6.0 STREET LIGHTING

6.1 INTRODUCTION

All street lighting systems shall be designed by a Professional Engineer competent in lighting design, and in accordance with the International Illuminating Engineering Society and Local Authority standards where required by the Local Authority.

All materials, equipment and specifications shall be subject to approval of the Provincial Electrical Inspector prior to submission to the Local Authority for consideration.

The developer shall be responsible for obtaining all permits and payment of any fees required by the Provincial Electrical Inspector or the power utility company prior to start of construction.

Upon completion, the consulting engineer or contractor shall make provision to energize the system for inspection purposes and notify the Local Authority the system is ready to inspect. After completion of such inspection by the Local Authority and correction of remaining deficiencies, the Local Authority will then make application to energize the system when service is required.

Street lighting voltages shall be compatible with the local power authority service voltages.

Provision for future lighting of parks shall be made by installing ducts from the nearest street-light or junction to the park property line.

6.2 DESIGN PARAMETERS

6.2.1 Minimum Levels of Illumination

The levels of average horizontal illumination, in lux, for roadways and pedestrian walkways shall not be less than those outlined in Table 6.2.1.1.

Table 6.2.1.1 - Average Horizontal Illumination (LUX)

Road Classification	Main Commercial Areas	Industrial & Intermediate Commercial Areas	Residential Areas
Arterial	22	15	*11
Collector	13	10	* 6

Local	10	6	4
Pedestrian Walkways	6	6	4

* Average horizontal illumination shall apply only to arterial or collector roads abutting residential properties. Arterial or collector roads traversing a residential area but not abutting residential properties shall be designed to meet industrial and intermediate commercial area standards.

Differentiation between areas shall be at the discretion of the Approving Officer.

The maximum uniformity ratio of horizontal illumination for roadways and pedestrian walkways using a maintenance factor of 0.90 shall be as outlined in Table 6.2.1.2.

Table 6.2.1.2 - Uniformity Ratios

Road Classification	Uniformity Average: Minimum
Arterial	3:1
Collector	4:1
Local	5:1
Pedestrian Walkways	5:1

6.2.2 Pole Locations

All pole locations are subject to Ministry of Transportation approval for which a permit is required.

For arterial and collector roadways, pole installations shall utilize a staggered arrangement on both sides of the roadways and where possible be located on lot lines, away from driveways and underground services. On local roadways, pole installations shall utilize a one-side arrangement along the sidewalk side, however a staggered arrangement may be considered provided private utility companies are satisfied that no conflicts exist.

Illumination levels differ for different classifications of roadways and where these roads meet, a transition area shall be incorporated. These shall have a gradual increase in illumination level until the higher level is reached.

On curves the luminaire spacing shall be reduced to ensure uniformity of illumination. Where poles are situated on the inside of bends the spacing must be reduced to $\pm$55% of the spacing on straight sections. On the outside of bends the spacing must be reduced to $\pm$70% of the normal spacing. Reduction figures are general guidelines and uniformity levels should dictate the required spacing.

Consideration shall be given to the relative positions of luminaires and trees to ensure that a uniform light distribution is maintained.

6.2.3 Underground Ducting Locations

In general, conduit shall be placed on the light side of the roadway. However, where a staggered type lighting pattern is utilized, conduit shall be placed on both sides of the roadway.

6.2.4 Lamp Standards and Luminaires

The types of standards and luminaires for different road classifications shall be as per Table 6.2.4.

Table 6.2.4 - Standards and Luminaires

Road Classification	Standard Type	Height	Luminaire Description
Arterial	Davit Arm NAPCO #29180-110-000	9.14 m	150 watt high pressure sodium,
Collector	Davit Arm NAPCO #29180-110-000	7.62 m	150 watt high pressure sodium
Local	Davit Arm NAPCO #29180-110-000 as per Std. Dwg.	7.62 m	100 Watt high pressure sodium,
	E-1 or accepted post top as per Std. Dwg. E-2	6.0 m	

6.2.5 List of Standard Drawings

The following drawings form part of Section 6:

Title	**No.**
Davit Street Lights	E1
Post Top Street Lights	E2
Local Urban Road - Typical Location of Utilities	G1
Local Urban Road - Open Shoulders	G2

6.3 MATERIALS

All materials shall be C.S.A. approved and conform to the following specifications:

6.3.1 Poles

Poles shall be one piece octagonal tapered, factory primed steel to A.S.T.M. Standard A153 (610 gms/m^2 inside and outside) designed to withstand 160 km/h wind loading. All poles shall be painted prior to installation and touched up to cover damaged areas after erection. Street light poles and accessories shall be as detailed on the standard drawings. Breakaway bases may be required at the discretion of the Local Authority.

