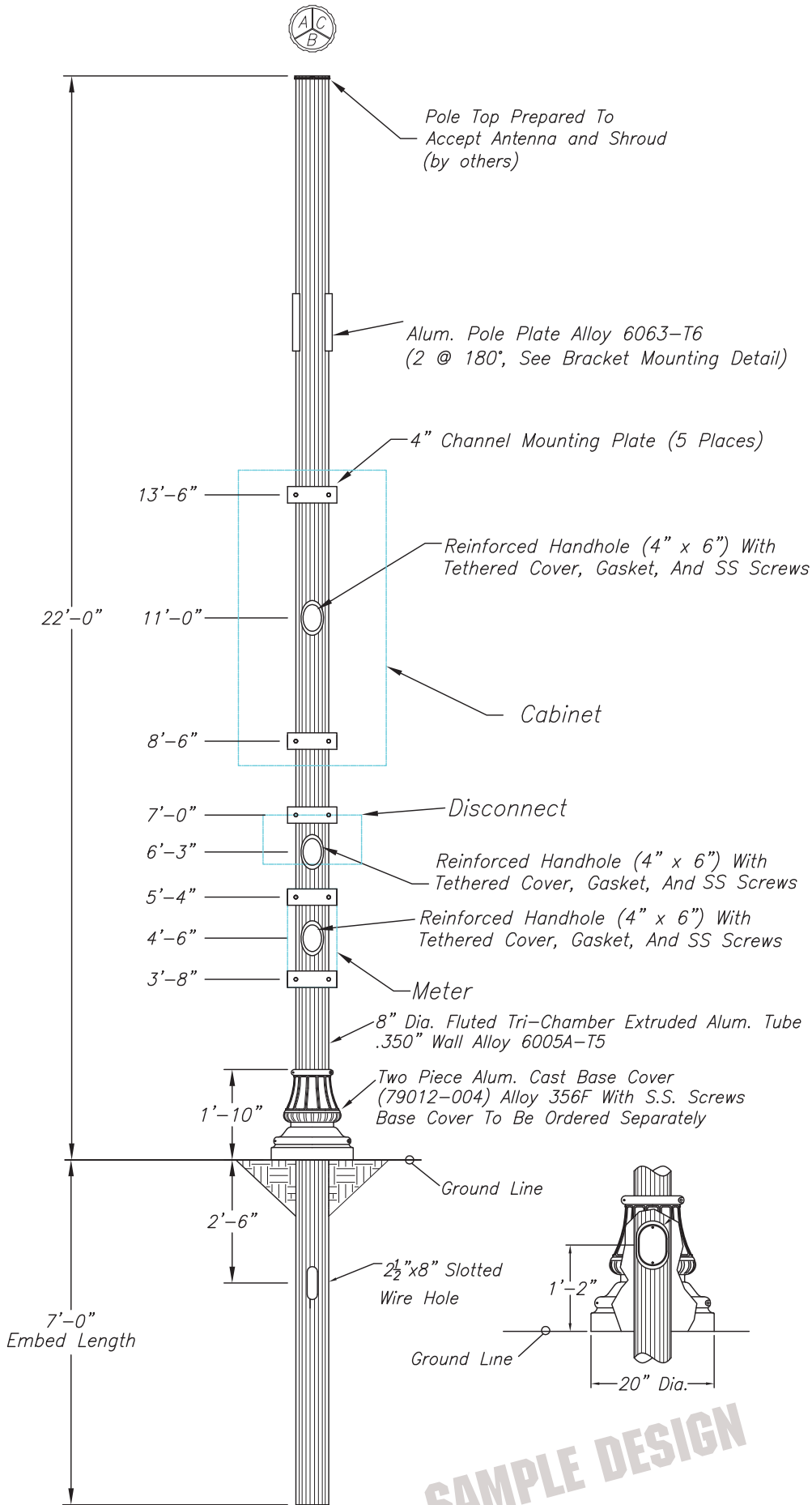


SAMPLE DESIGN

SMART Pole Solutions

Tri-Chamber Round Fluted - 8" Straight





SAMPLE DESIGN

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



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"

