

# AUSTIN ENERGY

## SPECIFICATION

### FOR

## LIGHTS, DIST, ST LIGHTS, CONGRESS AVENUE

| <b>DATE</b> | <b>PREPARED BY</b> | <b>ISSUANCE/REVISION</b> | <b>APPROVAL<br/>DIVISION MANAGER/STANDARDS<br/>MANAGER</b> |
|-------------|--------------------|--------------------------|--|
| 3/03/2015   | Dennis Patrick     | Issuance                 | _____  |
| 08/13/20    | Brantley Gosey     | Revision                 | _____  |

| <b>REASON FOR REVISION</b> |          | <b>AFFECTED PARAGRAPHS</b>              |
|----------------------------|----------|---|
| 3/03/2015                  | Issuance | All                                     |
| 08/13/2020                 | Revision | Add Barcoding Requirements Section 10.0 |

**AUSTIN ENERGY  
SPECIFICATION  
FOR  
CONGRESS AVENUE  
HISTORIC STREET LIGHTS**

**1.0 SCOPE AND CLASSIFICATION**

1.1 SCOPE

1.1.1 The City of Austin for the Electric Utility Department is hereinafter referred to as Austin Energy (AE). Manufacturers or firms supplying Congress Avenue street lights under these specifications shall have at a minimum of ten (10) years of experience in the manufacture and/or sale of historical lights.

1.1.2 The only material approved for the replacement of street light luminaires and bases is aluminum, and cast aluminum. The only material approved for the replacement of Congress Avenue Historic street light poles is steel. The pole styles include tapered and fluted.

1.2 CLASSIFICATION

Austin Energy will replace only those poles that are damaged beyond repair.

**2.0 APPLICABLE SPECIFICATIONS**

The light pole unit and all materials used in its manufacture except as specifically covered in this specification shall meet the requirements of the latest revision of AASHTO, ANSI, IES, and ASTM standards:

2.1 ANSI C136.2  
Roadway Lighting Luminaires - Voltage Classification.

2.2 ANSI C136.3  
Roadway Lighting Equipment Luminaire Attachments.

2.3 ANSI C136.10  
Roadway Lighting Equipment Locking Type Photo-Control Devices and Mating Receptacles, Physical and Electrical Interchangeability and Testing.

2.4 ANSI C136.25  
Roadway Lighting Equipment – Ingress Protection (IP 66)

2.5 ANSI C136.31  
Roadway Lighting Vibration – 3G Vibration Test

2.6 ANSI C136.37  
Roadway Lighting Equipment – Solid State Light Sources

2.7 ANSI C136.41  
Roadway and Area Lighting Equipment – Dimming Control Between an External Locking Type Photo-Control and Driver

2.8 ANSI C136.1110  
Roadway Lighting Equipment – Multiple Sockets.

- 2.9 ANSI/IES LM 79  
Electrical and Photometric Measurements of Solid-State Lighting Products.
- 2.10 ANSI/IES TM 15-11  
Luminaire Classification System for Outdoor Luminaires (B-U-G).
- 2.11 ANSI/IES LM-63  
Standard File Format for Electronic Transfer of Photometric Data and Related Information.
- 2.12 ASTM B26  
Standard Specification for Aluminum-Alloy Sand Castings
- 2.13 ASTM B179  
Standard Specification for Aluminum Alloys in Ingot and Molten Forms for Castings from All Casting Processes
- 2.14 ANSI/AWS D1.2  
Structural Welding Code – Aluminum

### **3.0 GENERAL**

- 3.1 Anchorage
  - 3.1.1 Included for each pole shall be a minimum of four steel anchor bolts, complete with double hex nuts and washers. Nuts, washers and threaded areas of anchor bolts shall be hot-dip galvanized to ASTM - A153. Anchor bolts shall be ASTM-F1554 grade 105.
- 3.2 Wind Resistance
  - 3.2.1 Entire luminaire, pole and arm assembly to be rated to withstand AASHTO requirements for 90 mile an hour wind load with a 30% gust factor.
- 3.3 Welds
  - 3.3.1 All welds shall meet the requirements of AWS D1.1.
- 3.4 Material Certification
  - 3.4.1 Material certifications shall be provided for all ASTM numbers referred to in this specification.
- 3.5 Factory Certification
  - 3.5.1 In order to insure proper procedures are followed in the manufacture of all structural members, the fabrication of the traffic mast arm and pole assemblies shall be done in a plant certified to the American Institute of Steel Construction (AISC).

### **4.0 POLE**

- 4.1 The 16 flute pole shaft shall have an 11in bottom x 6.8in top x 30ft and shall be fabricated from a minimum of 2 ply 7-gauge (.3586) steel. The shaft shall have no externally visible longitudinal welds. The steel shall meet the chemical and physical properties of ASTM-A595 grade A, with a 55,000 psi minimum yield. The cross section of the shaft shall have 16 sharp flutes. The shaft shall be one piece construction with a continuous taper of .14” per foot. Aluminum is not acceptable for the pole.