6.3.2 Pole Bases

Precast concrete trapezoidal bases shall be installed on all pole installations. Under certain situations cast in place bases may be considered.

6.3.3 Conduit

All conduit, couplings, adapters and bends for street lighting shall be rigid unplasticized polyvinyl chloride, 50mm diameter minimum, Canadian Electrical Code, with maximum 30% conduit fill, unless otherwise accepted. Installation shall be in strict accordance with the manufacturer's recommendations using C.S.A. certified cement. Steel conduit for power service shall be hot-dipped galvanized malleable iron.

6.3.4 Grounding

Grounding of neutral wire to grounding rod at each pole and service kiosk and installation of a continuous ground conductor in the conduit system shall be provided in accordance with the Provincial Electrical Code, #8 size, colour coded green.

6.3.5 Conductors

All conductors shall be type RW 90 X-link or RWU 90 X-link stranded copper. Minimum conductor size shall be #12. Conductor minimum size for advance warning flashers shall be #12. High traffic heads shall be wired with cabtire.

6.3.6 Connectors

Connectors shall be solderless insulated connectors of the Marrette type, taped with black P.V.C. tape. Full compression lugs shall be used for connecting ground conductors to ground studs in hand-holes.

6.3.7 Luminaires

All luminaires shall be acrylic type II, III or IV with cut-off or semi-cut-off distributions, in accordance with Section 6.2.4.

Polycarbonate vandal resistant refractors are required.

6.3.8 Lamps

All lamps shall be 150 watts or 100 watt high pressure sodium as applicable, colour corrected, deluxe coated.

6.3.9 Conduit Bedding

Bedding for buried conduit shall be sand or crushed granular aggregate as specified for PVC water piping. Utility warning tape shall be installed above all buried conduit.

6.3.10 Junction Boxes

Junction boxes shall be cast aluminum, P.V.C. or concrete. Cast aluminum boxes shall be used in sidewalks in commercial areas; concrete boxes may be used in all other areas.

6.3.11 Service Panels

Service panels shall be C.S.A. approved of the pole mounting or kiosk type.

6.3.12 Photo-Cell Units

Photo-cell units shall be cadmium sulphide type having externally adjustable sensitivity, thermal on and off delay type for 120 volt operation and an integrally contained control relay capable of switching at least 1000 volt-amperes. The unit shall be provided with a twist-lock base to match the receptacle provided in the luminaire and the action shall be such that in daylight the relay is energized, holding open its normally closed contacts. The unit shall have a built-in surge protector and a lightning arrester.

One photo-cell unit shall be installed for each 10 or less streetlights on a circuit.

Where pole mounting is required an outdoor receptacle with wall mounting bracket shall be provided.

6.3.13 Ground Rods

Ground rods shall be 19 mm diameter steel with hot forged point. Top ends shall be galvanized for a minimum distance of 250 mm for 1500 mm rods and 450 mm for 3 metre rods. Ground rods shall be full length copper clad.

6.3.14 Paint

Primer shall be factory applied and any marks touched up with an accepted primer prior to painting. Paint shall be "Tremclad Dark Blue", or accepted equal.

6.4 INSTALLATION

6.4.1 Layout and Positioning

Poles, pole bases, conduit and appurtenances shall be accurately located in accordance with the accepted drawings. Conduit shall be installed parallel or perpendicular to the road centreline and routed so as to run in a direct line between adjacent poles or junction boxes.

6.4.2 Conduit Installation

Conduit shall be installed in accordance with the manufacturer's recommendations.

Empty conduits shall be provided with an insulated #12 AWG copper wire and capped immediately after installation of the pull wire.

