

HALDIMAND COUNTY

DESIGN CRITERIA

SECTION Q

STREET LIGHTING

Revised 2015

Q 1.00 SCOPE

The following requirements apply to the installation of roadway lighting and associated equipment located on public rights-of-way classified as local residential roadways located within the municipality of Haldimand County. Roadway lighting shall be designed by the Developer and be subject to the approval of the Haldimand County.

Q 2.00 STANDARDS

The design and installation shall conform, as a minimum, to the current issue of the:

- Ontario Electrical Safety Code (OESC);
- ANSI/IESNA RP-8-00 – Illuminating Engineering Society of North America's National Standard Practice for Road way Lighting
- Guide for the Design of Roadway Lighting, published by the Transportation Association of Canada

In case of conflict, the standards specified above shall take precedence in the order listed.

Q 3.00 DESIGN CRITERIA

Street lighting design shall be based on ANSI/IESNA RP-8-00 (latest version) and the standards specified within this section. Street lighting design must provide uniform lighting at a level that is adequate and comfortable for vehicular and pedestrian movement for the appropriate road classification. All street lighting systems shall be designed by a qualified lighting designer. Unless otherwise approved by the County, all street lighting shall be Light Emitting Diode (LED) Cobra Head fixtures and shall be an approved product.

Q 4.00 COSTS

The costs associated with the design and installation of roadway lighting for the development shall be borne by the Developer, as determined by Haldimand County in accordance with its by-laws and policies.

Q 5.00 MATERIAL

All material and equipment for the installation of roadway lighting

shall:

- be supplied and installed by the Developer,
- bear a mark of approval that is acceptable to the Electrical Safety Authority, and
- conform to Haldimand County's specifications

Q 6.00 POLES AND LUMINAIRES

Roadway lighting poles and luminaires shall be supplied and installed in accordance with the latest revision of one of the following Haldimand County Distribution Standards, as determined by Haldimand County:

- HC31U-30 Spun Concrete Pole Class 'A' Tapered Elliptical Bracket, or
- HC31U-32 Talisman Pole and Washington Luminaire

Roadway lighting poles shall be installed on the same side of a roadway as the sidewalk. Where there are sidewalks on both sides of the roadway or there are no sidewalks on the public right-of-way, roadway lighting poles shall be installed on the opposite side of the roadway from the water main.

Roadway lighting poles shall be located at side lot line extensions in the boulevards of public rights-of-way and at the ends of walkways (where practicable), or at other locations for which prior approval has been obtained from Haldimand County.

Roadway lighting poles shall be located at an alternate side lot line extension away from a supply transformer.

Roadway lighting poles shall be located a distance of 3.5 m from the street property line except as otherwise specified by Haldimand County.

Roadway lighting poles shall be located so as to provide a minimum separation of 1.0 m between the pole and the edge of driveways, trees, electrical equipment, and fire hydrants.

Luminaires shall be controlled to automatically turn off during daylight hours.

Q 7.00 TRENCHES, TUBING AND DUCTS

Distribution cables shall be mechanically protected by 50 mm (2 in.) Electrical Non-metallic Tubing (ENT), except as otherwise specified by Haldimand County.

Distribution cables under roads shall be mechanically protected by 50 mm (2 in.) rigid PVC ducts encased in 20 MPa concrete and reinforced with 13 mm steel bar.

No. 8 AWG or smaller grounding conductors shall be in conduit or electrical metallic tubing of 13 mm (1/2 in.) minimum size, per OESC 10-806 (3) R2002.

Where distribution cables and grounding wires enter roadway lighting poles, they shall be mechanically protected by 50 mm (2 in.) Electrical Non-metallic Tubing (ENT).

The centre line of trenches for the installation of tubing and ducts along the boulevards of public rights-of-way shall be located according to classification of roadway as follows:

- at a distance of 2.5 m from street property line in G1 Rural 20 m rights-of-way;
- at a distance of 2.75 m from gutter on the transformer side of the roadway and 3.75 m on the water main side of the roadway in G2 Urban 20 m rights-of-way;
- at a distance of 3.0 m from street property line in G3 Partially Urbanized 24 m rights-of-way

Tubing and duct installations shall maintain a 0.3 m separation from all pipelines.