- 4.2 The base plate shall conform to A572 grade 50. It shall telescope the shaft and be attached by means of two continuous welds. One shall be on the inside of the base at the bottom of the shaft; the other on the outside at the top of the base. The base plate shall be arranged to accept (4) 1.5in diameter anchor bolts on a 15in bolt circle.
- 4.3 The pole shaft shall be furnished with a 4in x 6.5in length reinforcing hand hole frame and a ½” –13 UNC grounding provision.
- 4.4 The pole will have a decorative UMC 70J cast aluminum pole top and be secured with (3) set screws; on the top plate.
- 4.5 Each pole shall include (4) ¾in couplings for (4) ¾in schedule 80 steel banner arms to support 2 banners by others. The pole will also include a recessed 20amp 120volt duplex receptacle with waterproof cover. The pole will include (1) B86 design steel span wire clamp located at 26ft from ground. All items are to be coated the exact color to match pole.

## **5.0 ORNAMENTAL BASE ASSEMBLY**

- 5.1 The base shall be Union Metal Austin Design base number 97-18 and shall conform to the requirements of ASTM B26 aluminum. It shall be a 2-piece split (clam shell) design with two (2) removable doors at 180 degrees. Access plate of the base shall be of same alloy aluminum as base. The access plate shall be held secure with tamper resistant stainless steel bolts.
- 5.2 The base shall be a minimum of 37.5 inches in height and 18.5 inches in diameter at the bottom.
- 5.3 The base shall be one piece cast and saw cut equally in halves and fitted together to provide a hairline seam when assembled. All ornamentation must be cast as part of the base and not added by means of mechanical attachment or welding.
- 5.4 The base casting shall fit securely around the round pole and shall be connected internally by stainless steel pins, bolts, nuts and washers. The base opening shall match the contour round pole, as required.
- 5.5 The foundation surface (by others) must be level in order to accept the base assembly.
- 5.6 The base casting must be such that there is no gap of any kind between where the base meets the pole at the top of the base.

## **6.0 LUMINAIRE ARM**

- 6.1 The luminaire arm shall be fabricated from 2in schedule 40 steel pipe and extend 8ft from pole shaft. The clamp on arm will be secured to the pole with a back clamp mounted with (4) 5/8in carriage bolts & hex nuts.

## **7.0 LUMINAIRES**

- 7.1 The manufacturer shall only use approved materials.
- 7.2 The approved materials shall include the following:
  - 7.2.1 Paint
    - 7.2.1.1 Bidders shall use an exact equal to the present color of the Congress Avenue street light poles.
    - 7.2.1.2 All poles shall be coated with solid colors and lead free. The paint color will be an exact equal to the present color of the Congress Avenue street light poles.
    - 7.2.1.3 Warranty on Paint Finish  
The vendor shall warranty the paint finish for a minimum period of five (5) years.
    - 7.2.1.4 Touch-up Paint Kit

Upon bid award, the vendor shall provide for every twenty five (25) historical poles shipped to Austin Energy, a can of spray touch-up paint to be used to touch up any scratches.

- 7.2.2 Pole, pole base covers and luminaire fixtures  
Acceptable pole bases include two-piece solidly formed bases.
- 7.2.3 Pole Shaft  
Aluminum pole shafts shall be cleaned and painted.
- 7.2.4 Style and Luminaire Fixture
  - 7.2.4.1 The luminaire fixture shall be constructed of precision die cast aluminum with an extruded aluminum heat-sink element. The fixture shall enclose the slip fitter, LED's, Surge Protective Device (SPD), and driver components. These components shall be mounted to the fixture by means of a quick disconnect for ease of maintenance.
  - 7.2.4.2 The fixture shall be adequately enclosed with a metal wildlife guard to prevent entrance of birds in the electrical connection area and insects in the lamp area.
  - 7.2.4.3 The upper and lower sections of the fixture shall be joined by an integrally cast hinge pin at the mounting end with a positive spring loaded latch or a stainless steel bail at the latch end.
- 7.3 The hinge shall hold the lower section firmly in place when closed and shall be designed so that the lower section, when free-swinging, will not accidentally disengage.
- 7.4 The latch shall secure the lower section of the fixture to the upper one, permit access to the lamp and electrical connection compartment and be operable with protective gloves but without tools.
- 7.5 Provisions shall be made within the luminaire to permit leveling of the unit.
- 7.6 A leveling bubble device shall be mounted so as to be viewable from ground level. All screws, nuts, bolts washers and clips shall be stainless steel and painted if required.
- 7.7 The luminaire fixture shall be sufficiently sized to allow the operation of all components within their designed operating temperatures.
- 7.8 The complete luminaire shall have an effective projected area (EPA) not to exceed 1.5 sq. ft. and weight (including lamp) of less than 35 lbs.
- 7.9 Color of the luminaire shall be an exact match to the pole color and be a polyester powder coat finish. The coating needs to be applied only to the outside of the fixture.
- 7.10 Materials and protective coatings used for the luminaire assembly, including but not limited to screws, bolts, latches, hinges and mounting assembly shall individually and as a system be resistant to atmospheric conditions, including the corrosive and erosive action of conditions of service encountered in industrial and seaboard areas. All screws, bolts, latches and hinges shall be made of stainless steel.
- 7.11 The optics enclosure of the fixture, driver, and the Surge Protective Device (SPD) shall be rated IP 66 or better.
- 7.12 US, UL, DLC QPL, outdoor and wet listed.
- 7.13 Slipfitter
  - 7.13.1 The slipfitter shall be capable of accepting a 1-1/4 in. through 2 in. od pipe tenon with maximum allowable insertion lengths of 7-1/2 and 10 in. respectively, in accordance with table 2 of ANSI C136.3 latest revision thereof.
  - 7.13.2 The slipfitter shall provide a shoulder or stop to limit the depth of insertion of the pipe tenon during installation.