6.4.3 Poles, Bases and Luminaires

Bases shall be set plumb and oriented such that one side of the bolt square layout is parallel to the road centreline.

Poles shall receive one coat of paint prior to erection. Poles shall be set plumb with no more than 6 shims per pole.

Luminaires shall be securely fastened to the poles, levelled and cleaned after pole erection. Paint on poles shall be touched up after erection. If paint is badly scarred during installation, a second coat of paint shall be applied.

6.4.4 Wiring and Equipment

Wiring and equipment installation shall conform to the B.C. Electrical Code and manufacturer's recommendations.

6.4.5 Inspection and Testing

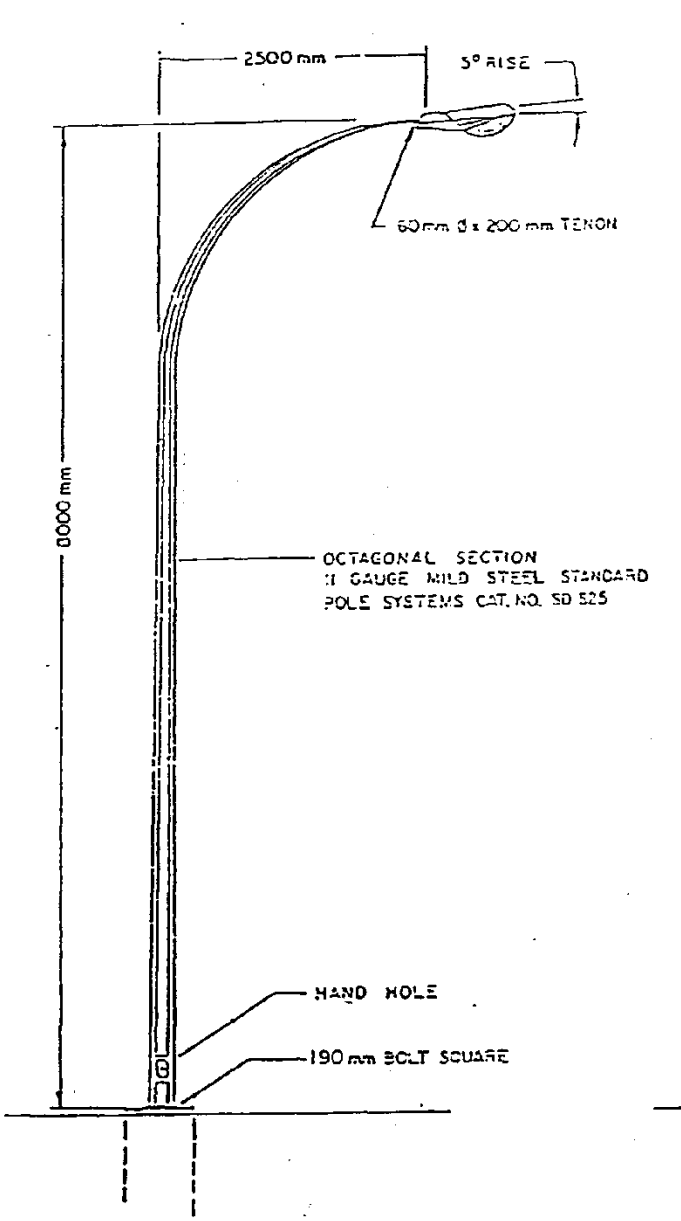
Inspection and testing shall conform to the provisions of the B.C. Electrical Code and the provisions of Section 6.1 hereof.