Tubing and ducts shall be buried in trenches at a depth of 0.9 m and surrounded by an envelope of sand.

The bottoms of trenches shall be free of all stones, debris and surplus material and shall be leveled to a tolerance of 100 mm and before backfilling, per OESC 12-012 (10).

Q 8.00 CABLES AND WIRING

Supply service cables, from the supply transformers to the supply service pedestals, shall be two #6 AWG copper conductors type RWU90XLPE colour-coded black and white and fitted with 1-hole compression connectors drilled for ½-in. bolts at the supply transformer ends.

Branch circuit cables, from roadway lighting supply service pedestals to and between each roadway lighting pole, shall be 2-conductor #8 AWG copper type NMWU with a #10 AWG copper bonding conductor.

Roadway lighting tap circuit cables, from the hand hole in each roadway lighting pole to the luminaire, shall be 2-conductor #12 AWG copper type NMWU with a #14 AWG copper bonding conductor per OESC 30-1102.

A weatherproof in-line fuse holder and fuse in accordance with OESC 30-1008 shall be installed at individual roadway lighting poles.

Connections at a roadway lighting pole shall conform to the latest revision of Haldimand County Distribution Standard HC31U-29 in Streetlight Connections in Pole Handhole 120 V.

Q 9.00 GROUNDING

Each roadway lighting supply service that is located at a distance greater than 3 m from the surface of a supply transformer shall be connected with a minimum #8 AWG bare copper conductor to a plate grounding electrode buried at least 600 mm below finished grade level in accordance with OESC 10-204 and 10-702 (4).

Where a roadway lighting supply service is located at a distance of 3 m or less from the surface of a supply transformer, the roadway lighting supply service shall be connected to the ground grid of the supply service transformer with a minimum #8 AWG insulated copper conductor type RWU90XLPE colour-coded green.

Where an individual branch circuit has five or more roadway lighting poles connected to it, every fifth pole in each continuous circuit and the first and last pole in such circuit shall have its steel re-enforcing connected with a minimum #8 AWG bare copper conductor to a plate grounding electrode.

The bonding conductor of branch circuits shall be connected to the steel reinforcing of roadway lighting poles and the non-current carrying parts of luminaires per OESC 10-818.

Q 10.00 POWER PEDESTALS

Power distribution pedestals and their foundations shall be supplied and installed at all roadway lighting power supply points per Haldimand County Distribution Standard HC31U-33 Power Distribution Pedestal or as otherwise specified by Haldimand County.

Power pedestals shall be located in the boulevards of public rights-of-way at side lot line extensions that do not conflict with proposed roadway lighting pole locations, or at locations for which prior approval has been obtained from Haldimand County Hydro.

Power pedestals shall be located at an alternate side lot line extension away from a supply transformer.

Power pedestals shall be located so as to provide a minimum separation of 1.0 m between its foundation wall and the edge of driveways, trees, vegetation, and structures, such as walls, poles, fire hydrants, utility pedestals, post office boxes, fences, posts, etc.

Power pedestals shall be located a distance of 0.3 m from the street property line to the back of the pedestal.

Power pedestals should be located on the same side of the roadway as the supply transformer.

Power pedestals should optimally be located centrally in respect to their roadway lighting connections to minimize cable lengths and the associated voltage drops.

Power pedestals at intersections should not be located beyond the "Beginning of Curve" (BC).

Power pedestals located on boulevards shall be orientated such that the access door opens towards the sidewalk.

Power pedestals shall be backfilled with sand 1 m around their perimeters.