- 7.13.3 The slipfitter shall have provisions for clamping the luminaire securely to the tenon and for leveling through no less than three (3) degrees from the axis of the attachment with respect to the horizontal.
- 7.13.4 The slipfitter shall be equipped with a fixed in place metal wildlife guard capable of accepting both 1-1/4 in. and 2 in. Tenons.
- 7.13.5 Slipfitter shall be secured to the mast arm by a minimum of two (2) bolts or threaded studs for secure mounting.

#### 7.14 Photometrics

##### 7.14.1 250 Watt Equivalent LED Photo Metrics

- 7.14.1.1 The 250-Watt equivalent led mast arm mounted luminaire shall be IES up-light rating U0 and, when mounted 30 feet above the midpoint of either long side of a rectangular area 160 feet by 40 feet, shall provide a measured minimum intensity of 0.2 foot-candle at any point on the surface of the area with an average of 0.60 foot-candles or greater. Light intensities measured in foot-candles along a line parallel to and 20 feet in from the long side of the previously defined rectangular area above, which the luminaire is mounted, shall decrease at a rate not to exceed 0.5 foot-candle in any 10 foot interval along the aforementioned line from 10 to 80 feet on both sides of the luminaire, and shall not be less than 0.3 foot-candle at any point along such line. Grid point spaced according to IESNA RP-8 for a roadway with four 10 foot lanes.
- 7.14.1.2 The maximum to minimum horizontal illuminance uniformity ratio shall not exceed 20:1 within the above mentioned rectangular area.
- 7.14.1.3 The average to minimum ratio shall not exceed 3.0:1 within the above mentioned roadway area.
- 7.14.1.4 The luminaires shall meet the photometric requirements shown above, when energized at 100 percent of rated line voltage. Tests shall be run with the fixture in the level position.
- 7.14.1.5 The bidder shall provide certified test reports at the time of submittal for the 250 watt equivalent led fixture, showing compliance to the specifications described herein. These test reports shall include, but not be limited to IES files and ISO ft.-candle contours with numeric points of light expressed in ft.-candles associated with each contour. The ISO ft.-candle contour shall be mapped on the horizontal planes with the location of the fixture clearly marked.
- 7.14.1.6 The luminaries shall have a power factor > 0.90.
- 7.14.1.7 The luminaries shall have a color temperature of 4000K, plus or minus 275K.
- 7.14.1.8 The luminaries shall have a nominal CRI > 70 and a minimum CRI > 65.
- 7.14.1.9 The luminaries shall have an efficacy of 92 LM/W or better.
- 7.14.1.10 Fixture shall have > 92% lumen maintenance at 60,000 hours of minimum operational life at an average operating time of 11.5 hours per night at an ambient of 40 degrees Celsius.
- 7.14.1.11 Light Loss Factor (LLF) as calculated in section 8.0.

#### 7.15 Luminaire Up-Light

- 7.15.1 All luminaires shall be U0 with no light above 90 degrees per the photometric requirements listed above. Luminaire shall have a B-U-G rating with an up-light value of U0.

- 7.16 Individual LED's shall be constructed such that a catastrophic loss or failure of one LED will not result in the loss of the entire fixture.