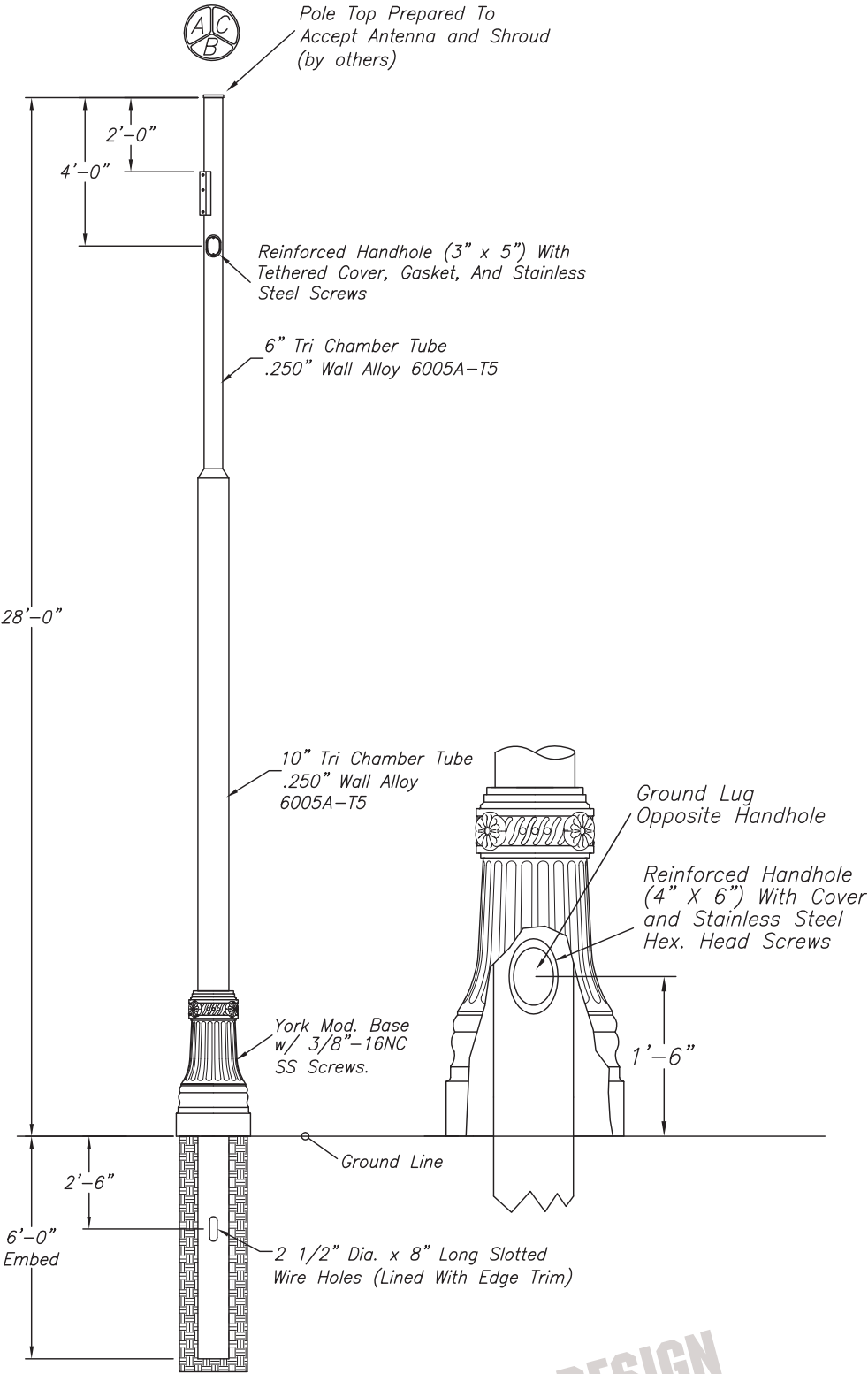
Base Design: York Modified 24" Clamshell