Q 11.00 MATERIAL SPECIFICATIONS

Pole, standard, 9.906 m (32.5 ft.), class 'A' round tapered centrifugally cast pre-stressed concrete for direct burial, cap top, smooth mould finish of natural concrete grey colour with acrylic coating Capseal X75 on entire length of pole, #6 AWG stranded copper ground wire, 65 x 200 mm hand hole, CSA certified, suitable for mast arm mounting per Haldimand County Distribution Standard HC5-5C

- Stresscrete # E395-APR-G-M00 S/F 120 with Capseal
- Sky Cast # SC-325-ARO-CON-DCG-P with Capseal

Pole, decorative, 4.242 m (14 ft.) above grade, class 'A'; fluted centrifugally cast pre-stressed concrete for direct burial, polished aggregate finish of Aztec Jade (green) colour with water repellent surface treatment, #6 AWG stranded copper ground wire, 65 x 200 mm hand hole, CSA certified, 89 mm (3.5 in.) OD by 89 mm (3.5 in.) long tenon for post top luminaire mounting per Haldimand County Distribution Standard HC31U-32

- Stresscrete # KT14-G-S51-140-35/35 Talisman

Arm, luminaire, mast style of tapered elliptical aluminum, 1.829 m (6 ft.) long, 0.914 m (3 ft.) rise and 89 mm (3.5 in.) tube OD, polished natural finish with 152 mm (6 in.) long fixed tenon 60 mm (2-3/8 in.) OD and universal aluminum pole plate for horizontal mounting on concrete poles, per ANSI C136.1.

- USS Manufacturing # TER6MA
- Dynapole # TEA-06

Luminaire, roadway, cobra head style, all wattages, Light Emitting Diode (LED).

- Philips Lumec – Roadview Series
- General Electric – ERS Series
- Cooper Lighting – Navion LED Series

All fixtures to be Cast aluminum, painted grey, CSA certified, minimum of 10 year warranty on fixture.

Note: As advancements and technology in the LED roadway lighting evolves and new fixtures are introduced, approved manufacturers will be required to provide updated model specifications for County review and approval.

Luminaire, roadway, cobra head style, 70 W HPS, IES Type II medium cutoff distribution, internally shielded with a flat tempered glass lens, 120 V CWI ballast, mogul socket, twist-lock photo-control receptacle, cast aluminum painted gray, NEMA wattage label, CSA certified, for horizontal mounting on 60 mm (2-3/8 in.) OD tenon.

- GE Lighting Systems # M2RC07S1P2GMC2
- Lithonia Lighting # CHL 70S R2 FL 120 CWI PER CSA L/LP

Luminaire, decorative, acorn globe style, 70 W HPS, IES Type III cutoff distribution, internal specular louver, 120 V CWI ballast, mogul socket, twist-lock photo-control receptacle with hinged access plate in cast aluminum capital base painted Forest Green, polycarbonate rippled globe with finial top, CSA certified, for post top mounting

- King Luminaire # K118-LAR-II-70-(MOG)-HPS-120-PR-GN Washington with No.1 finial and K14 capital

Lamp, 70 W High Pressure Sodium (HPS), ED23.5 bulb with clear finish, mogul screw base, 6,400 initial lumens, ANSI Code S62ME-70

- General Electric Lighting # LU70
- Lithonia Lighting # LU70
- Osram Sylvania # LU70
- Philips Electronics # C70S62

Control, lighting, photo-electric, 1800 VA, 120 V, 320 J MOV surge protection, 1 fc turn on level, 1:1.5 turn on/off ratio, 2.5-5 sec. time delay, 3-pole NEMA twist lock plug and UV stabilized weather-proof enclosure per ANSI C136.10

- Fisher-Pierce # ES120-W-PJ1T
- Precision # EC120-AP-TD

Holder, fuse, in line, 15 A, 600 V, single pole, for 10 x 38 mm midget fuses sealed in a water resistant compartment with breakaway connector on line side, crimp terminals for #12 AWG copper conductors on line and load sides, insulated with watertight boots, and CSA certified

- Gould - Ferraz Shawmut Inc. # FEB-11-11-BA
- Cooper - Edison Fuse Inc. # HEB-AW-RLC-A

Fuse, midget (10 x 38 mm), 15 A, 600 V, 10 kA interrupting rating, fast acting, CSA certified to Standard C22.2 No. 248.14

- Gould - Ferraz Shawmut Inc. # ATM15
- Littelfuse/Fusetek # KLK015
- Cooper - Edison Fuse Inc. type MCL 15 A
- Cooper - Bussman type KTK 15 A