## 8.0 LIGHT LOSS FACTOR CALCULATION

- 8.1 Calculations shall be for maintained values, i.e. Light Loss Factor (LLF) < 1.0, where Light Loss Factor (LLF) = Lamp Lumen Depreciation (LLD) X Lamp Lumen Depreciation (LDD) X Luminaire Ambient Temperature Factor (LATF), AND
- 8.1.1 Lamp Lumen Depreciation (LLD) factor shall be provided in the manufacturer's documentation per TM-21 calculations.
  - 8.1.2 Luminaire Dirt Depreciation (LDD) = 0.90, as per IES DG-4 for an enclosed and gasketed roadway luminaire, installed in an environment with less than 150 µg/m<sup>3</sup> airborne particulate matter and cleaned every four years.
  - 8.1.3 Luminaire Ambient Temperature Factor (LATF) = 1.00.
- 8.2 Terminal Board
- 8.2.1 The terminal board shall be a three (3) position type molded plastic; porcelain or buyer approved equivalent material with protective barriers between each contact the terminal board shall be mounted to the upper fixture section of the luminaire.
  - 8.2.2 All contact on the terminal board shall be captive type corrosion resistant with slotted head screws and equipped with wire grips and capable of accepting number 6 to number 14 awg stranded or solid aluminum or copper conductors.
  - 8.2.3 The terminal board shall be located so that there is adequate accessibility to it for connecting the supply leads when wearing rubber protective gloves and without the removal or replacement of internal components.
  - 8.2.4 Components shall be pre-wired to the terminal board requiring only power connection to clearly identified terminals. A green insulated #12 stranded wire shall be prewired from the housing ground terminal to the ground terminal on the terminal board. Ring terminals shall be used for the connecting of the wire. The wiring diagram shall be permanent, apparent, legible, and affixed inside the luminaire. The diagram shall indicate the photoelectric receptacle, SPD and driver circuit, the led board and coded terminal block connections.
  - 8.2.5 All wire shall be insulated at a minimum to operate at 125 degrees centigrade.
  - 8.2.6 All wire connectors shall be made with "amp type" push on terminal connectors. Wire nuts are unacceptable.
- 8.3 Photoelectric Control Receptacle
- 8.3.1 Photoelectric control receptacle shall be molded plastic and shall be capable of securely positioning the photoelectric control in any necessary direction.
  - 8.3.2 Electric contacts of the photoelectric control receptacle shall be tin plated bronze. Plated steel contacts are not acceptable.
  - 8.3.3 Photoelectric control receptacle shall meet all applicable provisions of ANSI C136.10 and ANSI C136.41, latest revision.
  - 8.3.4 Receptacle shall be 7 pole, 7 wire, 7 pin, locking type, and shall be pre wired to the terminal board.
  - 8.3.5 Receptacle shall be Roam compatible with integral dimming control capabilities.

#### 8.4 Driver/Surge Protector Device (SPD)

8.4.1 Fixture driver shall be dimmable and compatible with Roam lighting control system.

8.4.2 The 120V, 10kA surge protection device (SPD) shall meet or exceed ANSI C136.2 10kV BIL, UL 1449 and ANSI/IEEE C 62.41-2002 category C high exposure; MVolt surge protection shall meet or exceed category C. Surge protection shall be separate from the driver. If the SPD should fail in such a way, the luminaries will no longer operate and the SPD shall be field replaceable

### 9.0 FINISH

9.1 Materials and protective coatings used for the luminaire assembly, including but not limited to screws, bolts, latches, hinges and mounting assembly shall individually and as a system be resistant to atmospheric conditions, including the corrosive and erosive action of conditions of service encountered in industrial and seaboard areas. All screws, bolts, latches and hinges shall be made of stainless steel.

9.2 Finish/Paint shall have a five (5) year warranty.

9.3 All primer and paint shall be lead-free. The enclosure security and coating system shall be as per IEEE C57.12.28, as a minimum requirement.

### 10.0 BARCODE / IDENTIFICATION

10.1 The nameplate shall contain a permanent bar code that meets the following requirements:

Information: The bar code shall display the Manufacturer Identification Code and manufacturer's serial number.

Durability: The bar code shall last the lifetime of the lighting fixture. The bar code shall be constructed such that, when using a contact-type bar code reader, the bar code shall be capable of a minimum of thirty successful scans. Dimensions: The height of the bar code shall be either 0.24 inches or 15% of the barcode length (L); whichever is greater.

Character Size: The bar code print quality shall be in accordance with ANSI X3.182. The permanent bar code shall be of medium density.

Bar Code Symbology: The bar code symbology shall be Code 39, also referred to as 3-of-9 bar code, using the 43- character ASCII set, in accordance with ANSI X3.4.

Orientation of the Bar Code Characters: The bar code characters shall be arranged in one line).

Quiet Zones: A minimum quite zone of 0.25" shall immediately precede and follow the bar codes.

Human-Readable Interpretation: A human-readable interpretation line shall be provided directly beneath the bar code, in accordance with ANSI MH10.8M. The interpretation of the 3-of-9 bar code shall be clearly identifiable with the bar-code symbol above. The preferred shapes of the human-readable interpretation shall conform to either ANSI X3.17 or ANSI X3.49. As an alternative, any human-readable font with characters no less than 3/32" in height is acceptable

Manufacturers shall permanently attach the following information to the inside wall of the upper or main housing and in the barcode:

10.1.1 Manufacturers name

10.1.2 Manufacturers catalog number and type

10.1.3 Date of manufacturer (Codes are not accepted)



- 10.1.4 Lamp Wattage
  - 10.1.5 Lamp IES designation and type
  - 10.1.6 Primary voltage
  - 10.1.7 Primary current
  - 10.1.8 Wiring diagram corresponding to the components installed.
  - 10.1.9 Lamp Lux Level
  - 10.1.10 Lamp efficacy
- 10.2 Fixture wattage decal shall be specified as in ANSI C136.15, latest revision. Decal shall resist cracking, peeling, and fading for a period of ten (10) years.
- 10.3 LUMINAIRE WATTAGE MARKING LOCATION SHALL BE SECURED TO THE UNDERSIDE OF THE LUMINAIRE, APPROXIMATELY FIVE (5) INCHES TOWARD THE POLE FROM THE EDGE OF THE GLASSWARE

### ATTACHMENT

### I

| 077   | U.S.G. DESIGN No.<br><b>50055-895-71</b>                          | NON HEIGHT<br><b>36'-0"</b> | PIPE SIZE<br><b>7+3F-11.00" c 8.00" ± .30"-0"</b> |  |                         |  |               |   |            |                |          |                 |                |   |                |            |              |                 |                   |                         |            |                       |                |                  |                    |                  |                  |                  |                  |                |                 |                      |
|---|---|-----------------------------|---|--|-------------------------|--|---------------|---|------------|----------------|----------|-----------------|----------------|---|----------------|------------|--------------|-----------------|-------------------|-------------------------|------------|-----------------------|----------------|------------------|--------------------|------------------|------------------|------------------|------------------|----------------|-----------------|----------------------|
| <p>7+3F = 0.005" WALL THICKNESS, 10 PLAYS, 0.14 IN/IN TAPER</p> <p>36'-0" NON HEIGHT WITH HANDLE</p> <p>36'-0" NON HEIGHT</p>   |   |                             |   | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="2">MATERIAL SPECIFICATIONS</th> </tr> <tr> <td>ERECTOR TUBES</td> <td>CANONICAL &amp; PHYSICAL PROPERTIES OF ASTM-A365 OR A</td> </tr> <tr> <td>BASE PLATE</td> <td>ASTM-A372 BR80</td> </tr> <tr> <td>POLE TOP</td> <td>ASTM-A36 (360F)</td> </tr> <tr> <td>HANDSILE FRAME</td> <td>ASTM-A365 GR 50 (PREFERRED) OR ASTM-A372 GR 60 OR ASTM-A378 GR 60</td> </tr> <tr> <td>HANDSILE COVER</td> <td>ASTM-A1011</td> </tr> <tr> <td>REDUCED BASE</td> <td>ASTM-A36 (360F)</td> </tr> <tr> <td>BRAC ALUM CASTING</td> <td>ASTM-A36 (360F DR 210F)</td> </tr> <tr> <td>STEEL PIPE</td> <td>ASTM-A501 OR A57 OR A</td> </tr> <tr> <td>HANDSILE BOLTS</td> <td>ASTM-A307 OR 102</td> </tr> <tr> <td>HANDSILE BOLT NUTS</td> <td>ASTM-A307 OR 101</td> </tr> <tr> <td>STEEL WIRE CLAMP</td> <td>A36-A372 (10-60)</td> </tr> <tr> <td>STRUCTURE FINISH</td> <td>PER BRAC COVER</td> </tr> <tr> <td>HANDSILE FINISH</td> <td>AS ONLY TO ASTM-A133</td> </tr> </table> <p><b>DESIGN CRITERIA:</b></p> <ol style="list-style-type: none"> <li>DESIGNED IN ACCORDANCE WITH THE 1989 AASHTO BRIDGE SPECIFICATIONS FOR STRUCTURAL STEELWORK FOR HIGHWAY BRIDGE, LANIWAYARDS, AND TRAFFIC SIGNALS FOR 80 M.P.H. WIND ZONE.</li> <li>HANDSILE BOLTS ANALYZED FOR STEEL STRENGTH ONLY, THE HANOSILE BOLT ELONGATION LENGTH SHOWN ON THIS DRAWING SHALL BE MINIMUM BY THE FOUNDATION ENGINEER.</li> <li>THE EXPOSED LENGTH OF THE HANOSILE BOLT BETWEEN THE TOP OF THE FOUNDATION AND THE BOTTOM OF THE LAMINATE BOLT SHOULD NOT EXCEED ONE BOLT DIAMETER.</li> <li>CUSTOMER TO CLARIFY OBSERVATIONS &amp; MOUNTING HEIGHTS BEFORE PROCEEDING ORDER FOR MANUFACTURING.</li> </ol> | MATERIAL SPECIFICATIONS |  | ERECTOR TUBES | CANONICAL & PHYSICAL PROPERTIES OF ASTM-A365 OR A | BASE PLATE | ASTM-A372 BR80 | POLE TOP | ASTM-A36 (360F) | HANDSILE FRAME | ASTM-A365 GR 50 (PREFERRED) OR ASTM-A372 GR 60 OR ASTM-A378 GR 60 | HANDSILE COVER | ASTM-A1011 | REDUCED BASE | ASTM-A36 (360F) | BRAC ALUM CASTING | ASTM-A36 (360F DR 210F) | STEEL PIPE | ASTM-A501 OR A57 OR A | HANDSILE BOLTS | ASTM-A307 OR 102 | HANDSILE BOLT NUTS | ASTM-A307 OR 101 | STEEL WIRE CLAMP | A36-A372 (10-60) | STRUCTURE FINISH | PER BRAC COVER | HANDSILE FINISH | AS ONLY TO ASTM-A133 |
| MATERIAL SPECIFICATIONS   |   |                             |   |  |                         |  |               |   |            |                |          |                 |                |   |                |            |              |                 |                   |                         |            |                       |                |                  |                    |                  |                  |                  |                  |                |                 |                      |
| ERECTOR TUBES   | CANONICAL & PHYSICAL PROPERTIES OF ASTM-A365 OR A                 |                             |   |  |                         |  |               |   |            |                |          |                 |                |   |                |            |              |                 |                   |                         |            |                       |                |                  |                    |                  |                  |                  |                  |                |                 |                      |