Base Material: Aluminum Alloy 356

Butt Diameter: 10"

Mounting Height: 28'

Anchorage: Direct Buried



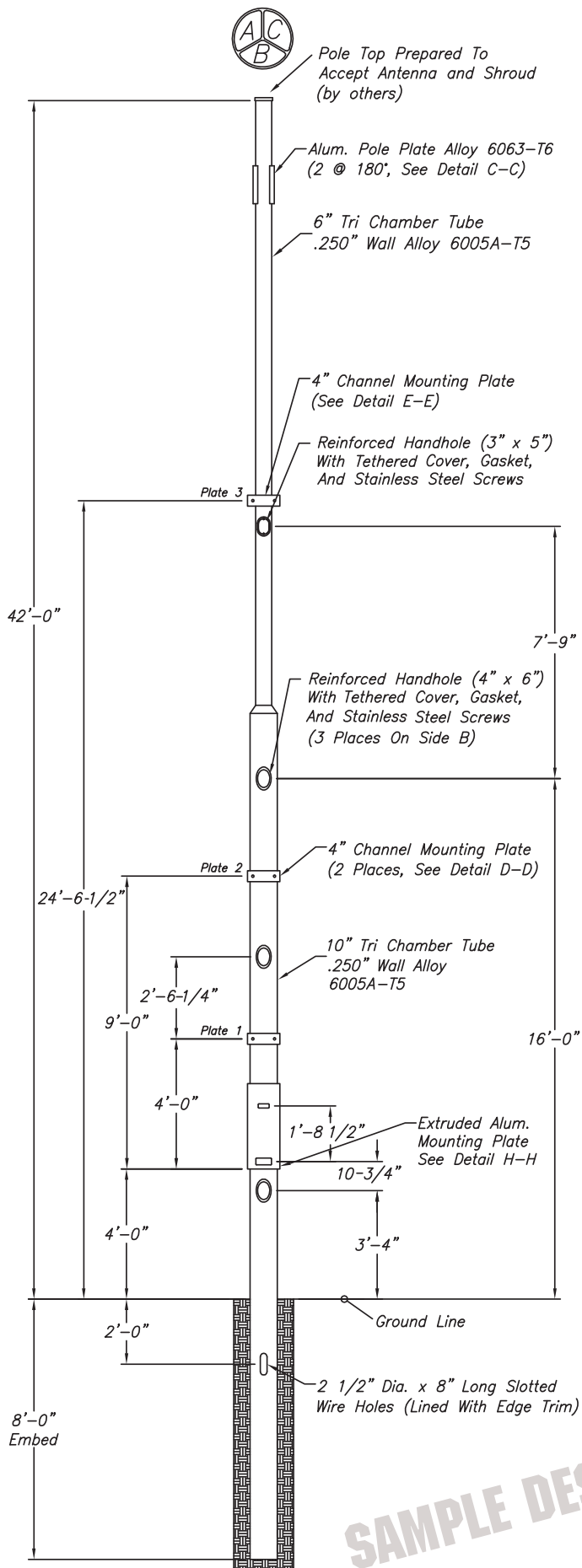
SAMPLE DESIGN



SMART Pole Solutions

Tri-Chamber Round - 10" to 6" Transition





SAMPLE DESIGN

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



SMART Pole Solutions