Pedestal, roadway lighting, short, 120 V distribution, 27 in. high, pad-lockable, galvanized steel outdoor enclosure painted equipment green, equipped with 100 A load centre with a 60 A single-pole main circuit breaker and 4 x 40 A single-pole branch circuit breakers all rated and ESA approved for 22 kA interrupting rating

- Pedestal Solutions Inc. # SLS1-4-40

Foundation, pedestal, precast concrete, 533 mm L x 381 mm W x 1067 mm D, of 30 MPa concrete, steel reinforced, suitable for mounting a roadway lighting power distribution pedestal by Pedestal Solutions Inc, per CSA A23.4-05 and drawing ICS 214

- Industrial Cast Stone Ltd. # ICS 214
- Brooklin Concrete Products Ltd. # BCP 20PED

Conductor for service entrance below ground, single #6 AWG copper type RWU90XLPE 1000 V, 90°C, coloured black for one phase conductor and white for neutral conductor, CSA certified to Standard C22.2 No. 38-05.

Cable for direct earth burial, non-metallic sheathed type NMWU, 300 V, 60°C, consisting of two copper conductors with extra thickness of PVC insulation colour-coded black and white, and a bare copper bonding wire covered overall with a black PVC jacket, CSA certified to Standard C22.2 No. 48M90(R2000), in the following sizes:

- 2/C #8 AWG insulated with 1/C #10 AWG bare
- 2/C #12 AWG insulated with 1/C #14 AWG bare

Conductor for grounding, minimum #8 AWG stranded bare soft drawn copper, per ASTM Standard B3

Conductor for grounding, minimum #8 AWG copper type RWU90XLPE 1000 V, 90°C, coloured green, CSA certified to Standard C22.2 No. 38-05.

Plate, ground electrode, 254 x 406 x 6 mm (10 x 16 x 1/4 in.), of galvanized steel with 19 mm (3/4 in) ground rod connection post and bronze ground rod connector for #8 AWG copper ground conductor, all CSA certified

- Hydrel Enterprises Ltd. # 1016.GPGC including 733.C connector
- Almat Metal Ltd. # K61-56 and K56-34 connector

Duct, straight, PVC, 50 mm (2 in.) inside diameter, type DB2/ES2, solid wall, for direct burial, per CSA C22.2 No. 211.1

Conduit, rigid PVC, 50 mm (2 in.) inside diameter, bell end, for direct burial, per CSA C22.2 No. 211.2

Tubing, electrical, non-metallic, type ENT, per CSA C22.2 No. 227.1, in the following inside diameter sizes:

- 50 mm (2 in.) for distribution cables
- 12.5 mm (1/2 in.) minimum for grounding wires

Coupling, electrical non-metallic, type ENT, 50 mm (2 in.) inside diameter, per CSA C22.2 No. 227.1.

- Ipex Inc. # KC35

Adapter, conduit to duct, rigid PVC, 50 mm (2 in.) inside diameter, duct to conduit, per CSA C22.2 No. 211.1 and CAN/CSA C22.2 NO. 85-M89 (R2006)