| BASE PLATE  | ASTM-A372 BR80  |                             |   |  |                         |  |               |   |            |                |          |                 |                |   |                |            |              |                 |                   |                         |            |                       |                |                  |                    |                  |                  |                  |                  |                |                 |                      |
| POLE TOP  | ASTM-A36 (360F)   |                             |   |  |                         |  |               |   |            |                |          |                 |                |   |                |            |              |                 |                   |                         |            |                       |                |                  |                    |                  |                  |                  |                  |                |                 |                      |
| HANDSILE FRAME  | ASTM-A365 GR 50 (PREFERRED) OR ASTM-A372 GR 60 OR ASTM-A378 GR 60 |                             |   |  |                         |  |               |   |            |                |          |                 |                |   |                |            |              |                 |                   |                         |            |                       |                |                  |                    |                  |                  |                  |                  |                |                 |                      |
| HANDSILE COVER  | ASTM-A1011  |                             |   |  |                         |  |               |   |            |                |          |                 |                |   |                |            |              |                 |                   |                         |            |                       |                |                  |                    |                  |                  |                  |                  |                |                 |                      |
| REDUCED BASE  | ASTM-A36 (360F)   |                             |   |  |                         |  |               |   |            |                |          |                 |                |   |                |            |              |                 |                   |                         |            |                       |                |                  |                    |                  |                  |                  |                  |                |                 |                      |
| BRAC ALUM CASTING   | ASTM-A36 (360F DR 210F)   |                             |   |  |                         |  |               |   |            |                |          |                 |                |   |                |            |              |                 |                   |                         |            |                       |                |                  |                    |                  |                  |                  |                  |                |                 |                      |
| STEEL PIPE  | ASTM-A501 OR A57 OR A   |                             |   |  |                         |  |               |   |            |                |          |                 |                |   |                |            |              |                 |                   |                         |            |                       |                |                  |                    |                  |                  |                  |                  |                |                 |                      |
| HANDSILE BOLTS  | ASTM-A307 OR 102  |                             |   |  |                         |  |               |   |            |                |          |                 |                |   |                |            |              |                 |                   |                         |            |                       |                |                  |                    |                  |                  |                  |                  |                |                 |                      |
| HANDSILE BOLT NUTS  | ASTM-A307 OR 101  |                             |   |  |                         |  |               |   |            |                |          |                 |                |   |                |            |              |                 |                   |                         |            |                       |                |                  |                    |                  |                  |                  |                  |                |                 |                      |
| STEEL WIRE CLAMP  | A36-A372 (10-60)  |                             |   |  |                         |  |               |   |            |                |          |                 |                |   |                |            |              |                 |                   |                         |            |                       |                |                  |                    |                  |                  |                  |                  |                |                 |                      |