Dual-Chamber Round - 6" Straight



Dual-Chamber Round

Shaft Design: Dual-Chamber – 6" Straight

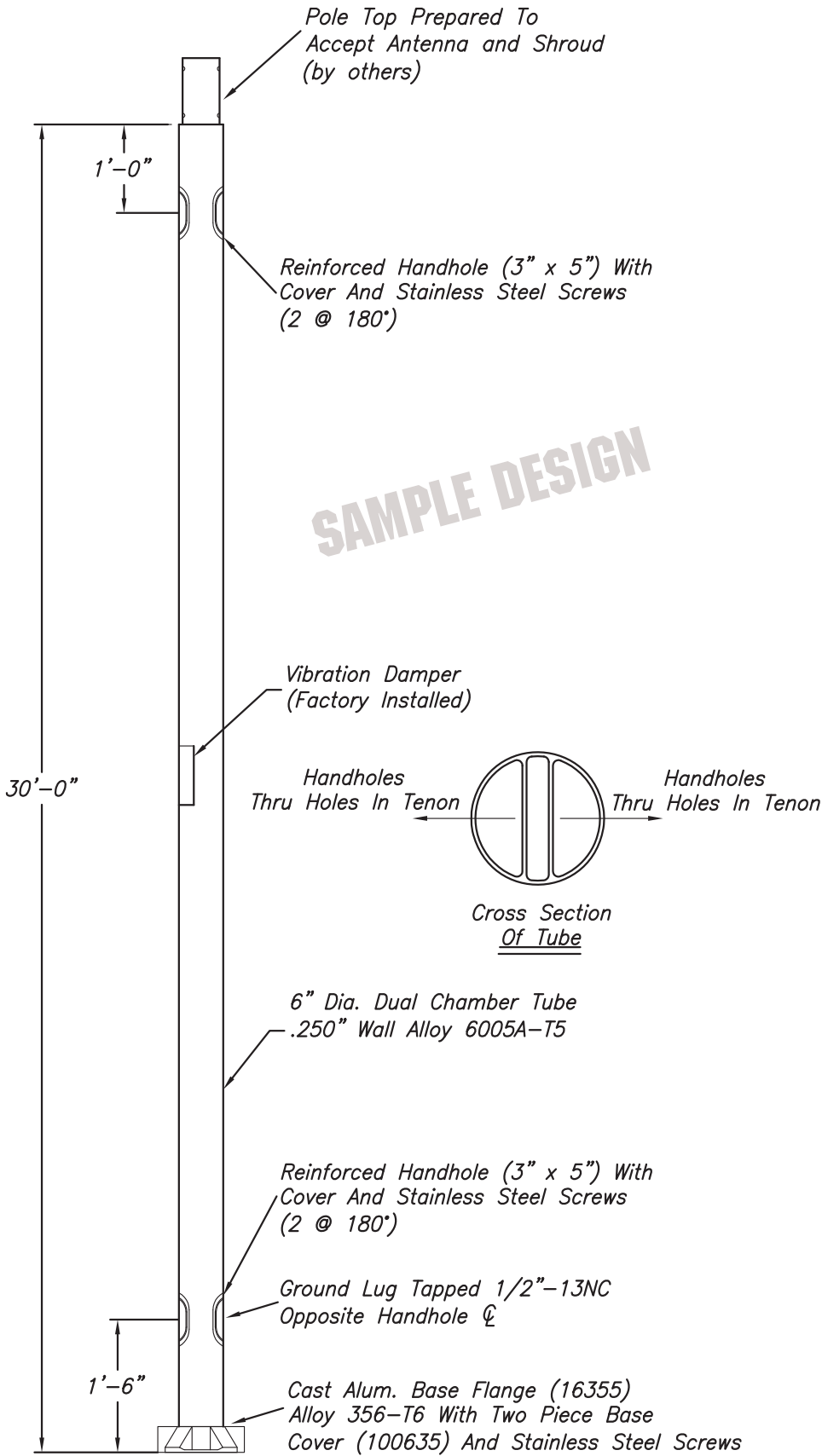
Shaft Material: Aluminum Alloy 6005A-T5

Wall Thickness: .250"

Butt Diameter: 6"

Mounting Height: 30'

Anchorage: 4-Bolt Base



SAMPLE DESIGN



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"