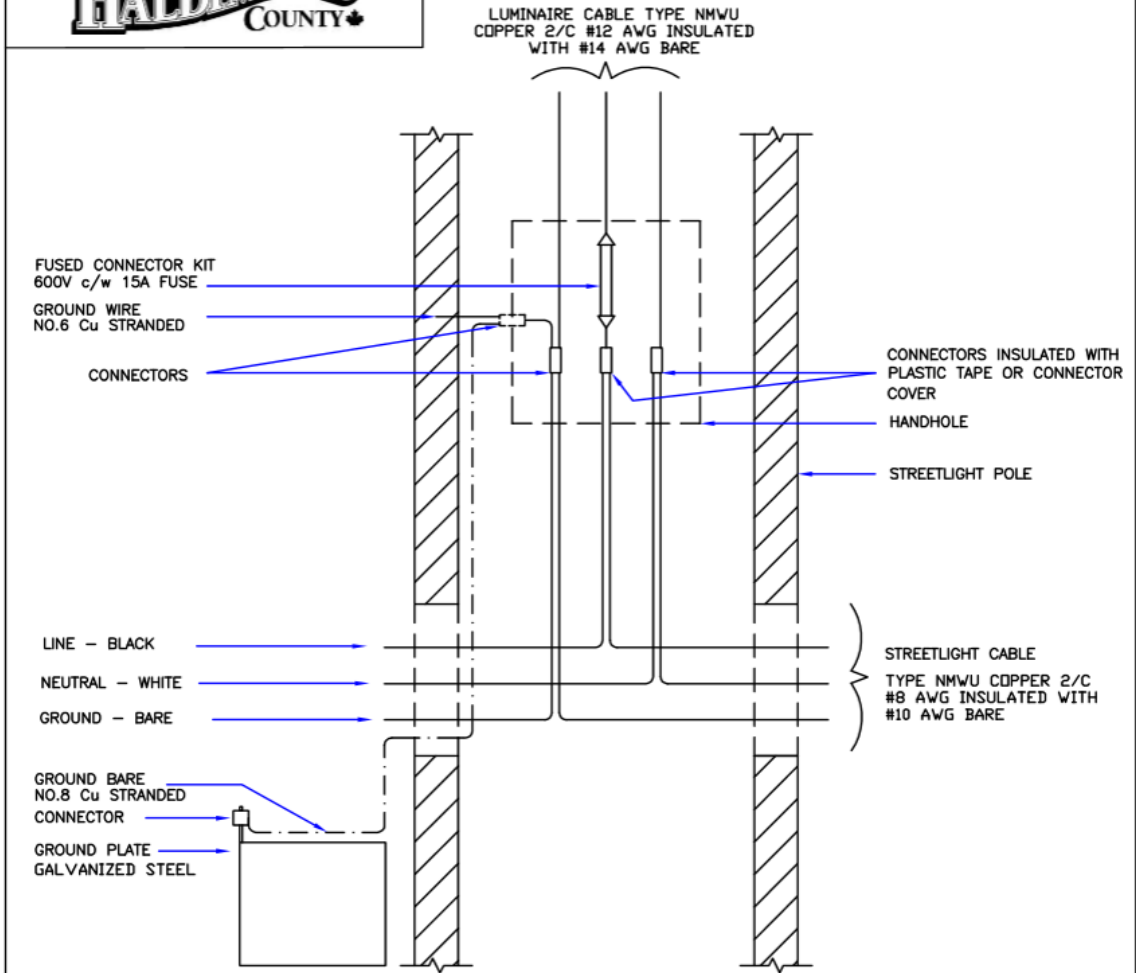
- Ipex Inc. # AGRIG20

Bell end fitting, rigid PVC conduit, 50 mm (2 in.) inside diameter, for direct burial, per CSA C22.2 No. 211.2 and CAN/CSA C22.2 NO. 85-M89 (R2006)

- Ipex Inc. # EB-35



Haldimand County
Distribution Standard
HC31U-29



NOTES:
1. GROUND PLATE ONLY REQUIRED AT EVERY FIFTH POLE IN EACH CONTINUOUS CIRCUIT, AND AT THE FIRST AND LAST POLE IN SUCH CIRCUIT.

REF. DWGS.:
POLE STANDARDS HC31U-30, 32

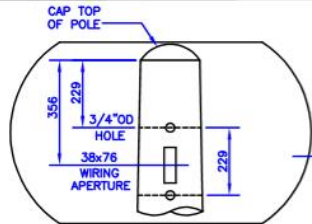


Title: STREETLIGHT CONNECTIONS IN POLE HANDHOLE 120V

APPROVED BY: E.G.	SIZE A	FILE NAME: HC31U-29	DWG NO. HC31U-29	REV 2
DRAWN BY: J.G.	SCALE N.T.S.	DATE: JAN 4, 2008	SHEET 1	

