3.0 UTILITIES AND STREETLIGHTING

3.1 Utilities

3.1.1 General

A complete engineering drawing submission shall include a Composite Utility Plan (C.U.P.) in order to ensure that conflicts between utilities, municipal services and driveways are avoided. The plan will indicate the location of all underground and all above ground services and utilities.

The hierarchy of municipal servicing and utilities shall generally apply when determining installation locations and, in descending order, are municipal sewers / watermains including appurtenances, hydro, gas, telephone, cable, and other.

All utilities are to be installed, wherever possible, at projections of lot property lines. A clustered location for utility pedestals and transformers is preferable.

For in-fill developments or at the limit to existing developments, the Developer is responsible for repairing any damaged existing utilities as a result of the new development.

3.1.2 Information Required on C.U.P.

The following utilities, services and appurtenances shall be clearly shown on the C.U.P.:

- Underground:
  - Any non-standard utility trench location (hydro, gas, telephone, and cable) as per the location indicated on the standard R.O.W. Cross-section drawings
  - Sewer and water service connection locations
  - Rear-lot catchbasin leads
  - Any watermain, sanitary or storm sewer infrastructure crossing boulevards
  - All Road Crossings

- Aboveground:
  - Curb and gutter
  - Driveway locations
  - Watermain valves (in boxes and/or chambers)
  - Fire hydrants
  - Sewer maintenance holes
  - Road & rear-lot catchbasins
  - Sidewalks and walkways
  - Easements
  - Hydro transformers
  - Streetlight standards
  - All pedestals (telephone, cable, and lighting)
  - Gas mains
  - All utility road crossings
  - Traffic and advisory signs
  - Mail box pads
  - Pavement markings (if applicable)
  - Bus stop pads (if applicable)
  - Fencing
  - Canada Post Community Mail Boxes
  - Any other features as may be directed by the Town.

In addition to the aforementioned information, each C.U.P. shall have a signature block provided for approval of each of the utilities listed below:

ACCEPTED BY	NAME	DATE

Hydro- Electrical Authority
Gas Authority
Telecommunications Authorities x3

Canada Post

Transit Authority (where applicable)

3.1.3 Trenches, Crossings and Backfilling

Trench locations are to be as per standard R.O.W. cross-section drawings. Any proposed non-standard locations are to be approved by the Town. Common trench installation for hydro, gas, cable and telephone shall be implemented as per the Town standard TNT.SD 116. Warning marker tape is to be installed in the utility trenches 0.6m above the cables.

Open cut utility crossings for new subdivision roads shall be installed prior to base curb construction and base asphalt placement. The crossings are to be installed perpendicular to the roadway (i.e. 90°) and opposite lot property lines wherever possible. A minimum clearance of 1.0m to any maintenance hole or road catchbasin must be maintained. Open cut utility crossings on existing roads shall have the asphalt surface saw cut for the width of the trench or as required for frost tapers, if applicable.

The backfill for the utility crossings on new roads shall be Granular 'A' up to the road subgrade, and compacted to a minimum of 98% SPMDD or as specified by the Soils Engineer. All granular material shall conform to OPSS 1010. Utility crossings on existing roads shall be backfilled with unshrinkable fill to the subgrade level (conforming to OPSS 1359), the granular reinstated and properly compacted, and asphalt binder applied to the saw cut edges prior to placing the hot mix asphalt. All asphalt restoration shall be in compliance with OPSS 310. All hot mix material shall conform to OPSS 1150 & 1154.

For existing roads where the curb has been undermined to facilitate the utility installation, the curb shall be removed and replaced. Curb restoration shall be a minimum of 2.0m or shall extend a minimum 0.5m beyond the outer trench edges, which ever is greater. All concrete to be 30 MPa as per OPSS 351. The minimum length of curb between cut locations shall be 1.0m.

3.1.4 Minimum Clearances

A minimum horizontal clear separation of 1.5m between driveway edges and transformers, and 1.0m between driveway edges and other street furniture shall be maintained. Driveways should be located to avoid catchbasins, wherever possible, and are not to encroach within 0.5m of the projected property lines.