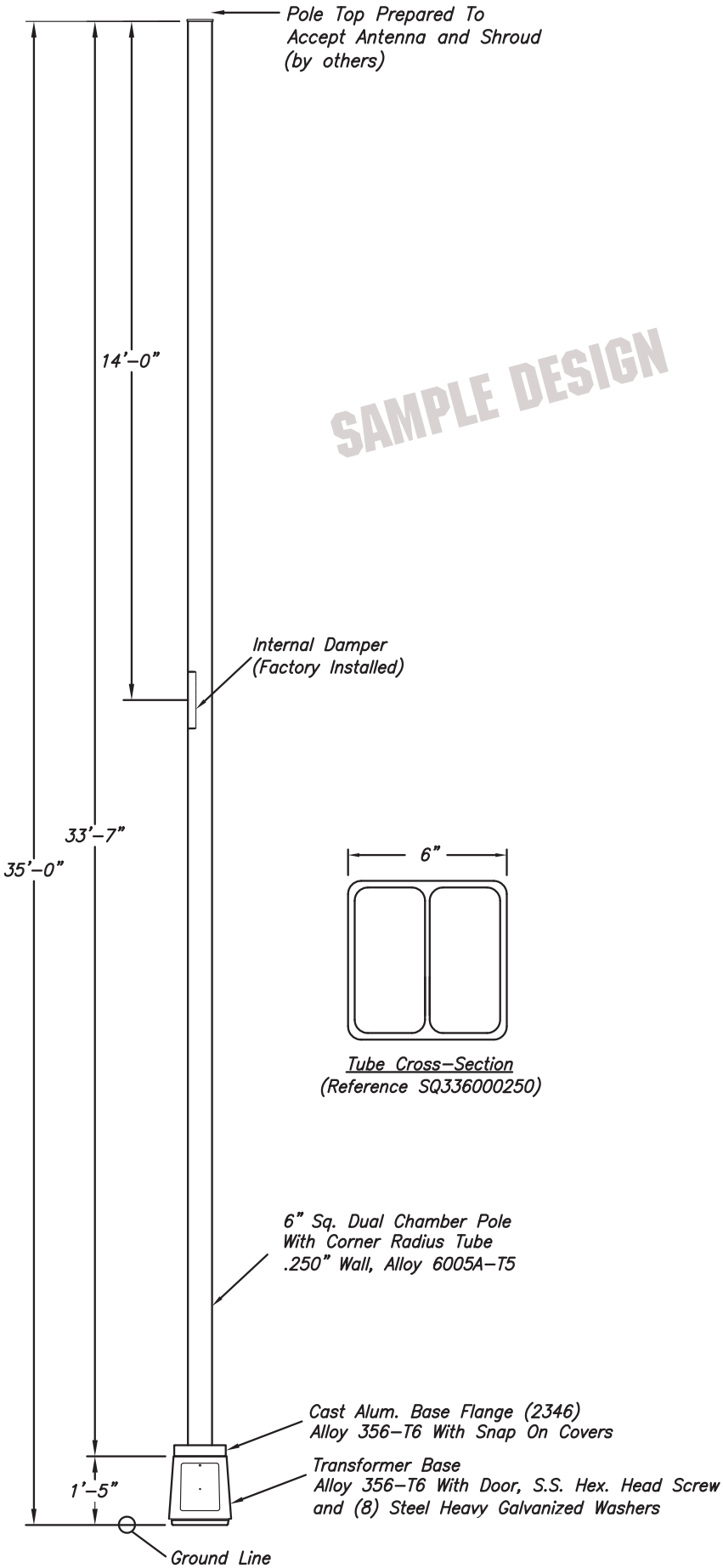
Base Design: T-Base

Base Material: Aluminum Alloy 356

Butt Square: 6"

Mounting Height: 35'

Anchorage: 4-Bolt T-Base



SAMPLE DESIGN



SMART TRAC
is the FOUNDATION
for tomorrow's
Smart Cities.



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.