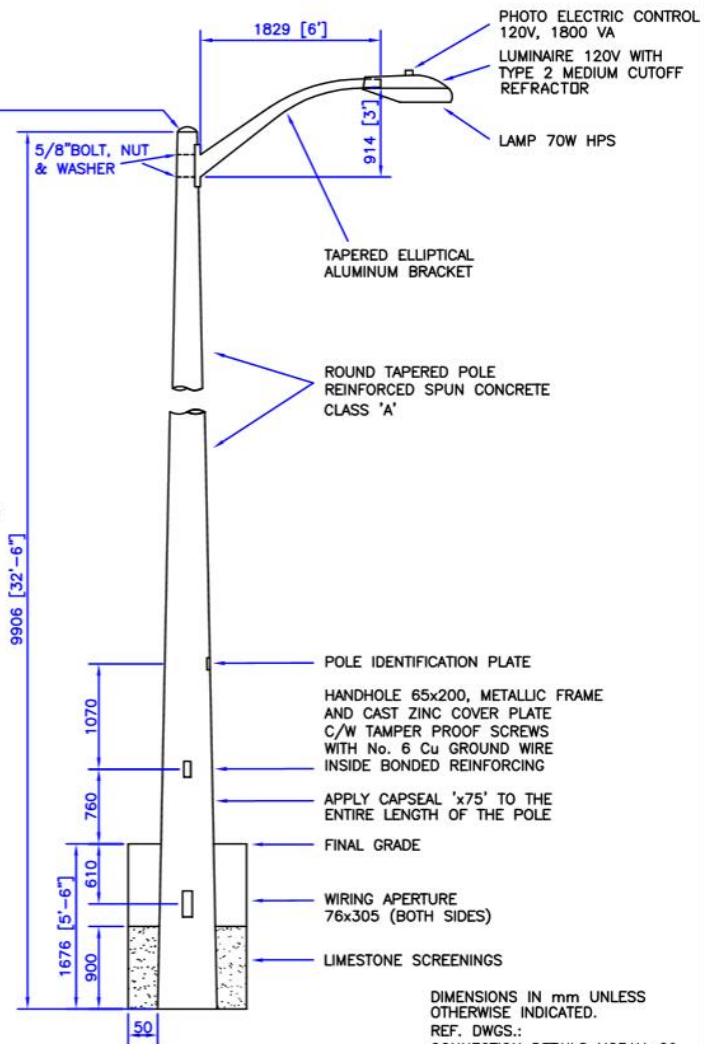


Haldimand County
Distribution Standard
HC31U-30



NOTES:

1. EXCAVATION TO BE DUG AND CLEARED OF LARGE STONES
2. STREET LIGHT STANDARD TO BE ASSEMBLED, WIRED TO HANDHOLE, AND PLACED IN EXCAVATION
3. LIMESTONE SCREENINGS TO BE PROVIDED AS BACKFILL AND COMPACTED TO 100% PROCTOR DENSITY
4. SHORT PIECES OF 50mm ELECTRICAL NON-METALIC TUBING TO BE PLACED IN WIRING APERTURE TO PROTECT CABLE
5. SURFACE TO BE RESTORED TO ORIGINAL CONDITION AND EXCESS MATERIAL REMOVED