The following chart represents the minimum clear separation between public utilities and municipal sewers and appurtenances unless otherwise approved by the Town:

Condition	Minimum Horizontal Distance	Minimum Vertical Distance
Minimum clearance between utilities (hydro, gas, cable, telephone) and municipal services	1.0 m	1.0 m
Minimum clearance between streetlights and transformers	3.0 m	n/a
Minimum clearance between streetlights and fire hydrants	3.0 m	n/a
Minimum clearance between streetlights and side lot line adjacent to RLCB leads	1.0 m	n/a
Minimum clearance between transformers and community mailbox pads	3.0 m	n/a

For any proposed construction work in the boulevard of existing roads, the corresponding representatives for the hydro, gas, cable and telephone companies must be contacted for field locates before any digging can commence.

Note: change all references from hydro to hydro-electrical

3.1.5 Hydro-Electrical Distribution System

The design and installation of the hydro distribution system shall be to the satisfaction of the Hydro Authority subject to the approval of the layout by the Town of New Tecumseth.

Utility service corridor location for detached, semi-detached and townhouse dwelling units shall conform to the Town of New Tecumseth standard drawings TNT.SD 401 to 403.

The final hydro drawings shall be stamped "Approved for Construction", dated and signed by the Hydro Authority. The installation of all hydro services shall be reviewed, inspected and accepted by the Hydro Authority.

3.1.6 Telecommunications and Natural Gas

The telephone, cable and gas services shall be underground and installed by the Utility Companies, or an approved and licensed Contractor accepted by the Town. The Developer shall grant the Utility Companies any necessary easements required for their services.

3.2 Streetlighting

3.2.1 General

A qualified Electrical Engineering Consultant is responsible for preparing the detailed streetlight layout and design and must ensure that it is in complete accordance with the Town of New Tecumseth Standards and Specifications in terms of all materials, locations, levels of lighting and absence of conflict. If the recommended levels cannot be met, the Electrical Engineering Consultant must certify that the design is 'safe' and appropriate given the underlying factors. The Electrical Engineering Consultant must certify that the streetlighting design is in accordance with ESA 22/04 Regulations.

All electrical streetlight layout and design drawings, including a detailed cost estimate for the installation, shall be submitted to the Town through the Engineering Consultant as part of the Complete Engineering Subdivision Submission Package.

3.2.2 Streetlight Poles

Three types of streetlight pole assemblies are to be utilized in new subdivision developments:

- Decorative Poles: Coach style lantern streetlights with decorative scroll arms mounted on a tapered, octagonal, black (midnight lace / polished), direct buried concrete pole. (Decorative street lighting luminaires to be SDL LED by Eaton/ Cooper Lighting.). SDL fixtures to have dimming driver, universal voltage and black colour.
- Standard Poles: Cobrahead style streetlights VERD VERDEON LED fixtures by Eaton with tapered elliptical aluminium arms mounted on a tapered, round, mould finished, direct buried concrete pole. (Poles to be products of USI or StressCrete). Cobrahead style fixtures to have dimming driver, universal voltage and gray colour.
- Telecommunication Pole: Streetlights with internal compartments for utility service equipment to be approved by the Town on a case by case basis. (Preferred pole to be Alexander by StressCrete)

Note: The Electrical Engineering Consultant will be responsible for establishing which type of streetlight pole assembly is to be utilized, in conjunction with the Town's approval. The Electrical Engineering Consultant will review all manufacturers streetlight assembly shop drawings to ensure compliance with Town's Standards and Specifications.

Streetlight poles shall be installed to a minimum depth of 1.5m below the finished grade and embedded in compacted crushed limestone screening. The poles shall be installed on projections of side lot lines, wherever possible.