| STRUCTURE FINISH  | PER BRAC COVER  |                             |   |  |                         |  |               |   |            |                |          |                 |                |   |                |            |              |                 |                   |                         |            |                       |                |                  |                    |                  |                  |                  |                  |                |                 |                      |
| HANDSILE FINISH   | AS ONLY TO ASTM-A133  |                             |   |  |                         |  |               |   |            |                |          |                 |                |   |                |            |              |                 |                   |                         |            |                       |                |                  |                    |                  |                  |                  |                  |                |                 |                      |
| <p><b>7/16" DIA. HOLES FOR</b><br/><b>(2) 3/16"x2" OUTER PMS</b></p> <p><b>1/4" THK CLEVIS</b><br/><b>1 3/8" HOLE FOR 1" BRAC BRACKET 1/4" LB</b></p> <p><b>3/4" DIA. U-BOLT WITH HEX NUTS</b></p> <p><b>3/16" STL CLAMP</b></p> <p><b>1 1/8" DIA. HOLES FOR (2) 3/16"x2" OUTER PMS</b></p> <p><b>1/4" THK CLEVIS</b><br/><b>1 3/8" HOLE FOR 1" BRAC BRACKET 1/4" LB</b></p> <p><b>2 1/2" x 1 1/4"</b></p> <p><b>SEE DIA. DIM-1-G237</b></p>  |   |                             |   | <p><b>1/4" PLATE</b></p> <p><b>3/16" DIA.</b></p> <p><b>3/16" DIA.</b></p> <p><b>1-HOLE</b></p> <p><b>TOP OF POLE DETAIL (DESCRIPTION OF "LOOK AS REQUIRED"</b></p> <p><b>6"x8 1/2" HANOSILE RFTY REINFORCED FRAME w/ 3" EA COVER (SEE DETAIL)</b></p> <p><b>SEE WELD DETAIL</b></p> <p><b>3 1/2"</b></p> <p><b>(1) 1 1/2"x3/8" ANCHOR BOLTS TO 1/4" PRELID WITH (2) NUT NUTS</b></p> <p><b>18" DIA</b></p> <p><b>10 3/4" DIA</b></p> <p><b>10 3/4" DIA</b></p> <p><b>10 3/4" DIA</b></p> <p><b>10 3/4" DIA</b></p> <p><b>BASE PLATE DETAIL</b></p> <p><b>10 3/4" DIA</b></p> <p><b>10 3/4" DIA</b></p> <p><b>10 3/4" DIA</b></p>  |                         |  |               |   |            |                |          |                 |                |   |                |            |              |                 |                   |                         |            |                       |                |                  |                    |                  |                  |                  |                  |                |                 |                      |
| <p><b>1 1/8" THK BACK-UP BAR TO SECURE HANDSILE COVER</b></p> <p><b>13 EA COVER WITH 1/4"-20X10 B.S. HANOSILE SURFACE</b></p> <p><b>GROUNDING PROVISION RMT RETAINER C54778 WELDED TO HANDSILE FRAME W/ 1/2"-13X10 S.S. 90 DEG &amp; S.S. HEX BOLT 3/8" LC</b></p> <p><b>1 1/8" DIA. HANOSILE FRAME BOLT</b></p> <p><b>3/4" DIA. U-BOLT WITH HEX NUTS</b></p> <p><b>1 1/8" THK CLEVIS</b></p> <p><b>1 3/8" HOLE FOR 1" BRAC BRACKET 1/4" LB</b></p> <p><b>2 1/2" x 1 1/4"</b></p> <p><b>SEE DIA. DIM-1-G237</b></p> |   |                             |   | <p><b>3/4" DIA. U-BOLT WITH HEX NUTS</b></p> <p><b>1 1/8" THK CLEVIS</b></p> <p><b>1 3/8" HOLE FOR 1" BRAC BRACKET 1/4" LB</b></p> <p><b>2 1/2" x 1 1/4"</b></p> <p><b>SEE DIA. DIM-1-G237</b></p> <p><b>1/4" THK CLEVIS</b></p> <p><b>1 3/8" HOLE FOR 1" BRAC BRACKET 1/4" LB</b></p> <p><b>2 1/2" x 1 1/4"</b></p> <p><b>SEE DIA. DIM-1-G237</b></p>   |                         |  |               |   |            |                |          |                 |                |   |                |            |              |                 |                   |                         |            |                       |                |                  |                    |                  |                  |                  |                  |                |                 |                      |
| <p><b>36'-0" NON HEIGHT WITH HANDLE</b></p> <p><b>36'-0" NON HEIGHT</b></p> <p><b>12'-0" DIA</b></p> <p><b>3" DIA</b></p> <p><b>1 1/8" THK CLEVIS</b></p> <p><b>1 3/8" HOLE FOR 1" BRAC BRACKET 1/4" LB</b></p> <p><b>2 1/2" x 1 1/4"</b></p> <p><b>SEE DIA. DIM-1-G237</b></p>   |   |                             |   | <p><b>1/4" THK CLEVIS</b></p> <p><b>1 3/8" HOLE FOR 1" BRAC BRACKET 1/4" LB</b></p> <p><b>2 1/2" x 1 1/4"</b></p> <p><b>SEE DIA. DIM-1-G237</b></p>  |                         |  |               |   |            |                |          |                 |                |   |                |            |              |                 |                   |                         |            |                       |                |                  |                    |                  |                  |                  |                  |                |                 |                      |