6.4.6 Installation on Power Utility Poles

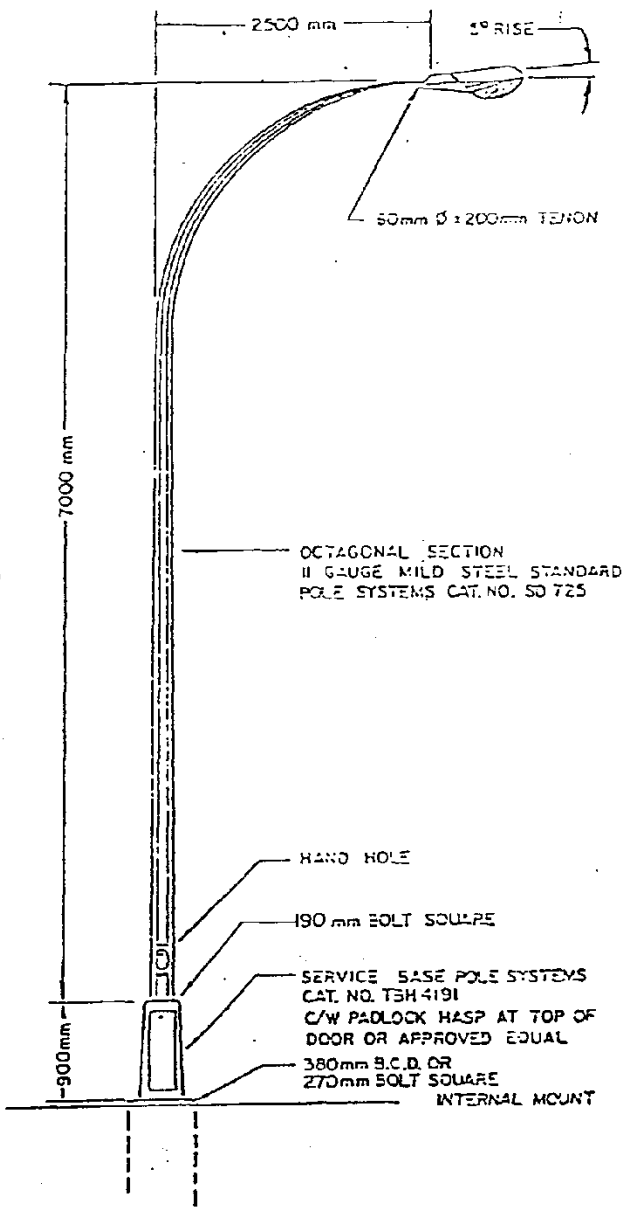
Where street lighting is to be installed on power utility poles, the installations shall conform to the lighting level requirements of this Schedule and to the materials and installation requirements of the utility owner.

8.0 STANDARD DRAWINGS

[xiv] Amendment Bylaw No. 2000.10, 2021 – adopted January 21, 2021.



TYPE A



TYPE B

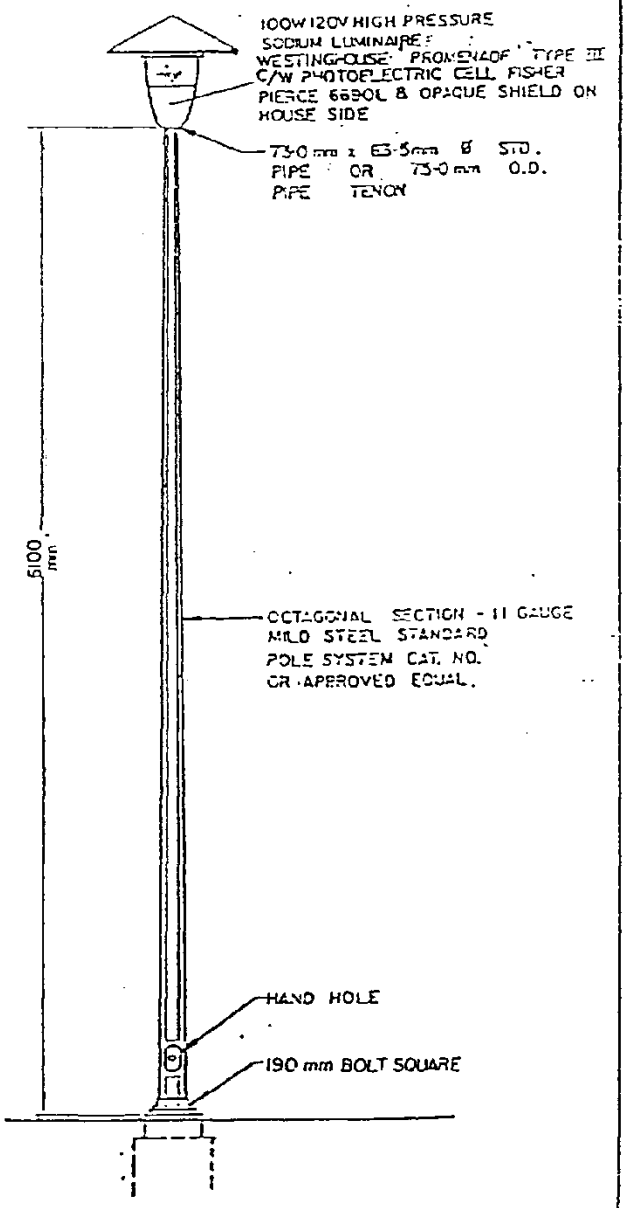
1. POLES AND SERVICE BASES TO BE PRIMED AT FACTORY AND PAINTED AFTER ERECTION WITH ONE COAT OF DARK BLUE TREM CLAD.
2. BASE BOLT COVERS TO BE USED ON TYPE 'B' POLES ONLY.