DIMENSIONS IN mm UNLESS OTHERWISE INDICATED.
REF. DWGS.:
CONNECTION DETAILS HC31U-29

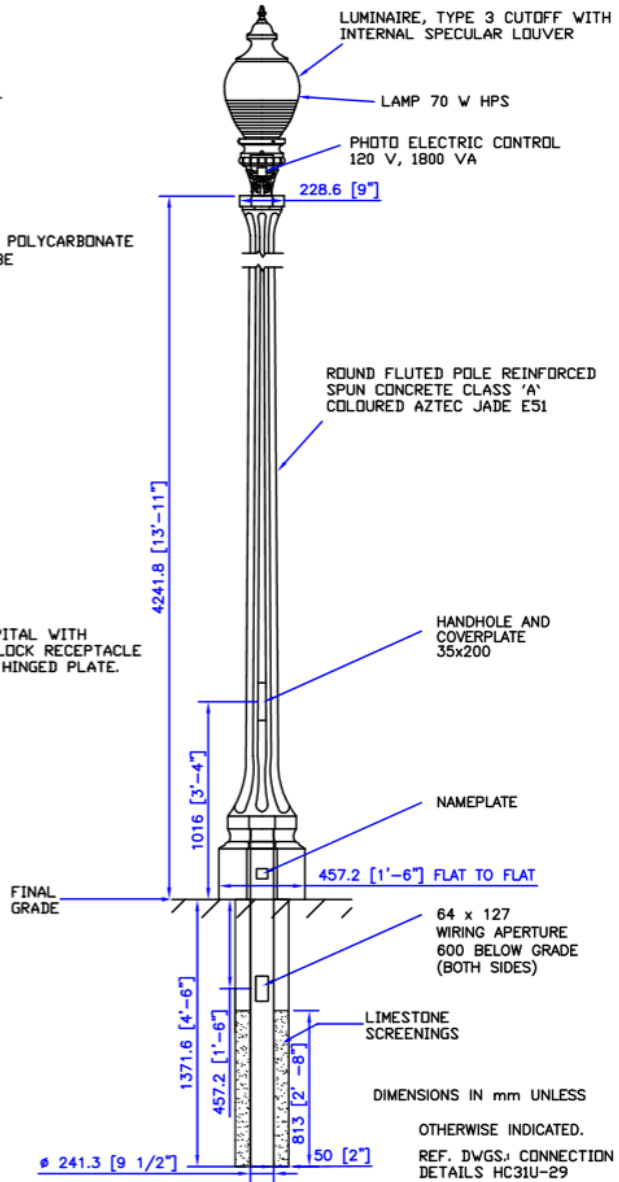
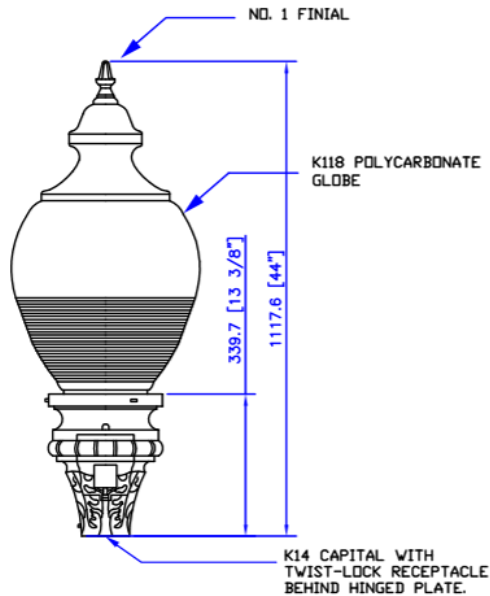


Title: SPUN CONCRETE POLE CLASS 'A' TAPERED ELLIPTICAL BRACKET

APPROVED BY: E.G.	SIZE A	FILE NAME: HC31U-30	DWG NO. HC31U-30	REV 2
DRAWN BY: J.G.	SCALE N.T.S.	DATE: JAN 4, 2008	SHEET 1	



Haldimand County
Distribution Standard
HC31U-32



NOTES:

1. EXCAVATION TO BE DUG AND CLEARED OF ALL LARGE STONES
2. STREETLIGHT STANDARD TO BE ASSEMBLED, WIRED TO HANDHOLE, AND PLACED IN EXCAVATION
3. EXCAVATION TO BE BACKFILLED WITH LIMESTONE SCREENINGS AND COMPACTED TO 100% PROCTOR DENSITY
4. SHORT PIECES OF 50 MM ELECTRICAL NON-METALIC TUBING TO BE PLACED IN WIRING APERTURE TO PROTECT CABLE
5. SURFACE TO BE RESTORED TO ORIGINAL CONDITION AND EXCESS MATERIAL REMOVED