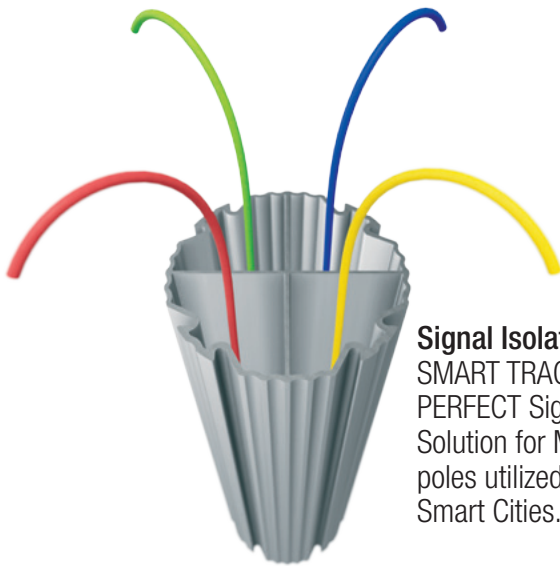


Transition Rings

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".



Signal Isolation Solution
 SMART TRAC is the PERFECT Signal Isolation Solution for Multi-Use poles utilized by today'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.



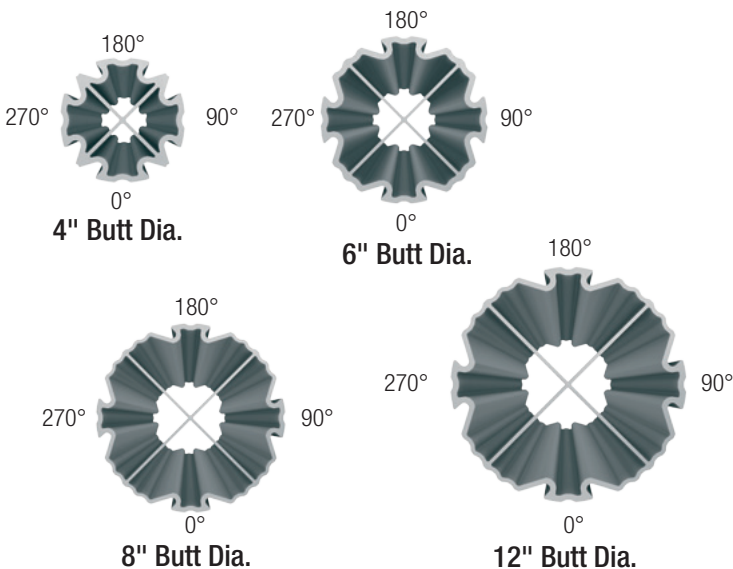
Handholes

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.



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

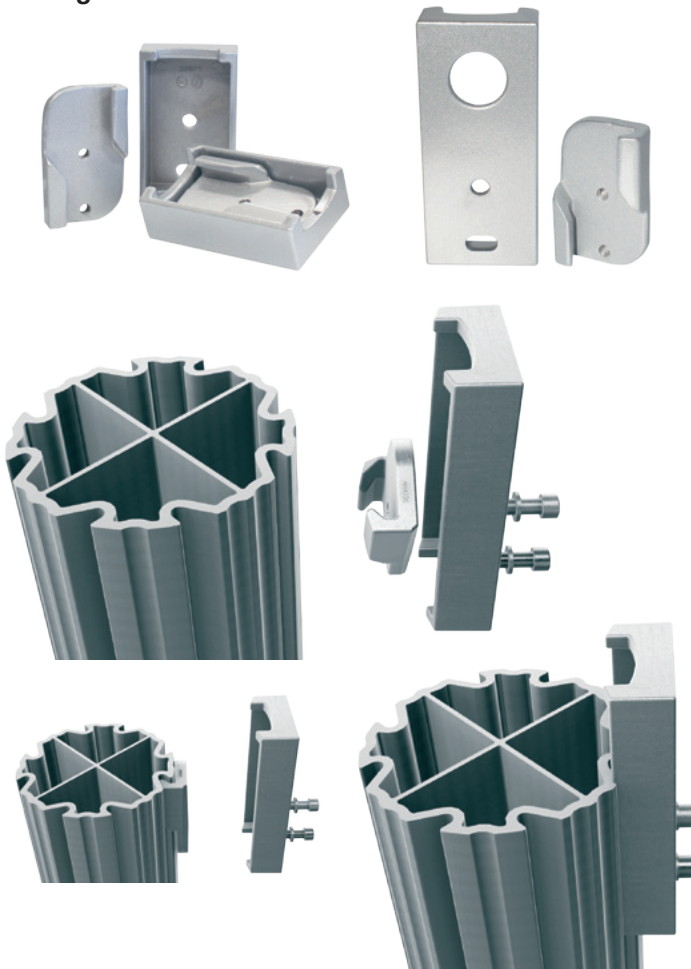
Hapco offers an extensive collection of 2-Piece Decorative Bases for use with all SMART TRAC pole designs. See Pages 30-31