| <p><b>1 1/8" THK CLEVIS</b></p> <p><b>1 3/8" HOLE FOR 1" BRAC BRACKET 1/4" LB</b></p> <p><b>2 1/2" x 1 1/4"</b></p> <p><b>SEE DIA. DIM-1-G237</b></p>   |   |                             |   | <p><b>1 1/8" THK CLEVIS</b></p> <p><b>1 3/8" HOLE FOR 1" BRAC BRACKET 1/4" LB</b></p> <p><b>2 1/2" x 1 1/4"</b></p> <p><b>SEE DIA. DIM-1-G237</b></p>  |                         |  |               |   |            |                |          |                 |                |   |                |            |              |                 |                   |                         |            |                       |                |                  |                    |                  |                  |                  |                  |                |                 |                      |
| <p><b>1 1/8" THK CLEVIS</b></p> <p><b>1 3/8" HOLE FOR 1" BRAC BRACKET 1/4" LB</b></p> <p><b>2 1/2" x 1 1/4"</b></p> <p><b>SEE DIA. DIM-1-G237</b></p>   |   |                             |   | <p><b>1 1/8" THK CLEVIS</b></p> <p><b>1 3/8" HOLE FOR 1" BRAC BRACKET 1/4" LB</b></p> <p><b>2 1/2" x 1 1/4"</b></p> <p><b>SEE DIA. DIM-1-G237</b></p>  |                         |  |               |   |            |                |          |                 |                |   |                |            |              |                 |                   |                         |            |                       |                |                  |                    |                  |                  |                  |                  |                |                 |                      |
| <p><b>1 1/8" THK CLEVIS</b></p> <p><b>1 3/8" HOLE FOR 1" BRAC BRACKET 1/4" LB</b></p> <p><b>2 1/2" x 1 1/4"</b></p> <p><b>SEE DIA. DIM-1-G237</b></p>   |   |                             |   | <p><b>1 1/8" THK CLEVIS</b></p> <p><b>1 3/8" HOLE FOR 1" BRAC BRACKET 1/4" LB</b></p> <p><b>2 1/2" x 1 1/4"</b></p> <p><b>SEE DIA. DIM-1-G237</b></p>  |                         |  |               |   |            |                |          |                 |                |   |                |            |              |                 |                   |                         |            |                       |                |                  |                    |                  |                  |                  |                  |                |                 |                      |
| <p><b>1 1/8" THK CLEVIS</b></p> <p><b>1 3/8" HOLE FOR 1" BRAC BRACKET 1/4" LB</b></p> <p><b>2 1/2" x 1 1/4"</b></p> <p><b>SEE DIA. DIM-1-G237</b></p>   |   |                             |   | <p><b>1 1/8" THK CLEVIS</b></p> <p><b>1 3/8" HOLE FOR 1" BRAC BRACKET 1/4" LB</b></p> <p><b>2 1/2" x 1 1/4"</b></p> <p><b>SEE DIA. DIM-1-G237</b></p>  |                         |  |               |   |            |                |          |                 |                |   |                |            |              |                 |                   |                         |            |                       |                |                  |                    |                  |                  |                  |                  |                |                 |                      |
| <p><b>1 1/8" THK CLEVIS</b></p> <p><b>1 3/8" HOLE FOR 1" BRAC BRACKET 1/4" LB</b></p> <p><b>2 1/2" x 1 1/4"</b></p> <p><b>SEE DIA. DIM-1-G237</b></p>   |   |                             |   | <p><b>1 1/8" THK CLEVIS</b></p> <p><b>1 3/8" HOLE FOR 1" BRAC BRACKET 1/4" LB</b></p> <p><b>2 1/2" x 1 1/4"</b></p> <p><b>SEE DIA. DIM-1-G237</b></p>  |                         |  |               |   |            |                |          |                 |                |   |                |            |              |                 |                   |                         |            |                       |                |                  |                    |                  |                  |                  |                  |                |                 |                      |
| <p><b>1 1/8" THK CLEVIS</b></p> <p><b>1 3/8" HOLE FOR 1" BRAC BRACKET 1/4" LB</b></p> <p><b>2 1/2" x 1 1/4"</b></p> <p><b>SEE DIA. DIM-1-G237</b></p>   |   |                             |   | <p><b>1 1/8" THK CLEVIS</b></p> <p><b>1 3/8" HOLE FOR 1" BRAC BRACKET 1/4" LB</b></p> <p><b>2 1/2" x 1 1/4"</b></p> <p><b>SEE DIA. DIM-1-G237</b></p>  |                         |  |               |   |            |                |          |                 |                |   |                |            |              |                 |                   |                         |            |                       |                |                  |                    |                  |                  |                  |                  |                |                 |                      |
| <p><b>1 1/8" THK CLEVIS</b></p> <p><b>1 3/8" HOLE FOR 1" BRAC BRACKET 1/4" LB</b></p> <p><b>2 1/2" x 1 1/4"</b></p> <p><b>SEE DIA. DIM-1-G237</b></p>   |   |                             |   | <p><b>1 1/8" THK CLEVIS</b></p> <p><b>1 3/8" HOLE FOR 1" BRAC BRACKET 1/4" LB</b></p> <p><b>2 1/2" x 1 1/4"</b></p> <p><b>SEE DIA. DIM-1-G237</b></p>  |                         |  |               |   |            |                |          |                 |                |   |                |            |              |                 |                   |                         |            |                       |                |                  |                    |                  |                  |                  |                  |                |                 |                      |