DIMENSIONS IN mm UNLESS OTHERWISE INDICATED.
REF. DWGS: CONNECTION DETAILS HC31U-29



Title: TALISMAN POLE & WASHINGTON LUMINAIRE

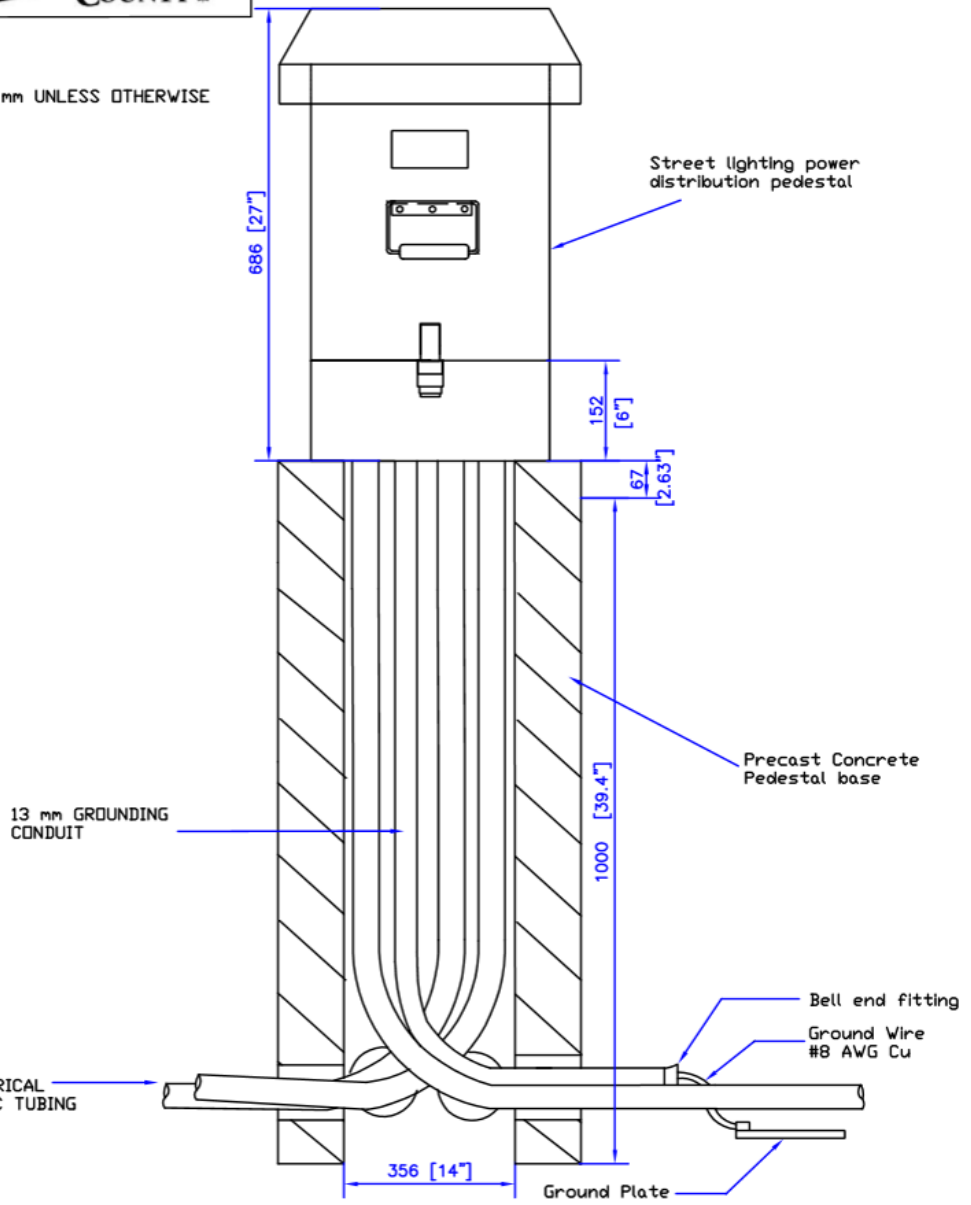
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				JAN 4, 2008	



Haldimand County
Distribution Standard
HC31U-33

NOTES

DIMENSIONS IN mm UNLESS OTHERWISE INDICATED



Title: STREETLIGHTING POWER DISTRIBUTION PEDESTAL

APPROVED BY: E.G.	SIZE A	FILE NAME: HC31U-33	DWG NO. HC31U-33	REV 1
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