For Developments within the Downtown Core and in conjunction with the Town's Approval, the following decorative pole assembly is to be utilized:

- Luminaire: F126 Series by HCI (Heritage Casting & Ironworks), black color
- Pole: P405-4F by HCI (Heritage Casting & Ironworks), black color
- Arm: A-306 Series by HCI (Heritage Casting & Ironworks), black color

3.2.3 Illumination Criteria and Luminaire Fixtures

The streetlighting system shall be designed to meet the following average maintained illumination level and minimum uniformity ratio for each type of road and walkway:

Roadway Classification	Average Illumination (lux)	Uniformity Avg/Min Ratio	Luminaire Wattage (W)
Urban Local	4	6:1	70 &100
Industrial	9	3:1	150
Rural	6	6:1	100
Minor Collector	6	4:1	100 &150
Major Collector / 4-Lane Arterial	13	3:1	200
5-Lane Arterial	17	3:1	200
Walkway	5	6:1	70

Notes:
1. The illumination criteria is based on asphaltic pavement types R2 and R3.
2. The illumination criteria for concrete roads must be in accordance with the *Illuminating Engineering Society Design Guidelines* and/or the *Municipal Engineers Association, Municipal Works Design Manual*.
3. All other Road Classifications not identified above will be considered on an individual basis in accordance with the requirements of the Town.

The illumination criteria will be the prime consideration governing the lighting design for residential subdivisions and industrial roadways. Intersections shall have an illumination equal to the sum of the current design levels of the intersecting roadways. The criteria also apply where new development roads intersect with existing roads. For the purpose of photometric analysis, asphalt within the limits of the daylight corners of intersections shall constitute the intersection. A photometric point plot is required for review and approval by the Town and is to cover right-of-way from property line to property line.

The spacing of the streetlights shall be designed to ensure that the illumination criteria is maintained at all times. Particular attention may be required around bends and grade changes in the roadway. A staggered arrangement of streetlight poles (i.e. alternate location on either side of the pavement) is acceptable provided the electrical engineering consultant submits to the Town photometric calculations indicating that the minimum lighting requirements are satisfied. Where road medians are utilized, double fixtured streetlights mounted at 180° apart installed on the centreline of the median may be a feasible option to be considered by the electrical engineering consultant.

All luminaires shall comply with all applicable requirements of CSA Standard C22.2 No. 7 “Electrical Lighting Fixtures”. The luminaires shall be high pressure sodium, Type II medium cut-off distribution, dual voltage 120/240 auto regulator high power integral ballast, complete with lamp and fixture mount photo cell. LED fixtures would be considered for walkway installations when installed in between houses. For residential subdivisions, the ballast should typically be wired for 120V usage. For industrial areas, the ballast should typically be wired for 240V usage.

The luminaire wattages must be specified on the streetlight drawings prepared by the electrical engineering consultant and must be in accordance with the aforementioned chart in this section without causing adverse glare.

The photoelectric control (photo cell) is to be designed to automatically switch “ON” when the natural illumination decreases to 50 lux and to switch “OFF” when illumination reaches not more than 200 lux. Both operations are to be delayed 10 to 15 seconds so that the control will not respond to transient changes in lighting such as lightening flashes.

3.2.4 Approval, Construction and Energization

Approval of electrical engineering drawings and plans for streetlighting must be obtained from the Hydro Authority during the submission process.

The entire streetlight system shall be installed in full accordance with the Electrical Safety Authority (E.S.A). The design Engineer shall certify the streetlight system design is in accordance with ESA 22/04 Regulations.

Prior to energization of the streetlight and electrical distribution system, the Developer shall schedule the E.S.A. for the inspection of the streetlight and electrical distribution system works. In addition, the Developer shall arrange for a copy of the E.S.A's "Connection Authorization" to be forwarded to the Town and arrange for the Hydro Authority to provide the Town with 48 hours notification of the intent to energize the streetlight and electrical distribution system. Energy charges with regard to the streetlighting will be paid by the Town upon energization of the streetlighting. The streetlighting system is to be energized prior to the first occupancy.

Where the Developer installs the streetlighting system, it must guarantee and maintain the lighting until assumption of the subdivision by the Town.