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



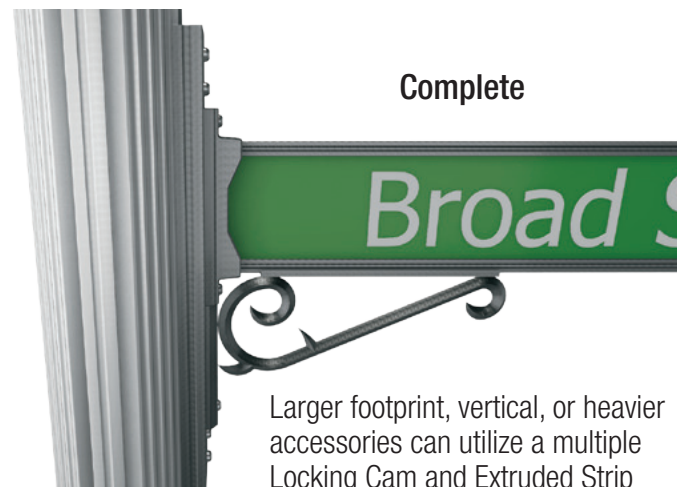
SMART TRAC's Heavy-Duty Bracket is designed for use with the most common arm designs and can be used in combinations for Truss Arms and Custom Designs. NO DRILLING of the pole is required, allowing jobsite placement and future movement.

Locking Cam with Extruded Strip Covers



Step One

Step Two



Complete

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

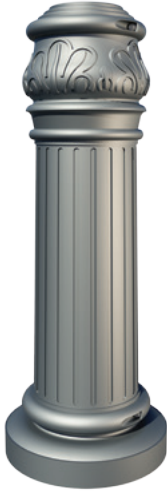
Custom Capabilities

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.



Redding

Diameter: 20"
Height: 3'-6"
6"-9" Butt Diameters



Staunton

Diameter: 16"
Height: 3'-6"
6"-8" Butt Diameters



Sterling

Width: 17"
Height: 1'-8"
4"-7" Butt Diameters



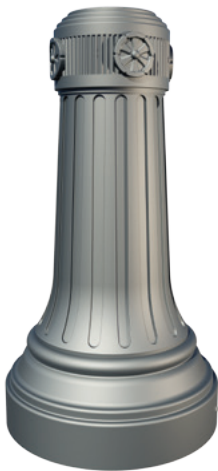
Yale

Diameter: 14"
Height: 2'-0"
4"-6" Butt Diameters



York 17"

Diameter: 17"
Height: 2'-5"
4"-6" Butt Diameters



York 20"

Diameter: 20"
Height: 3'-0"
6"-8" Butt Diameters



**York 24"
Non-Floral**

Diameter: 24"
Height: 3'-0"
7"-9" Butt Diameters



**York 24"
Floral Ring**

Diameter: 24"
Height: 3'-6"
6"-9" Butt Diameters



York Modified

Diameter: 24"
Height: 3'-11"
9"-12" Butt Diameters



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 AWS D1.2 Committee
 American Association of State Highway
 and Transportation Officials
 AASHTO NCHRP
 National Electrical Manufacturers Society
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 Accredited Standards Committee*