REGIONAL DISTRICT of OKANAGAN SIMILKAMEEN

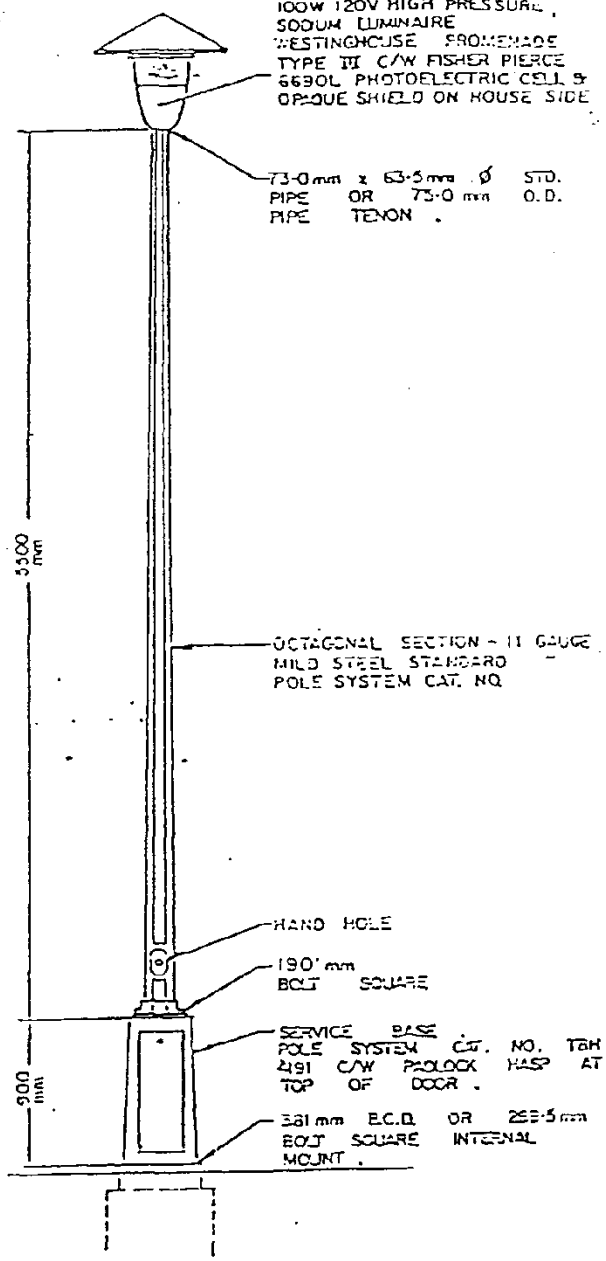
DAVIT STREET LIGHTS

SCALE: N.T.S.

DWG. NO: E1



TYPE C



TYPE D

NOTE:
1. POLES AND SERVICE BASES TO BE PRIMED AT FACTORY AND PAINTED AFTER ERECTION WITH ONE COAT OF DARK BLUE TREM CLAD.
2. INSTALATION OF POST-TOP STREET LIGHTING REQUIRES APPROVAL IN ADVANCE FROM THE APPROVING OFFICER.

REGIONAL DISTRICT of OKANAGAN SIMILKAMEEN

POST TOP STREET LIGHTS

SCALE: N.T.S.

DWG. NO: E2